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P802.1ASdr/D1.2

April 17, 2023

(Amendment to IEEE Std 802.1AS™-2020
as modified by IEEE Std 802.1AS™-2020/Cor 1 - 2021)

Draft Standard for Local and metropolitan area networks—

Timing and Synchronization for Time-Sensitive Applications

Amendment: Inclusive Terminology

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1 **Project Authorization Request, Scope, Purpose, and Criteria for Standards** 2 **Development (CSD)**

3 The complete amendment PAR, as approved by IEEE NesCom 3rd June 2020, can be found at:

4 <https://development.standards.ieee.org/myproject-web/public/view.html#pardetail/8208>

5 The 'Scope of the Proposed changes' and the 'Need for the Project' specify the changes to be made by this
6 amendment (see below).

7 **Scope of the Proposed changes:**

8 This amendment changes the non-inclusive, insensitive, and deprecated terminology including those
9 identified by IEEE P1588g and IEEE editorial staff, replacing them with their suitable terminology wherever
10 possible.

11 **Need for the Project:**

12 IEEE Std 802.1AS-2020, includes a profile of IEEE Std 1588-2019, and uses non-inclusive terms to describe
13 port states and clock roles in a Precision Time Protocol (PTP) network. IEEE SA has recently resolved that
14 IEEE standards should be written in such a way as to avoid non-inclusive and insensitive terminology. IEEE
15 P1588g is developing a consensus on the preferred alternative terminology. In order to avoid confusion in
16 industry, this project selects from the IEEE P1588g alternative terms to describe PTP functionality.

17 **Criteria for Standards Development:**

18 The complete Criteria for Standards Development (CSD) can be found at:

19 <https://mentor.ieee.org/802-ec/dcn/21/ec-21-0097-00-ACSD-p802-1asdr.pdf>

20

1

2 **Draft IEEE Standard for** 3 **Local and metropolitan area networks—**

4 **Timing and Synchronization for Time-** 5 **Sensitive Applications**

6 **Amendment: Inclusive Terminology**

7 [This amendment is based on IEEE Std 802.1AS™-2020 as modified by IEEE Std 802.1AS™-2020/Cor 1 -
8 2021.]

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19

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April 17, 2023

(Amendment to IEEE Std 802.1AS™-2020
as modified by IEEE Std 802.1AS™-2020/Cor 1 - 2021)

Draft IEEE Standard for Local and metropolitan area networks— Timing and Synchronization for Time-Sensitive Applications Amendment: Inclusive Terminology

Prepared by the
Maintenance Task Group of IEEE 802.1

Sponsor
LAN/MAN Standards Committee
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1 **Abstract:** This amendment to IEEE Std 802.1AS™-2020 replaces terminology with alternative
2 terminology identified by IEEE Std 1588g-2022. All changes made in figures are only to replace
3 terminology.

4

5 **Keywords:** best timeTransmitter, frequency offset, Grandmaster Clock, Grandmaster PTP
6 Instance, PTP End Instance, PTP Relay Instance, IEEE 802.1AS™, phase offset, synchronization,
7 syntonization, time-aware system

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1 Introduction

This introduction is not part of IEEE Std 802.1ASdrTM-20xx, IEEE Standard for Local and metropolitan area networks—Timing and Synchronization for Time-Sensitive Applications—Amendment: Inclusive Terminology

2 The first edition of IEEE Std 802.1AS was published in 2011. A first corrigendum, IEEE Std
3 802.1ASTM-2011/Cor1-2013, provided technical and editorial corrections. A second corrigendum, IEEE Std
4 802.1ASTM-2011/Cor2-2015 provided additional technical and editorial corrections.

5 The second edition, IEEE Std 802.1AS-2020, added support for multiple gPTP domains, Common Mean
6 Link Delay Service, external port configuration, and Fine Timing Measurement for 802.11 transport.
7 Backward compatibility with IEEE Std 802.1AS-2011 was maintained. A corrigendum, IEEE Std
8 802.1ASTM-2020/Cor1-2021, provides technical and editorial corrections.

9 This amendment to IEEE Std 802.1ASTM-2020 replaces terminology with alternative terminology identified
10 by IEEE Std 1588g-2022. All changes made in figures are only to replace terminology.

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2 **IEEE Standard for** 3 **Local and Metropolitan Area Networks—** 4 **Timing and Synchronization for** 5 **Time-Sensitive Applications** 6 **Amendment: Inclusive Terminology**

7 **1. Overview**

8 **1.1 Scope**

9 This standard specifies protocols, procedures, and managed objects used to ensure that the synchronization
10 requirements are met for time-sensitive applications, such as audio, video, and time-sensitive control, across
11 networks, for example, IEEE 802 and similar media. This includes the maintenance of synchronized time
12 during normal operation and following addition, removal, or failure of network components and network
13 reconfiguration. It specifies the use of IEEE 1588™ specifications where applicable in the context of
14 IEEE Std 802.1Q™-2018.¹ Synchronization to an externally provided timing signal [e.g., a recognized
15 timing standard such as Coordinated Universal Time (UTC) or International Atomic Time (TAI)] is not part
16 of this standard but is not precluded.

17 **1.2 Purpose**

18 This standard enables systems to meet the respective jitter, wander, and time-synchronization requirements
19 for time-sensitive applications, including those that involve multiple streams delivered to multiple end
20 stations. To facilitate the widespread use of packet networks for these applications, synchronization
21 information is one of the components needed at each network element where time-sensitive application data
22 are mapped or demapped or a time-sensitive function is performed. This standard leverages the work of the
23 IEEE 1588 Working Group by developing the additional specifications needed to address these
24 requirements.

25

¹ Information on references can be found in Clause 2.

1 *Change 4 as follows:*

2 **4. Acronyms and abbreviations**

3 B~~T~~MC best ~~master~~timeTransmitter clock

4 ~~BMCA~~BTCA best ~~master~~timeTransmitter clock algorithm

5

1 5. Conformance

2 5.4 PTP Instance requirements and options

3 5.4.1 Summary of requirements

4 *Change 5.4.1 e) and f) as follows:*

- 5 e) Implement the Clock~~Slave~~TimeReceiverSync state machine (10.2.13).
- 6 f) Support the following best ~~master~~timeTransmitter clock algorithm (~~BMCA~~BTCA) requirements:
 - 7 1) Implement the ~~BMCA~~BTCA (10.3.1.1, 10.3.1.2, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.8,
 - 8 and 10.3.10).
 - 9 2) For domain 0, implement specifications for externalPortConfigurationEnabled value of FALSE
 - 10 (10.3.1).
 - 11 3) Implement the PortAnnounceReceive state machine (10.3.11).
 - 12 4) Implement the PortAnnounceInformation state machine (10.3.12).
 - 13 5) Implement the PortStateSelection state machine (10.3.13).
 - 14 6) Have the ~~BMCA~~BTCA as the default mode of operation, with externalPortConfiguration
 - 15 FALSE, on domain 0.
 - 16 7) Implement at least one of the possibilities for externalPortConfigurationEnabled (i.e., FALSE,
 - 17 meaning the ~~BMCA~~BTCA is used, and TRUE, meaning external port configuration is used) on
 - 18 domains other than domain 0.

19 5.4.2 PTP Instance options

20 *Change 5.4.2 b), c), and l) as follows:*

- 21 b) Support the following media-independent ~~master~~timeTransmitter capability on at least one PTP
- 22 Port:
 - 23 1) Implement the PortSyncSyncSend state machine (10.2.12).
 - 24 2) Implement the PortAnnounceTransmit state machine (10.3.16).
 - 25 3) Implement the AnnounceIntervalSetting state machine (10.3.17).
 - 26 4) For transmit of the Announce message, support the message requirements as specified in 10.5,
 - 27 10.6, and 10.7.
- 28 c) Support the following for Grandmaster PTP Instance capability:
 - 29 1) Support the media-independent ~~master~~timeTransmitter capability specified in item b) of 5.4.2.
 - 30 2) Support the requirements for a grandmaster-capable PTP Instance (10.1.3).
 - 31 3) Implement the ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine (10.2.9).
 - 32 4) Implement the ~~ClockMasterSyncOffset~~ClockTimeTransmitterSyncOffset state machine
 - 33 (10.2.10).
 - 34 5) Implement the ~~ClockMasterReceive~~ClockTimeTransmitterReceive state machine (10.2.11).
- 35 l) Implement both ~~BMCA~~BTCA and external port configuration on domains other than domain 0; if
- 36 both possibilities are implemented on domains other than domain 0, the default value of
- 37 externalPortConfigurationEnabled shall be FALSE.

1 5.4.3 PTP Relay Instance requirements

2 *Change 5.4.3 c) as follows:*

- 3 c) Support the media-independent ~~master~~timeTransmitter capability specified in item b) of 5.4.2.

4 5.6 MAC-specific timing and synchronization methods for IEEE Std 802.11-2016

5 *Change 5.6 b) as follows:*

- 6 b) Support at least one of
- 7 1) the media-dependent ~~master~~timeTransmitter state machines (12.5.1), or
- 8 2) the media-dependent ~~slave~~timeReceiver state machine (12.5.2).

9

1 7. Time-synchronization model for a packet network

2 7.2 Architecture of a time-aware network

3 7.2.2 Time-aware network consisting of a single gPTP domain

4 *Change the paragraph after Figure 7-1 and related footnote in 7.2.2 as follows:*

5 Any PTP Instance with clock sourcing capabilities can be a potential Grandmaster PTP Instance, and a
6 selection method (the *best ~~master~~timeTransmitter clock algorithm*, or *BMCA~~BT~~CA*) ensures that all of the
7 PTP Instances in a gPTP domain use the same Grandmaster PTP Instance.² The *BMCA~~BT~~CA* is largely
8 identical to that used in IEEE Std 1588-2019, but somewhat simplified. In Figure 7-1 the *BMCA~~BT~~CA*
9 process has resulted in the Grandmaster PTP Instance being on the network backbone. If, however, the
10 access network fails, the systems on a local network automatically switch over to one of the potential
11 Grandmaster PTP Instances on the local network that is as least as “good” as any other. For example, in
12 Figure 7-2, the access network link has failed, and a potential Grandmaster PTP Instance that has a GNSS
13 reference source has become the active Grandmaster PTP Instance. As a result, now two gPTP domains exist
14 where there used to be one. Finally, note that when a time-aware system supports more than one domain, one
15 of the domains supported must be domain 0 for backward compatibility with the 2011 edition of this
16 standard, though domain 0 is not necessarily active in a time-aware system.ⓘ

17 7.2.3 Time-aware network consisting of multiple gPTP domains

18 *Change the second paragraph in 7.2.3 as follows:*

19 As in the single-domain case, any of the network technologies of 7.2.1 can be used. The Grandmaster PTP
20 Instance of each domain is selected by the *BMCA~~BT~~CA*; in this case, a separate, independent instance of the
21 *BMCA~~BT~~CA* is invoked in each domain.

22 7.2.4 Time-aware networks with redundant Grandmaster PTP Instances and/or redundant 23 paths

24 *Change 7.2.4.2 as follows:*

25 7.2.4.2 Redundancy specified in this standard (*BMCA~~BT~~CA*)

26 This standard provides a basic level of redundancy as follows:

- 27 — A detection component that triggers when the current Grandmaster PTP Instance stops working (i.e.,
28 loss of Sync messages and Announce messages for a period of time) or if the link to the
29 Grandmaster PTP Instance goes down (i.e., immediate loss of Sync messages and Announce
30 messages).
- 31 — A correction component that triggers the Best *MasterTimeTransmitter* Clock Algorithm
32 (*BMCA~~BT~~CA*) and the sending of Announce messages so that a new Grandmaster PTP Instance
33 can be elected.
- 34 — An action component, where the winning Grandmaster PTP Instance starts sending Announce
35 messages and Sync messages and all the PTP Instances listen to this new Grandmaster PTP Instance.

² There are, however, short periods during network reconfiguration when more than one Grandmaster PTP Instance might be active while the *BMCA~~BT~~CA* process is taking place.

7.3 Time synchronization

Change 7.3.4 as follows:

7.3.4 Grandmaster PTP Instance (best ~~master~~timeTransmitter) selection and network establishment

All PTP Instances participate in best ~~master~~timeTransmitter selection so that the IEEE 802.1AS protocol can determine the synchronization spanning tree. This synchronization spanning tree can be different from the forwarding spanning tree determined by IEEE 802.1Q™ Rapid Spanning Tree Protocol (RSTP) since the spanning tree determined by RSTP can be suboptimal or even inadequate for synchronization or can be for a different topology of nodes from the synchronization spanning tree.

gPTP requires that all systems in the gPTP domain be time-aware systems, i.e., the protocol does not transfer timing over systems that are not time-aware (e.g., those that meet the requirements of IEEE Std 802.1Q-2018, but do NOT meet the requirements of the present standard). A time-aware system uses the peer-to-peer delay mechanism on each PTP Port to determine if a non-time-aware system is at the other end of the link or between itself and the Pdelay responder. If, on sending Pdelay_Req,

- a) No response is received,
- b) Multiple responses are received, or
- c) The measured propagation delay exceeds a specified threshold, then

the protocol concludes that a non-time-aware system or end-to-end Transparent Clock (TC) (see IEEE Std 1588-2019) is present. In this case, the link attached to the PTP Port is deemed not capable of running gPTP, and the ~~BMC~~BTCA ignores it. However, the PTP Port continues to attempt the measurement of propagation delay using the peer-to-peer delay mechanism (for full-duplex IEEE 802.3 links), multipoint control protocol (MPCP) messages (for EPON), or IEEE 802.11 messages (for IEEE 802.11 links), and periodically checks whether the link is or is not capable of running the IEEE 802.1AS protocol.

7.4 PTP Instance architecture

The model of a PTP Instance is shown in Figure 7-8

Replace Figure 7-8 with the following figure:.

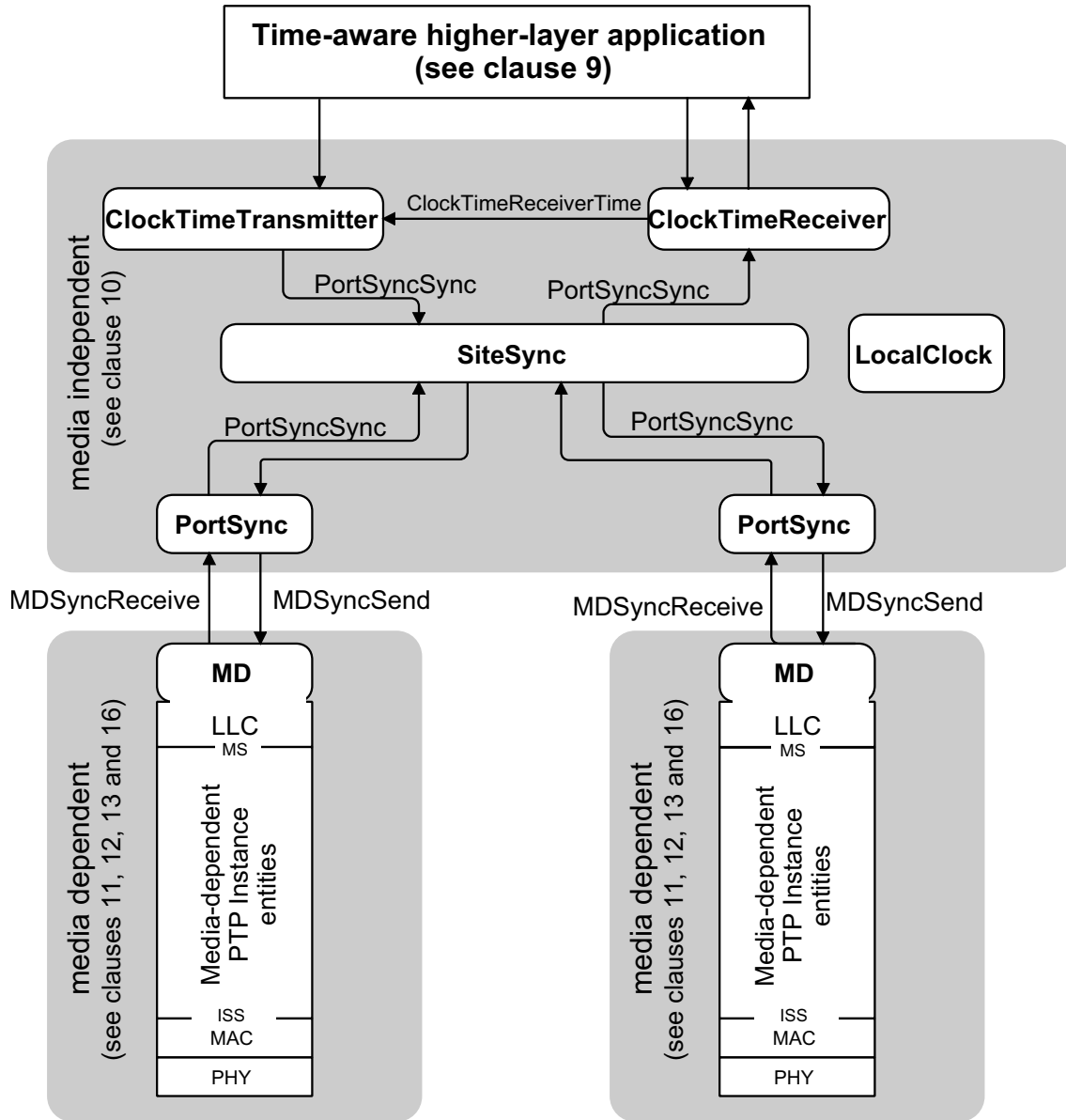


Figure 7-8—PTP Instance model

Change 7.4 b) as follows:

- b) A single media-independent part that consists of ~~ClockMaster~~**ClockTimeTransmitter**, ~~ClockSlave~~**ClockTimeReceiver**, and **SiteSync** logical entities, one or more **PortSync** entities, and a **LocalClock** entity. The ~~BMCA~~**BTCA** and forwarding of time information between logical ports and the ~~ClockSlave~~**ClockTimeReceiver** and ~~ClockMaster~~**ClockTimeTransmitter** is done by the **SiteSync**

1 entity, while the computation of PTP Port-specific delays needed for time-synchronization
2 correction is done by the PortSync entities.

3 7.5 Differences between gPTP (IEEE Std 802.1AS) and PTP (IEEE Std 1588-2019)

4 *Change 7.5 c) 2) as follows:*

5 c) In gPTP there are only two types of PTP Instances: PTP End Instances and PTP Relay Instances,
6 while IEEE Std 1588-2019 has Ordinary Clocks, Boundary Clocks, end-to-end Transparent Clocks,
7 and P2P Transparent Clocks. A PTP End Instance corresponds to an IEEE 1588 Ordinary Clock, and
8 a PTP Relay Instance is a type of IEEE 1588 Boundary Clock where its operation is very tightly
9 defined, so much so that a PTP Relay Instance with Ethernet ports can be shown to be
10 mathematically equivalent to a P2P Transparent Clock in terms of how synchronization is
11 performed, as shown in 11.1.3. In addition, a PTP Relay Instance can operate in a mode (i.e., the
12 mode where the variable syncLocked is TRUE; see 10.2.5.15) where the PTP Relay Instance is
13 equivalent to a P2P Transparent Clock in terms of when time-synchronization messages are sent. A
14 time-aware system measures link delay and residence time and communicates these in a correction
15 field. In summary, a PTP Relay Instance conforms to the specifications for a Boundary Clock in
16 IEEE Std 1588-2019, but a PTP Relay Instance does not conform to the complete specifications for
17 a P2P Transparent Clock in IEEE Std 1588-2019 because:

- 18 1) When syncLocked is FALSE, the PTP Relay Instance sends Sync according to the
19 specifications for a Boundary Clock, and
- 20 2) The PTP Relay Instance invokes the ~~BMC~~ABTCA and has PTP Port states.

21

1 8. IEEE 802.1AS concepts and terminology

2 8.4 Messages

3 8.4.3 Generation of event message timestamps

4 *Change 8.4.3 NOTE 2 as follows:*

5 NOTE 2—In general, the timestamps can be generated at a timestamp measurement plane that is removed from the
6 reference plane. Furthermore, the timestamp measurement plane, and therefore the time offset of this plane from the
7 reference plane, is likely to be different for inbound and outbound event messages. To meet the requirement of this
8 clause, the generated timestamps should be corrected for these offsets. Figure 8-2 illustrates these offsets. Based on this
9 model the appropriate corrections are as follows:

10 $\text{egressTimestamp} = \text{egressMeasuredTimestamp} + \text{egressLatency}$

11 $\text{ingressTimestamp} = \text{ingressMeasuredTimestamp} - \text{ingressLatency}$

12 where the timestamps relative to the reference plane, egressTimestamp and ingressTimestamp, are computed from the
13 timestamps relative to the timestamp measurement plane, egressMeasuredTimestamp and ingressMeasuredTimestamp,
14 respectively, using their respective latencies, egressLatency and ingressLatency. Failure to make these corrections results
15 in a time offset between the ~~slave~~timeReceiver and ~~master~~timeTransmitter clocks.

16 8.5 Ports

17 8.5.2 Port identity

18 8.5.2.3 Port number

19 *Change second paragraph of 8.5.2.3 as follows:*

20 The portNumber value 0 is assigned to the interface between the ~~ClockMaster~~ClockTimeTransmitter and
21 ClockSource entities (see 10.1 and Figure 10-1). The value 0xFFFF is reserved.

22 8.6 PTP Instance characterization

23 8.6.1 PTP Instance type

24 *Change NOTE in 8.6.1 as follows:*

25 NOTE—Attributes c) through i) can be considered to be associated with the ~~ClockMaster~~ClockTimeTransmitter entity
26 of the PTP Instance.

27 8.6.2 PTP Instance attributes

28 8.6.2.1 priority1

29 *Change first paragraph of 8.6.2.1 as follows:*

30 priority1 is used in the execution of the ~~BMCABTCA~~ (see 10.3). The value of priority1 is an integer selected
31 from the range 0 through 255. The ordering of priority1 in the operation of the ~~BMCABTCA~~ (see 10.3.4 and
32 10.3.5) is specified as follows. A ~~ClockMaster~~ClockTimeTransmitter A shall be deemed better than a
33 ~~ClockMaster~~ClockTimeTransmitter B if the value of priority1 of A is numerically less than that of B.

1

2 *Change NOTE 2, and NOTE 3 of 8.6.2.1 as follows:*

3 NOTE 2—The ~~BMC~~~~A~~BTCA (see 10.3) considers priority1 before other attributes; the priority1 attribute can therefore
4 be used to force a desired ordering of PTP Instances for best ~~master~~timeTransmitter selection.

5 NOTE 3—The settings for priority1 in Table 8-1 guarantee that a PTP Instance that is grandmaster-capable is always
6 preferred by the ~~BMC~~~~A~~BTCA over a PTP Instance that is not grandmaster-capable.

7 8.6.2.2 clockClass

8 *Change first paragraph in 8.6.2.2 as follows:*

9 The clockClass attribute denotes the traceability of the synchronized time distributed by a
10 ~~ClockMaster~~ClockTimeTransmitter when it is the Grandmaster PTP Instance.

11 *Change the paragraph after b) in 8.6.2.2 as follows:*

12 The ordering of clockClass in the operation of the best ~~master~~timeTransmitter clock algorithm (see 10.3.4
13 and 10.3.5) is specified as follows. When comparing clockClass values, PTP Instance A shall be deemed
14 better than PTP Instance B if the value of the clockClass of A is lower than that of B.

15 8.6.2.3 clockAccuracy

16 *Change first paragraph in 8.6.2.3 as follows:*

17 The clockAccuracy attribute indicates the expected time accuracy of a ~~ClockMaster~~ClockTimeTransmitter.

18 *Change paragraph after b) in 8.6.2.3 as follows:*

19 The ordering of clockAccuracy in the operation of the best ~~master~~timeTransmitter clock algorithm (see
20 10.3.4 and 10.3.5) is specified as follows. When comparing clockAccuracy values, PTP Instance A shall be
21 deemed better than PTP Instance B if the value of the clockAccuracy of A is lower than that of B.

22 8.6.2.4 offsetScaledLogVariance

23 *Change first paragraph in 8.6.2.4 as follows:*

24 The offsetScaledLogVariance is a scaled, offset representation of an estimate of the PTP variance. The PTP
25 variance characterizes the precision and frequency stability of the ~~ClockMaster~~ClockTimeTransmitter. The
26 PTP variance is the square of PTP Deviation (PTPDEV) (see B.1.3.2).

27 *Change paragraph after b) in 8.6.2.4 as follows:*

28 The ordering of offsetScaledLogVariance in the operation of the best ~~master~~timeTransmitter clock algorithm
29 (see 10.3.4 and 10.3.5) is specified as follows. When comparing offsetScaledLogVariance values, PTP
30 Instance A shall be deemed better than PTP Instance B if the value of the offsetScaledLogVariance of A is
31 lower than that of B.

1 8.6.2.5 priority2

2 *Change the first paragraph in 8.6.2.5 as follows:*

3 priority2 is used in the execution of the ~~BMCABTCA~~ (see 10.3). The value of priority2 shall be an integer
4 selected from the range 0 through 255. The ordering of priority2 in the operation of the ~~BMCABTCA~~ is the
5 same as the ordering of priority1 (see 8.6.2.1).

6 *Change the NOTE in 8.6.2.5 as follows:*

7 NOTE—IEEE 802.1AS performance is improved when the number of hops between the Grandmaster PTP Instance and
8 a ~~slave~~~~timeReceiver~~ PTP End Instance is reduced. When ~~BMCABTCA~~ attributes are equal in a network, the preceding
9 recommendations for priority2 select a PTP Relay Instance in order to reduce the number of hops (rather than use
10 clockIdentity alone).

11 8.6.2.7 timeSource

12 *Change the first paragraph in 8.6.2.7 as follows:*

13 The timeSource is an information only attribute indicating the type of source of time used by a
14 ~~ClockMaster~~~~ClockTimeTransmitter~~. The value is not used in the selection of the Grandmaster PTP Instance.
15 The data type of timeSource shall be TimeSource, which is an Enumeration⁸. The values of TimeSource are
16 specified in Table 8-2. These represent categories. For example, the global positioning system (GPS) entry
17 includes not only the GPS system of the U.S. Department of Defense but the European Galileo system and
18 other present and future GNSSs.

9. Application interfaces

9.1 Overview of the interfaces

Change second paragraph in 9.1 as follows:

The following subclauses define one application interface between the ClockSource entity and ClockMasterClockTimeTransmitter entity (see 10.1.2) and four application interfaces between the ClockTarget entity and ClockSlaveClockTimeReceiver entity (see 10.1.2). The ClockSource is an entity that can be used as an external timing source for the gPTP domain. The ClockSource entity either contains or has access to a clock (see 3.3). The ClockTarget entity represents any application that uses information provided by the ClockSlaveClockTimeReceiver entity via any of the application interfaces.

Replace Figure 9-1 with the following figure:

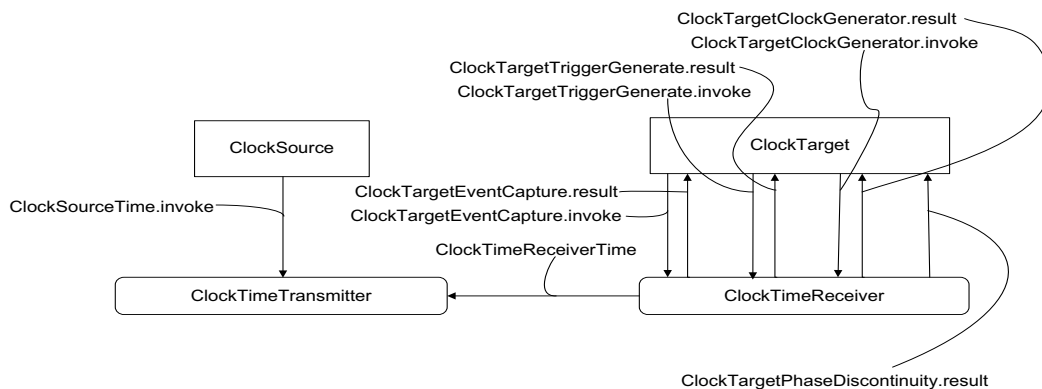


Figure 9-1—Application interfaces

9.2 ClockSourceTime interface

Change 9.2.1 as follows:

9.2.1 General

This interface is used by the ClockSource entity to provide time to the ClockMasterClockTimeTransmitter entity of a PTP Instance. The ClockSource entity invokes the ClockSourceTime.invoke function. The function provides the time, relative to the ClockSource, at which the function was invoked.

9.3 ClockTargetEventCapture interface

Change 9.3.1 as follows:

9.3.1 General

This interface is used by the ClockTarget entity to request the synchronized time of an event that it signals to the ClockSlaveClockTimeReceiver entity of a PTP Instance. The ClockTarget entity invokes the

1 ClockTargetEventCapture.invoke function to signal an event to the ~~ClockSlave~~ClockTimeReceiver entity.
2 The ~~ClockSlave~~ClockTimeReceiver entity invokes the ClockTargetEventCapture.result function to return
3 the time of the event relative to the current Grandmaster Clock or, if no PTP Instance is grandmaster-
4 capable, the LocalClock. The ClockTargetEventCapture.result function also returns gmPresent, to indicate
5 to the ClockTarget whether a Grandmaster PTP Instance is present.

6 9.3.2 ClockTargetEventCapture.invoke parameters

7 *Change 9.3.2.1 as follows:*

8 9.3.2.1 domainNumber (UInteger8)

9 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is requested to
10 provide the synchronized time of the signaled event.

11 *Change 9.3.3 as follows:*

12 9.3.3 ClockTargetEventCapture.result parameters

```
13 ClockTargetEventCapture.result {  
14     domainNumber,  
15     slavetimeReceiverTimeCallback,  
16     gmPresent  
17 }
```

18 *Change 9.3.3.1 as follows:*

19 9.3.3.1 domainNumber (UInteger8)

20 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is providing the
21 synchronized time of the signaled event.

22 *Change 9.3.3.2 as follows:*

23 9.3.3.2 ~~slave~~timeReceiverTimeCallback (ExtendedTimestamp)

24 The value of ~~slave~~timeReceiverTimeCallback is the time, relative to the Grandmaster Clock, that the
25 corresponding ClockTargetEventCapture.invoke function is invoked.

26 NOTE—The invocation of the ClockTargetEventCapture.invoke function and the detection of this invocation by the
27 ~~ClockSlave~~ClockTimeReceiver entity are simultaneous in this abstract interface.

28 9.4 ClockTargetTriggerGenerate interface

29 *Change 9.4.1 as follows:*

30 9.4.1 General

31 This interface is used by the ClockTarget entity to request that the ~~ClockSlave~~ClockTimeReceiver entity
32 send a result at a specified time relative to the Grandmaster Clock. The ClockTarget entity invokes the
33 ClockTargetTriggerGenerate.invoke function to indicate the synchronized time of the event. The
34 ~~ClockSlave~~ClockTimeReceiver entity invokes the ClockTargetTriggerGenerate.result function to either
35 signal the event at the requested synchronized time or indicate an error condition.

1 *Change 9.4.2 as follows:*

2 **9.4.2 ClockTargetTriggerGenerate.invoke parameters**

```
3 ClockTargetTriggerGenerate.invoke {  
4     domainNumber,  
5     slavetimeReceiverTimeCallback  
6 }
```

7 *Change 9.4.2.1 as follows:*

8 **9.4.2.1 domainNumber (UInteger8)**

9 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is requested to signal
10 an event at the specified time.

11 *Change 9.4.2.2 as follows:*

12 **9.4.2.2 ~~slave~~timeReceiverTimeCallback (ExtendedTimestamp)**

13 If ~~slave~~timeReceiverTimeCallback is nonzero, its value is the synchronized time the corresponding
14 ClockTargetTriggerGenerate.result function, i.e., the trigger, is to be invoked. If
15 ~~slave~~timeReceiverTimeCallback is zero, any previous ClockTargetTriggerGenerate.invoke function for
16 which a ClockTargetTriggerGenerate.result function has not yet been issued is canceled.

17 **9.4.3 ClockTargetTriggerGenerate.result parameters**

18 *Change 9.4.3.1 as follows:*

19 **9.4.3.1 domainNumber (UInteger8)**

20 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is triggering an event
21 at the specified time.

22 **9.4.3.2 errorCondition (Boolean)**

23 *Change NOTE in 9.4.3.2 as follows:*

24 NOTE—For example, the ClockTargetTriggerGenerate.result function is invoked with errorCondition = TRUE if the
25 requested ~~slave~~timeReceiverTimeCallback is a time prior to the synchronized time when the corresponding
26 ClockTargetTriggerGenerate.invoke function is invoked. As another example, the ClockTargetTriggerGenerate.result
27 function is invoked with errorCondition = TRUE if a discontinuity in the synchronized time causes the requested
28 ~~slave~~timeReceiverTimeCallback to be skipped over.

29 *Change 9.4.4 as follows:*

30 **9.4.4 ClockTargetTriggerGenerate interface definition**

31 The invocation of the ClockTargetTriggerGenerate.invoke function causes the
32 ~~ClockSlave~~ClockTimeReceiver entity to store the value of the ~~slave~~timeReceiverTimeCallback parameter in
33 an internal variable (replacing any previous value of that variable) until the synchronized time, or
34 LocalClock time if gmPresent is FALSE, equals the value of that variable, at which time the
35 ClockTargetTriggerGenerate.result function is invoked with errorCondition = FALSE. If it is not possible to

1 invoke the ClockTargetTriggerGenerate.result function at ~~slave~~timeReceiverTimeCallback, e.g., if
2 ~~slave~~timeReceiverTimeCallback is earlier than the synchronized time (or LocalClock time if gmPresent is
3 FALSE) when the ClockTargetTriggerGenerate.invoke function is invoked, the
4 ClockTargetTriggerGenerate.result function is invoked with errorCondition = TRUE. Invocation of the
5 ClockTargetTriggerGenerate.invoke function with ~~slave~~timeReceiverTimeCallback = 0 (which is earlier
6 than any synchronized time) is used to cancel a pending request.

7 9.5 ClockTargetClockGenerator interface

8 *Change 9.5.1 as follows:*

9 9.5.1 General

10 This interface is used by the ClockTarget entity to request that the ~~ClockSlave~~ClockTimeReceiver entity
11 deliver a periodic clock signal of specified period and phase. The ClockTarget entity invokes the
12 ClockTargetClockGenerator.invoke function to request that the ~~ClockSlave~~ClockTimeReceiver entity
13 generate the periodic clock signal. The ~~ClockSlave~~ClockTimeReceiver entity invokes the
14 ClockTargetClockGenerator.result function at significant instants of the desired clock signal.

15 *Change 9.5.2 as follows:*

16 9.5.2 ClockTargetClockGenerator.invoke parameters

```
17 ClockTargetClockGenerator.invoke {  
18     domainNumber,  
19     clockPeriod,  
20     slavetimeReceiverTimeCallbackPhase  
21 }
```

22 *Change 9.5.2.1 as follows:*

23 9.5.2.1 domainNumber (UInteger8)

24 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is requested to
25 deliver a periodic clock signal.

26 *Change 9.5.2.3 as follows:*

27 9.5.2.2 ~~slave~~timeReceiverTimeCallbackPhase (ExtendedTimestamp)

28 The value of ~~slave~~timeReceiverTimeCallbackPhase describes phase of the generated clock signal by
29 specifying a point on the timescale in use such that ClockTargetClockGenerator.result invocations occur at
30 synchronized times that differ from ~~slave~~timeReceiverTimeCallbackPhase by $n \times \text{clockPeriod}$, where n is an
31 integer.

32 NOTE—The value of ~~slave~~timeReceiverTimeCallbackPhase can be earlier or later than the synchronized time the
33 ClockTargetClockGenerator.invoke function is invoked; use of a ~~slave~~timeReceiverTimeCallbackPhase value in the
34 future does not imply that the initiation of the periodic clock signal is suppressed until that synchronized time.

35 *Change 9.5.3 as follows:*

1 9.5.3 ClockTargetClockGenerator.result parameters

```
2 ClockTargetClockGenerator.result {  
3     domainNumber,  
4     slavetimeReceiverTimeCallback,  
5 }
```

6 *Change 9.5.3.1 as follows:*

7 9.5.3.1 domainNumber (UInteger8)

8 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is delivering a
9 periodic clock signal.

10 *Change 9.5.3.2 as follows:*

11 9.5.3.2 ~~slave~~timeReceiverTimeCallback (ExtendedTimestamp)

12 The value of ~~slave~~timeReceiverTimeCallback is the synchronized time of this event.

13 9.6 ClockTargetPhaseDiscontinuity interface

14 *Change 9.6.1 as follows:*

15 9.6.1 General

16 This interface provides discontinuity information, sent from the Grandmaster PTP Instance, to an
17 application within an end station. It is used by the ~~ClockSlave~~ClockTimeReceiver entity to supply sufficient
18 information to the ClockTarget entity to enable the ClockTarget entity to determine whether a phase or
19 frequency discontinuity has occurred. The ~~ClockSlave~~ClockTimeReceiver invokes the
20 ClockTargetPhaseDiscontinuity.result function in the SEND_SYNC_INDICATION block of the
21 ~~ClockSlave~~ClockTimeReceiverSync state machine (see 10.2.13 and Figure 10-9). The invocation occurs
22 when a PortSyncSync structure is received, after the needed information has been computed by the
23 ~~ClockSlave~~ClockTimeReceiverSync state machine.

24 9.6.2 ClockTargetPhaseDiscontinuity.result parameters

25 *Change 9.6.2.1 as follows:*

26 9.6.2.1 domainNumber (UInteger8)

27 This parameter is the domain number of the ~~ClockSlave~~ClockTimeReceiver entity that is providing
28 discontinuity information.

29

1 10. Media-independent layer specification

2 10.1 Overview

3 *Change 10.1.2 as follows:*

4 10.1.2 Model of operation

5 A PTP Instance contains a best ~~master~~timeTransmitter selection function and a synchronization function.
6 These functions include PTP Port-specific aspects and aspects associated with the PTP Instance as a whole.
7 The functions are distributed among a number of entities, which together describe the behavior of a
8 compliant implementation. The functions are specified by a number of state machines.

9 The model for the media-independent layer of a PTP Instance is shown in Figure 10-1. It includes a single
10 SiteSync entity, ~~ClockMaster~~ClockTimeTransmitter entity, and ~~ClockSlave~~ClockTimeReceiver entity for
11 the PTP Instance as a whole, plus one PortSync for each PTP Port. The PTP Instance also includes one MD
12 entity for each PTP Port, which is part of the media-dependent layer. The media-dependent functions
13 performed by the MD entity are described in the clauses for the respective media. In addition to the entities,
14 Figure 10-1 shows the information that flows between the entities via the PortSyncSync, MDSyncSend, and
15 MDSyncReceive structures (see 10.2.2.3, 10.2.2.1, and 10.2.2.2, respectively).

16 The SiteSync, ~~ClockMaster~~ClockTimeTransmitter, ~~ClockSlave~~ClockTimeReceiver, and PortSync entities
17 each contain a number of cooperating state machines, which are described later in this clause (the MD entity
18 state machines are described in the respective media-dependent clauses). The
19 ~~ClockMaster~~ClockTimeTransmitter entity receives information from an external time source, known as a
20 *ClockSource entity* (see 9.2), via an application interface, and provides the information to the SiteSync
21 entity. The ~~ClockSlave~~ClockTimeReceiver entity receives Grandmaster Clock time-synchronization and
22 current Grandmaster PTP Instance information from the SiteSync entity, and makes the information
23 available to an external application, known as a *clockTarget entity* (see 9.3 through 9.6), via one or more
24 application service interfaces. The SiteSync entity executes the portion of best ~~master~~timeTransmitter clock
25 selection associated with the PTP Instance as a whole, i.e., it uses the best ~~master~~timeTransmitter
26 information received on each PTP Port to determine which PTP Port has received the best information, and
27 updates the states of all the ports (see 10.3.1.1 for a discussion of PTP Port states). It also distributes
28 synchronization information received on the ~~SlavePort~~TimeReceiverPort to all the ports whose state is
29 ~~MasterPort~~TimeTransmitterPort (see 10.3.1.1). The PortSync entity for a ~~SlavePort~~TimeReceiverPort
30 receives best ~~master~~timeTransmitter selection information from the PTP Instance at the other end of the
31 associated link, compares this to the current best ~~master~~timeTransmitter information that it has, and forwards
32 the result of the comparison to the Site Sync entity. The PortSync entity for a ~~SlavePort~~TimeReceiverPort
33 also receives time-synchronization information from the MD entity associated with the PTP Port, and
34 forwards it to the SiteSync entity. The PortSync entity for a ~~MasterPort~~TimeTransmitterPort sends best
35 ~~master~~timeTransmitter selection and time-synchronization information to the MD entity for the PTP Port,
36 which in turn sends the respective messages.

1 Replace Figure 10-1 with the following figure:

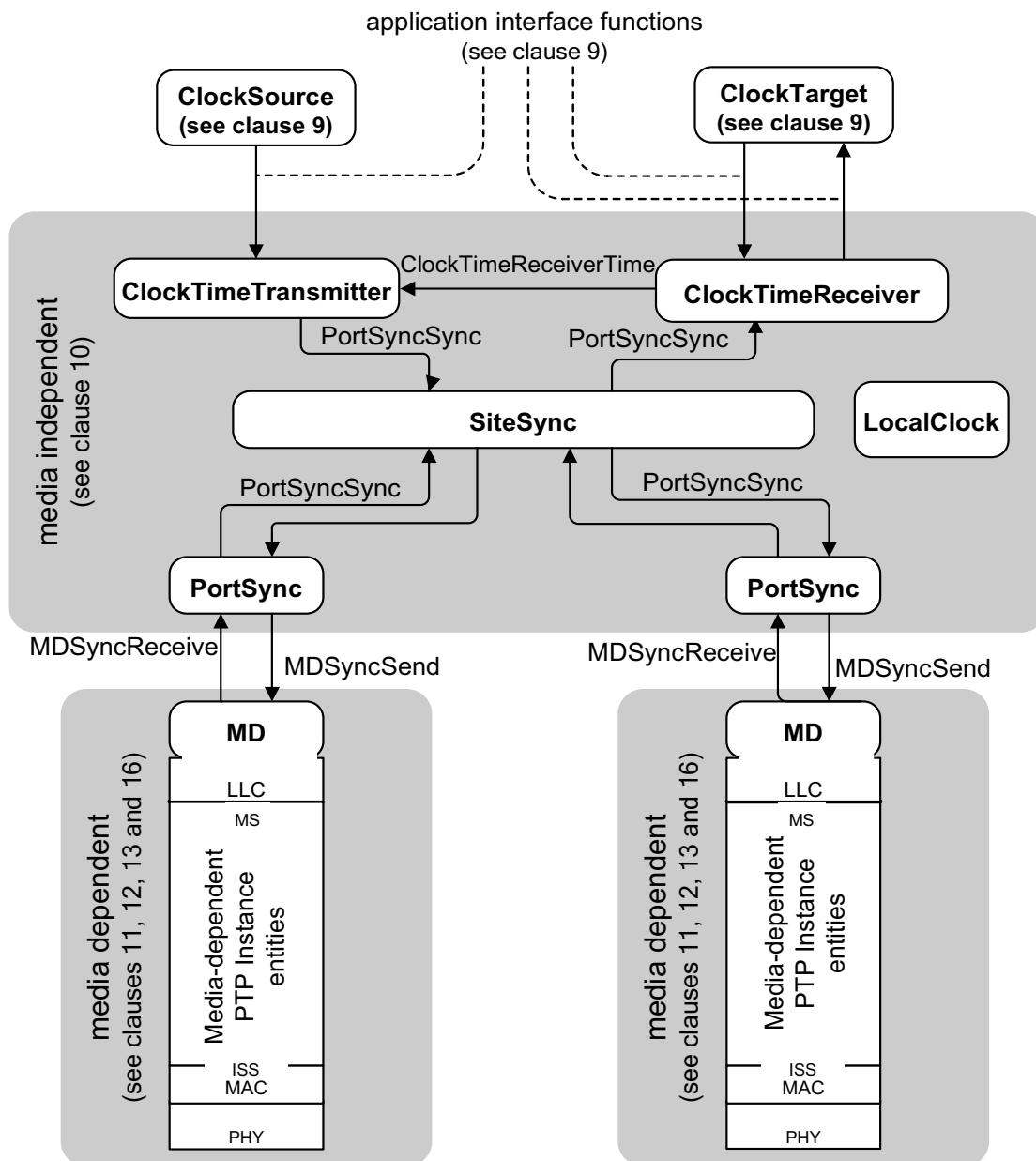


Figure 10-1—Model for media-independent layer of PTP Instance

2 NOTE—This clause does not require a one-to-one correspondence between the PortSync entities of PTP Instances
3 attached to the same gPTP communication path (see 3.11), i.e., more than two PTP Instances can be attached to a gPTP
4 communication path that uses a shared medium and meet the requirements of this clause. However, it is possible for a
5 media-dependent clause to have additional requirements that limit the gPTP communication paths to point-to-point links
6 for that medium; in this case, each link has exactly two PortSync entities, which can be considered to be in one-to-one
7 correspondence. One example of this is the full-duplex point-to-point media-dependent layer specified in 11. In addition,
8 one or more gPTP communication paths can be logically point-to-point but traverse the same shared medium.

1 The time-synchronization state machines are described in 10.2. The best ~~master~~timeTransmitter clock
2 selection state machines are described in 10.3. The attributes and format of the Announce message are
3 described in 10.5 and 10.6. The timing characterization of the protocol is described in 10.7.

4 **10.1.3 Grandmaster-capable PTP Instance**

5 *Change NOTE 2 in 10.1.3 as follows:*

6 NOTE 2—While a PTP Instance that is not grandmaster-capable can never be the Grandmaster PTP Instance of the
7 gPTP domain, such a PTP Instance contains a best ~~master~~timeTransmitter selection function, invokes the best
8 ~~master~~timeTransmitter selection algorithm, and conveys synchronization information received from the current
9 Grandmaster PTP Instance.

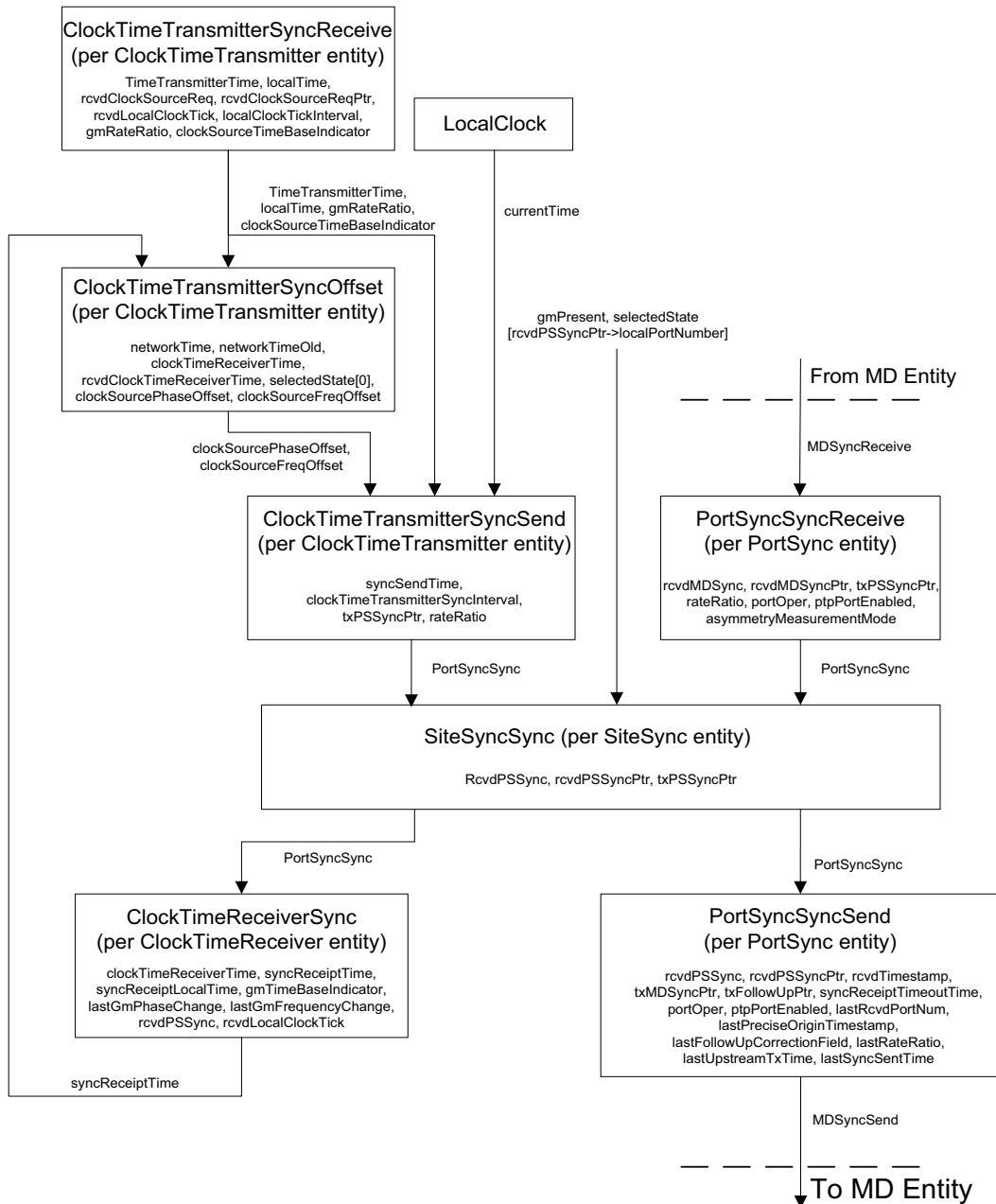
10 **10.2 Time-synchronization state machines**

11 *Change 10.2.1 as follows:*

12 **10.2.1 Overview**

13 The time-synchronization function in a PTP Instance is specified by a number of cooperating state
14 machines. Figure 10-2 illustrates these state machines, their local variables, their interrelationships, and the
15 global variables and structures used to communicate between them. The figure indicates the interaction
16 between the state machines and the media-dependent layer and LocalClock entity.

1 Replace Figure 10-2 with the following figure :



Notes:

- selectedState for each port and gmPresent are set by Port State Selection state machine (see 10.3.12)
- currentTime is a global variable that is always equal to the current time relative to the local oscillator
- application interfaces to higher layers are not shown
- the ClockTimeTransmitterSyncReceive, ClockTimeTransmitterSyncSend, and ClockTimeTransmitterSyncOffset state machines are optional for PTP Instances that are not grandmaster-capable.

Figure 10-2—Time-synchronization state machines—overview and interrelationships

1 The ClockMasterSyncReceiveClockTimeTransmitterSyncReceive,
2 ClockMasterSyncOffsetClockTimeTransmitterSyncOffset, and
3 ClockMasterSyncSendClockTimeTransmitterSyncSend state machines are optional for PTP Instances that
4 are not grandmaster-capable (see 8.6.2.1 and 10.1.3). These state machines may be present in a PTP Instance
5 that is not grandmaster-capable; however, any information supplied by them, via the
6 ClockMasterSyncSendClockTimeTransmitterSyncSend state machine, to the SiteSyncSync state machine is
7 not used by the SiteSyncSync state machine if the PTP Instance is not grandmaster-capable.

8 The media-independent layer state machines in Figure 10-2 are as follows:

- 9 a) ClockMasterSyncReceiveClockTimeTransmitterSyncReceive (one instance per PTP Instance):
10 receives ClockSourceTime.invoke functions from the ClockSource entity and notifications of
11 LocalClock entity ticks (see 10.2.4.18), updates masterTimetimeTransmitterTime, and provides
12 masterTimetimeTransmitterTime to ClockMasterSyncOffsetClockTimeTransmitterSyncOffset and
13 ClockMasterSyncSendClockTimeTransmitterSyncSend state machines.
- 14 b) ClockMasterSyncOffsetClockTimeTransmitterSyncOffset (one instance per PTP Instance): receives
15 syncReceiptTime from the ClockSlaveClockTimeReceiver entity and
16 masterTimetimeTransmitterTime from the
17 ClockMasterSyncReceiveClockTimeTransmitterSyncReceive state machine, computes phase offset
18 and frequency offset between masterTimetimeTransmitterTime and syncReceiptTime if the PTP
19 Instance is not the Grandmaster PTP Instance, and provides the frequency and phase offsets to the
20 ClockMasterSyncSendClockTimeTransmitterSyncSend state machine.
- 21 c) ClockMasterSyncSendClockTimeTransmitterSyncSend (one instance per PTP Instance): receives
22 masterTimetimeTransmitterTime from the ClockMasterSyncReceiveClockTimeTransmitterSyncReceive
23 state machine, receives phase and frequency offset between masterTimetimeTransmitterTime and
24 syncReceiptTime from the ClockMasterSyncOffsetClockTimeTransmitterSyncOffset state machine,
25 and provides masterTimetimeTransmitterTime (i.e., synchronized time) and the phase and frequency
26 offset to the SiteSync entity using a PortSyncSync structure.
- 27 d) PortSyncSyncReceive (one instance per PTP Instance, per PTP Port): receives time-synchronization
28 information from the MD entity of the corresponding PTP Port, computes accumulated rateRatio,
29 computes syncReceiptTimeoutTime, and sends the information to the SiteSync entity.
- 30 e) SiteSyncSync (one instance per PTP Instance): receives time-synchronization information,
31 accumulated rateRatio, and syncReceiptTimeoutTime from the PortSync entity of the current
32 slaveTimeReceiver port or from the ClockMasterClockTimeTransmitter entity; and sends the
33 information to the PortSync entities of all the ports and to the ClockSlaveClockTimeReceiver entity.
- 34 f) PortSyncSyncSend (one instance per PTP Instance, per PTP Port): receives time-synchronization
35 information from the SiteSync entity, requests that the MD entity of the corresponding PTP Port
36 send a time-synchronization event message, receives the syncEventEgressTimestamp for this event
37 message from the MD entity, uses the most recent time-synchronization information received from
38 the SiteSync entity and the timestamp to compute time-synchronization information that will be sent
39 by the MD entity in a general message (e.g., for full-duplex IEEE 802.3 media) or a subsequent
40 event message (e.g., for IEEE 802.11 media), and sends this latter information to the MD entity.
- 41 g) ClockSlaveClockTimeReceiverSync (one instance per PTP Instance): receives time-synchronization
42 information from the SiteSync entity; computes clockSlaveClockTimeReceiverTime and
43 syncReceiptTime; sets syncReceiptLocalTime, GmTimeBaseIndicator, lastGmPhaseChange, and
44 lastGmFreqChange; sends clockSlaveClockTimeReceiverTime to the
45 ClockMasterClockTimeTransmitter entity; and provides information to the ClockTarget entity (via
46 the ClockTargetPhaseDiscontinuity interface; see 9.6) to enable that entity to determine if a phase or
47 frequency discontinuity has occurred.

1 10.2.2 Data structures communicated between state machines

2 10.2.2.1 MDSyncSend

3 *Change 10.2.2.1.6 as follows:*

4 10.2.2.1.6 preciseOriginTimestamp (Timestamp)

5 The preciseOriginTimestamp is the sourceTime of the ~~ClockMaster~~ClockTimeTransmitter entity of the
6 Grandmaster PTP Instance, with any fractional nanoseconds truncated, when the received time-
7 synchronization information was sent by the Grandmaster PTP Instance. The preciseOriginTimestamp is the
8 value of the preciseOriginTimestamp member of the most recently received PortSyncSync structure from
9 the PortSync entity of this PTP Port (see 10.2.2.3.8).

10 *Change 10.2.2.1.7 as follows:*

11 10.2.2.1.7 upstreamTxTime (UScaledNs)

12 The upstreamTxTime is given by the following equation:

$$13 \quad \text{upstreamTxTime} = \text{syncEventIngressTimestamp} - \frac{\text{meanLinkDelay}}{\text{neighborRateRatio}}$$

14 where

15 syncEventIngressTimestamp	corresponds to the receipt of the time-synchronization information at the
16	slave timeReceiver port of this PTP Instance
17 meanLinkDelay	is defined in 10.2.5.8
18 neighborRateRatio	is defined in 10.2.5.7
19 upstreamTxTime	is the value of the upstreamTxTime member of the most recently
20	received PortSyncSync structure from the PortSync entity of this PTP
21	Port (see 10.2.2.3.9)

22 10.2.2.2 MDSyncReceive

23 10.2.2.2.1 General

24 *Change the first paragraph in 10.2.2.2.1 as follows:*

25 This structure contains information that is sent by the MD entity of a PTP Port to the PortSync entity of that
26 PTP Port. It provides the PortSync entity with ~~master~~timeTransmitter clock timing information and
27 timestamp of receipt of a time-synchronization event message compensated for propagation time on the
28 upstream link. The information is sent to the PortSync entity upon receipt of time-synchronization
29 information by the MD entity of the PTP Port. The information is in turn provided by the PortSync entity to
30 the SiteSync entity. The information is used by the PortSyncSyncReceive state machine of the PortSync
31 entity to compute the rate ratio of the Grandmaster Clock relative to the local clock and is communicated to
32 the SiteSync entity, and then the SiteSync entity communicates it to the other PortSync entities for use in
33 computing ~~master~~timeTransmitter clock timing information.

34 *Change 10.2.2.2.4 as follows:*

1 **10.2.2.2.4 sourcePortIdentity (PortIdentity)**

2 The sourcePortIdentity is the value of the sourcePortIdentity of the time-synchronization event message
3 received by this PTP Port. It is the portIdentity of the upstream ~~MasterPort~~ TimeTransmitterPort that sent the
4 event message.

5 *Change 10.2.2.2.5 as follows:*

6 **10.2.2.2.5 logMessageInterval (Integer8)**

7 The logMessageInterval is the value of the logMessageInterval of the time-synchronization event message
8 received by this PTP Port. It is the currentLogSyncInterval (see 10.7.2.3) of the upstream
9 ~~MasterPort~~ TimeTransmitterPort that sent the event message.

10 *Change 10.2.2.2.6 as follows:*

11 **10.2.2.2.6 preciseOriginTimestamp (Timestamp)**

12 The preciseOriginTimestamp is the sourceTime of the ~~ClockMaster~~ ClockTimeTransmitter entity of the
13 Grandmaster PTP Instance, with any fractional nanoseconds truncated, when the time-synchronization event
14 message was sent by the Grandmaster PTP Instance.

15 *Change 10.2.2.2.7 as follows:*

16 **10.2.2.2.7 upstreamTxTime (UScaledNs)**

17 The upstreamTxTime is given by the following equation:

$$18 \quad \text{upstreamTxTime} = \text{syncEventIngressTimestamp} - \frac{\text{meanLinkDelay}}{\text{neighborRateRatio}}$$

19 where

20 syncEventIngressTimestamp	corresponds to the receipt of the time-synchronization information at the
21	slave <u>timeReceiver</u> port of this PTP Instance (i.e., at this PTP Port)
22 meanLinkDelay	is defined in 10.2.5.8
23 neighborRateRatio	is defined in 10.2.5.7

24 **10.2.2.3 PortSyncSync**

25 *Change 10.2.2.3.1 as follows:*

26 **10.2.2.3.1 General**

27 This structure is sent by the PortSync and ~~ClockMaster~~ ClockTimeTransmitter entities to the SiteSync entity
28 and also from the SiteSync entity to the PortSync and ~~ClockSlave~~ ClockTimeReceiver entities.

29 When sent from the PortSync or ~~ClockMaster~~ ClockTimeTransmitter entity, it provides the SiteSync entity
30 with ~~master~~ timeTransmitter clock timing information, timestamp of receipt of a time-synchronization event
31 message compensated for propagation time on the upstream link, and the time at which sync receipt timeout
32 occurs if a subsequent Sync message is not received by then. The information is used by the SiteSync entity

1 to compute the rate ratio of the Grandmaster Clock relative to the local clock and is communicated to the
2 other PortSync entities for use in computing ~~master~~timeTransmitter clock timing information.

3 When sent from the SiteSync entity to the PortSync or ~~ClockSlave~~ClockTimeReceiver entity, the structure
4 contains information needed to compute the synchronization information that will be included in respective
5 fields of the time-synchronization event and general messages that will be sent and also to compute the
6 synchronized time that the ~~ClockSlave~~ClockTimeReceiver entity will supply to the ClockTarget entity.

```

7 PortSyncSync {
8     domainNumber,
9     localPortNumber,
10    syncReceiptTimeoutTime,
11    followUpCorrectionField,
12    sourcePortIdentity,
13    logMessageInterval,
14    preciseOriginTimestamp,
15    upstreamTxTime,
16    rateRatio,
17    gmTimeBaseIndicator,
18    lastGmPhaseChange,
19    lastGmFreqChange
20 }

```

21 The parameters of the PortSyncSync structure are defined in the following subclauses for when the structure
22 is sent from the PortSync or ~~ClockMaster~~ClockTimeTransmitter entity to the SiteSync entity. If the structure
23 is sent from the SiteSync entity to the PortSync or ~~ClockSlave~~ClockTimeReceiver entity, the member values
24 are copied from the most recently received PortSyncSync structure where the PTP Port that received this
25 structure has PTP Port state of ~~SlavePort~~TimeReceiverPort.

26 *Change 10.2.2.3.3 as follows:*

27 **10.2.2.3.3 localPortNumber (UInteger16)**

28 If the structure is sent by a PortSync entity, the localPortNumber is the port number of the PTP Port whose
29 PortSync entity sent this structure. If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the
30 localPortNumber is zero.

31 *Change 10.2.2.3.4 as follows:*

32 **10.2.2.3.4 syncReceiptTimeoutTime (UScaledNs)**

33 If the structure is sent by a PortSync entity, the syncReceiptTimeoutTime is the value of the local time (i.e.,
34 the free-running, local clock time) at which sync receipt timeout occurs if a subsequent time-
35 synchronization event message is not received by that time. If the structure is sent by a
36 ~~ClockMaster~~ClockTimeTransmitter entity, the syncReceiptTimeoutTime is FFFFFFFFFFFFFFFF₁₆ [see
37 item h) in 10.2.9.2.1].

38 *Change 10.2.2.3.5 as follows:*

1 10.2.2.3.5 followUpCorrectionField (ScaledNs)

2 If the structure is sent by a PortSync entity, the followUpCorrectionField is the value of the
3 followUpCorrectionField member of the MDSyncReceive structure whose receipt caused the sending of this
4 structure (see 10.2.2.2.2). If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the
5 followUpCorrectionField is the sub-nanosecond portion of the ~~ClockMaster~~ClockTimeTransmitter time.

6 *Change 10.2.2.3.6 as follows:*

7 10.2.2.3.6 sourcePortIdentity (PortIdentity)

8 If the structure is sent by a PortSync entity, the sourcePortIdentity is the value of the sourcePortIdentity
9 member of the MDSyncReceive structure whose receipt caused the sending of this structure (see 10.2.2.2.4).
10 If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the clockIdentity member of the
11 sourcePortIdentity is the clockIdentity of this PTP Instance, and the portNumber member of the
12 sourcePortIdentity is 0.

13 *Change 10.2.2.3.7 as follows:*

14 10.2.2.3.7 logMessageInterval (Integer8)

15 If the structure is sent by a PortSync entity, the logMessageInterval is the value of the logMessageInterval
16 member of the MDSyncReceive structure whose receipt caused the sending of this structure (see 10.2.2.2.5).
17 If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the logMessageInterval is the value of
18 ~~clockMasterLogSyncInterval~~clockTimeTransmitterLogSyncInterval (see 10.7.2.4).

19 *Change 10.2.2.3.8 as follows:*

20 10.2.2.3.8 preciseOriginTimestamp (Timestamp)

21 If the structure is sent by a PortSync entity, the preciseOriginTimestamp is the value of the
22 preciseOriginTimestamp member of the MDSyncReceive structure whose receipt caused the sending of this
23 structure (see 10.2.2.2.6). If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the
24 preciseOriginTimestamp is the ~~ClockMaster~~ClockTimeTransmitter time truncated to the next lower
25 nanosecond.

26 *Change 10.2.2.3.9 as follows:*

27 10.2.2.3.9 upstreamTxTime (UScaledNs)

28 If the structure is sent by a PortSync entity, the upstreamTxTime is the value of the upstreamTxTime
29 member of the MDSyncReceive structure whose receipt caused the sending of this structure (see 10.2.2.2.7).
30 If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the upstreamTxTime is the local clock
31 time corresponding to the ~~ClockMaster~~ClockTimeTransmitter time.

32 *Change 10.2.2.3.10 as follows:*

33 10.2.2.3.10 rateRatio (Float64)

34 If the structure is sent by a PortSync entity, the rateRatio is the value of the rateRatio member of the
35 MDSyncReceive structure whose receipt caused the sending of this structure (see 10.2.2.2.8). It is equal to

1 the ratio of the frequency of the Grandmaster Clock to the frequency of the LocalClock entity of the PTP
2 Instance at the other end of the link attached to this PTP Port, i.e., the PTP Instance that sent the most
3 recently-received time-synchronization event message (see 10.2.8.1.4). If the structure is sent by a
4 ~~ClockMaster~~ClockTimeTransmitter entity, the rateRatio is equal to gmRateRatio (see 10.2.4.14).

5 *Change 10.2.2.3.11 as follows:*

6 **10.2.2.3.11 gmTimeBaseIndicator (UInteger16)**

7 If the structure is sent by a PortSync entity, the gmTimeBaseIndicator is the value of the
8 gmTimeBaseIndicator member of the MDSyncReceive structure whose receipt caused the sending of this
9 structure (see 10.2.2.2.9). If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the
10 gmTimeBaseIndicator is equal to clockSourceTimeBaseIndicator (see 10.2.4.8).

11 *Change 10.2.2.3.12 as follows:*

12 **10.2.2.3.12 lastGmPhaseChange (ScaledNs)**

13 If the structure is sent by a PortSync entity, the lastGmPhaseChange is the value of the lastGmPhaseChange
14 member of the MDSyncReceive structure whose receipt caused the sending of this structure (see 10.2.2.2.9).
15 If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the lastGmPhaseChange is equal to
16 clockSourcePhaseOffset (see 10.2.4.7).

17 *Change 10.2.2.3.13 as follows:*

18 **10.2.2.3.13 lastGmFreqChange (Float64)**

19 If the structure is sent by a PortSync entity, the lastGmFreqChange is the value of the lastGmFreqChange
20 member of the MDSyncReceive structure whose receipt caused the sending of this structure (see 10.2.2.2.9).
21 If the structure is sent by a ~~ClockMaster~~ClockTimeTransmitter entity, the lastGmFreqChange is equal to
22 clockSourceFreqOffset (see 10.2.4.6).

23 *Change 10.2.3 as follows*

24 **10.2.3 Overview of global variables used by time synchronization state machines**

25 Subclauses 10.2.4 and 10.2.5 define global variables used by time synchronization state machines whose
26 scopes are as follows:

- 27 — Per PTP Instance (i.e., per domain)
- 28 — Per PTP Instance, per PTP Port
- 29 — Instance used by the Common Mean Link Delay Service (CMLDS) (see 11.2.17) (i.e., variable is
- 30 common across all LinkPorts)
- 31 — Instance used by CMLDS, per LinkPort

32 Table 10-1 summarizes the scope of each global variable of 10.2.4 and 10.2.5.

33

Table 10-1—Summary of scope of global variables used by time synchronization state machines (see 10.2.4 and 10.2.5)

Variable name	Subclause of definition	Per PTP Instance (i.e., per domain)	Per PTP Instance, per PTP Port	Instance used by CMLDS (i.e., variable is common across all LinkPorts)	Instance used by CMLDS, per LinkPort
BEGIN	10.2.4.1	Yes	No	Yes	No
clockMasterSyncInterval <u>clockTimeTransmitterSyncInterval</u>	10.2.4.2	Yes	No	No	No
clockSlave <u>clockTimeReceiverTime</u>	10.2.4.3	Yes	No	No	No
syncReceiptTime	10.2.4.4	Yes	No	No	No
syncReceiptLocalTime	10.2.4.5	Yes	No	No	No
clockSourceFreqOffset	10.2.4.6	Yes	No	No	No
clockSourcePhaseOffset	10.2.4.7	Yes	No	No	No
clockSourceTimeBaseIndicator	10.2.4.8	Yes	No	No	No
clockSourceTimeBaseIndicatorOld	10.2.4.9	Yes	No	No	No
clockSourceLastGmPhaseChange	10.2.4.10	Yes	No	No	No
clockSourceLastGmFreqChange	10.2.4.11	Yes	No	No	No
currentTime	10.2.4.12	Yes	No	No	No
gmPresent	10.2.4.13	Yes	No	No	No
gmRateRatio	10.2.4.14	Yes	No	No	No
gmTimeBaseIndicator	10.2.4.15	Yes	No	No	No
lastGmPhaseChange	10.2.4.16	Yes	No	No	No
lastGmFreqChange	10.2.4.17	Yes	No	No	No
localClockTickInterval	10.2.4.18	Yes	No	No	No
localTime	10.2.4.19	Yes	No	No	No
selectedState	10.2.4.20	Yes	No	No	No
masterTime <u>timeTransmitterTime</u>	10.2.4.21	Yes	No	No	No
thisClock	10.2.4.22	Yes	No	Yes	No
parentLogSyncInterval	10.2.4.23	Yes	No	No	No
instanceEnable	10.2.4.24	Yes	No	No	No
syncReceiptTimeoutTime	10.2.4.25	Yes	No	No	No
asCapable	10.2.5.1	No	Yes	No	No
asymmetryMeasurementMode	10.2.5.2	No	Yes ^a	No	Yes
syncReceiptTimeoutTimeInterval	10.2.5.3	No	Yes	No	No
currentLogSyncInterval	10.2.5.4	No	Yes	No	No
initialLogSyncInterval	10.2.5.5	No	Yes	No	No
syncInterval	10.2.5.6	No	Yes	No	No
neighborRateRatio	10.2.5.7	No	Yes ^a	No	Yes

Table 10-1—Summary of scope of global variables used by time synchronization state machines (see 10.2.4 and 10.2.5) (continued)

Variable name	Subclause of definition	Per PTP Instance (i.e., per domain)	Per PTP Instance, per PTP Port	Instance used by CMLDS (i.e., variable is common across all LinkPorts)	Instance used by CMLDS, per LinkPort
meanLinkDelay	10.2.5.8	No	Yes ^a	No	Yes
delayAsymmetry	10.2.5.9	No	Yes ^a	No	Yes
computeNeighborRateRatio	10.2.5.10	No	Yes ^a	No	Yes
computeMeanLinkDelay	10.2.5.11	No	Yes ^a	No	Yes
portOper ^b	10.2.5.12	No	Yes	No	Yes
ptpPortEnabled	10.2.5.13	No	Yes	No	No
thisPort	10.2.5.14	No	Yes	No	Yes
syncLocked	10.2.5.15	No	Yes	No	No
neighborGptpCapable	10.2.5.16	No	Yes	No	No
syncSlowdown	10.2.5.17	No	Yes	No	No
oldSyncInterval	10.2.5.18	No	Yes	No	No
gPtpCapableMessageSlowdown	10.2.5.19	No	Yes	No	No
gPtpCapableMessageInterval	10.2.5.20	No	Yes	No	No
oldGptpCapableMessageInterval	10.2.5.21	No	Yes	No	No
currentLogGptpCapableMessageInterval	10.2.5.22	No	Yes	No	No
initialLogGptpCapableMessageInterval	10.2.5.23	No	Yes	No	No

^a The instance of this variable that is per PTP Instance, per PTP Port exists only for domain 0.

^b There is one instance of this variable per physical port, which is accessible by all PTP Ports and LinkPorts associated with the physical port.

1 10.2.4 Per PTP Instance global variables

2 Change 10.2.4.2 as follows:

3 **10.2.4.2 ~~clockMasterSyncInterval~~clockTimeTransmitterSyncInterval:** A variable containing the mean
4 time interval between successive messages providing time-synchronization information by the
5 ~~clockMaster~~clockTimeTransmitter entity to the SiteSync entity. This value is given by $1000000000 \times$
6 ~~2^{clockMasterLogSyncInterval/clockTimeTransmitterLogSyncInterval}~~ns, where
7 ~~clockMasterLogSyncInterval~~clockTimeTransmitterLogSyncInterval is the logarithm to base 2 of the mean
8 time between the successive providing of time-synchronization information by the
9 ~~clockMaster~~clockTimeTransmitter entity (see 10.7.2.4). The data type for
10 ~~clockMasterSyncInterval~~clockTimeTransmitterSyncInterval is UScaledNs.

11 Change 10.2.4.3 as follows:

1 **10.2.4.3 ~~clockSlave~~ClockTimeReceiverTime:** The synchronized time maintained, at the ~~slave~~timeReceiver,
2 at the granularity of the LocalClock entity [i.e., a new value is computed every localClockTickInterval (see
3 10.2.4.18) by the ~~ClockSlave~~ClockTimeReceiver entity]. The data type for
4 ~~clockSlave~~ClockTimeReceiverTime is ExtendedTimestamp.

5 *Change 10.2.4.4 as follows:*

6 **10.2.4.4 syncReceiptTime:** The synchronized time computed by the ~~ClockSlave~~ClockTimeReceiver entity
7 at the instant time-synchronization information, contained in a PortSyncSync structure, is received. The data
8 type for syncReceiptTime is ExtendedTimestamp.

9 *Change 10.2.4.8 as follows:*

10 **10.2.4.8 clockSourceTimeBaseIndicator:** A global variable that is set equal to the timeBaseIndicator
11 parameter of the ClockSourceTime.invoke application interface function (see 9.2.2.3), by the
12 ~~ClockMaster~~ClockTimeTransmitter entity. The parameter timeBaseIndicator of ClockSourceTime.invoke is
13 set by the ClockSource entity and is changed by that entity whenever the time base changes. The data type
14 for clockSourceTimeBaseIndicator is UInteger16.

15 *Change 10.2.4.15 as follows:*

16 **10.2.4.15 gmTimeBaseIndicator:** The most recent value of gmTimeBaseIndicator provided to the
17 ~~ClockSlave~~ClockTimeReceiverSync state machine via a PortSyncSync structure. The data type for
18 gmTimeBaseIndicator is UInteger16.

19 *Change 10.2.4.16 as follows:*

20 **10.2.4.16 lastGmPhaseChange:** The most recent value of lastGmPhaseChange provided to the
21 ~~ClockSlave~~ClockTimeReceiverSync state machine via a PortSyncSync structure. The data type for
22 lastGmPhaseChange is ScaledNs.

23 *Change 10.2.4.17 as follows:*

24 **10.2.4.17 lastGmFreqChange:** The most recent value of lastGmFreqChange provided to the
25 ~~ClockSlave~~ClockTimeReceiverSync state machine via a PortSyncSync structure. The data type for
26 lastGmFreqChange is Float64.

27 *Change 10.2.4.21 as follows:*

28 **10.2.4.21 ~~masterTime~~timeTransmitterTime:** The time maintained by the
29 ~~ClockMaster~~ClockTimeTransmitter entity, based on information received from the ClockSource and
30 LocalClock entities. The data type for ~~masterTime~~timeTransmitterTime is ExtendedTimestamp.

31 *Change 10.2.4.23 as follows:*

32 **10.2.4.23 parentLogSyncInterval:** The most recent logMessageInterval value received on the
33 ~~slave~~timeReceiver port. If this PTP Instance is the Grandmaster PTP Instance, then this is the
34 ~~clockMasterLogSyncInterval~~clockTimeTransmitterLogSyncInterval (see 10.7.2.4). The data type for
35 parentLogSyncInterval is Integer8.

1 10.2.5 Per-port global variables

2 *Change 10.2.5,15 as follows:*

3 **10.2.5.15 syncLocked:** A Boolean, set by the PortSyncSyncSend state machine (see 10.2.12.3), that
4 indicates that this PTP Port, when operating as a ~~master~~timeTransmitter port, shall transmit a Sync as soon
5 as possible after the ~~slave~~timeReceiver port received a Sync (ignoring syncInterval). If FALSE, the PTP Port
6 shall use the timing set by syncInterval.

7 10.2.7 SiteSyncSync state machine

8 10.2.7.1 State machine variables

9 *Change 10.2.7.1.1 as follows:*

10 **10.2.7.1.1 revdPSSyncSSS:** A Boolean variable that notifies the current state machine when a
11 PortSyncSync structure (see 10.2.2.3) is received from the PortSyncSyncReceive state machine of a
12 PortSync entity or from the ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine of the
13 ~~ClockMaster~~ClockTimeTransmitter entity. This variable is reset by this state machine.

14 10.2.7.2 State machine functions

15 *Change 10.2.7.2.2 as follows:*

16 **10.2.7.2.2 txPSSync (txPSSyncPtrSSS):** Transmits a copy of the PortSyncSync structure pointed to by
17 txPSSyncPtrSSS to the PortSyncSyncSend state machine of each PortSync entity and the
18 ~~ClockSlave~~ClockTimeReceiverSync state machine of the ~~ClockSlave~~ClockTimeReceiver entity of this PTP
19 Instance.

20 *Change 10.2.7.3 as follows:*

21 10.2.7.3 State diagram

22 The SiteSyncSync state machine shall implement the function specified by the state diagram in Figure 10-3,
23 the local variables specified in 10.2.7.1, the functions specified in 10.2.7.2, the structure specified in
24 10.2.2.3, and the relevant global variables and functions specified in 10.2.4 through 10.2.6. The state
25 machine receives time-synchronization information, accumulated rateRatio, and syncReceiptTimeoutTime
26 from the PortSync entity (PortSyncSyncReceive state machine) of the current ~~slave~~timeReceiver port or
27 from the ~~ClockMaster~~ClockTimeTransmitter entity (~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend
28 state machine). If the information was sent by a PortSync entity, the state machine also receives the
29 portIdentity of the PTP Port on the upstream PTP Instance that sent the information to this PTP Instance (if
30 the information was sent by the ~~ClockMaster~~ClockTimeTransmitter entity, the portIdentity is that of the
31 ~~ClockMaster~~ClockTimeTransmitter entity, i.e., it has clockIdentity equal to the clockIdentity of this PTP
32 Instance and portNumber 0). The state machine sends a PortSyncSync structure to the PortSync entities of
33 all the ports and to the ~~ClockSlave~~ClockTimeReceiver entity.

34 *Replace Figure 10-3 with the following figure:*

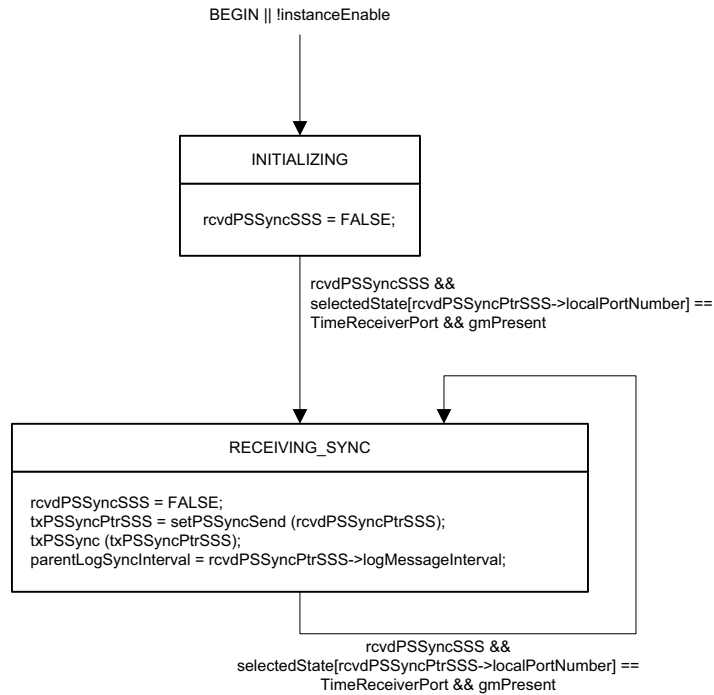


Figure 10-3—SiteSyncSync state machine

1 10.2.8 PortSyncSyncReceive state machine

2 10.2.8.1 State machine variables

3 *Change 10.2.8.1.4 as follows:*

4 **10.2.8.1.4 rateRatio:** A Float64 variable that holds the ratio of the frequency of the Grandmaster Clock to
5 the frequency of the LocalClock entity. This frequency ratio is computed by:

- 6 a) Measuring the ratio of the Grandmaster Clock frequency to the LocalClock frequency at the
7 Grandmaster PTP Instance and initializing rateRatio to this value in the
8 ~~ClockMasterSend~~ClockTimeTransmitterSyncSend state machine of the Grandmaster PTP Instance
9 and
- 10 b) Accumulating, in the PortSyncSyncReceive state machine of each PTP Instance, the frequency
11 offset of the LocalClock entity of the PTP Instance at the remote end of the link attached to that PTP
12 Port to the frequency of the LocalClock entity of this PTP Instance.

13 *Change the title of 10.2.9 as follows:*

14 10.2.9 ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine

15 10.2.9.2 State machine functions

16 *Change 10.2.9.2.1 as follows:*

17 **10.2.9.2.1 setPSSyncCMSS (gmRateRatio):** Creates a PortSyncSync structure to be transmitted, and
18 returns a pointer to this structure. The members are set as follows:

- 19 a) localPortNumber is set to 0.
- 20 b) preciseOriginTimestamp is set equal to the ~~masterTime~~timeTransmitterTime, with any fractional
21 nanoseconds truncated.
- 22 c) followUpCorrectionField is set equal to the sum of
 - 23 1) The fractional nanoseconds portion of ~~masterTime~~timeTransmitterTime.fractionalNanoseconds
24 and
 - 25 2) The quantity $\text{gmRateRatio} \times (\text{currentTime} - \text{localTime})$.
- 26 d) The clockIdentity member of sourcePortIdentity is set equal to the clockIdentity of this PTP
27 Instance.
- 28 e) The portNumber member of the sourcePortIdentity is set to 0.

29 NOTE 1—This quantity and localPortNumber are redundant; both are retained so that the SiteSync entity can process
30 PortSyncSync structures received from a PortSync entity or the ~~ClockMaster~~ClockTimeTransmitter entity in the same
31 manner.

- 32 f) logMessageInterval is set to ~~clockMasterLogSyncInterval~~clockTimeTransmitterLogSyncInterval.
- 33 g) upstreamTxTime is set equal to localTime.
- 34 h) syncReceiptTimeoutTime is set equal to $\text{FFFFFFFFFFFFFFFF}_{16}$, which indicates that there is no
35 sync receipt timeout.

36 NOTE 2—A ~~ClockMaster~~ClockTimeTransmitter entity does not receive Sync messages, and there is no notion of sync
37 receipt timeout.

- 38 i) rateRatio is set equal to gmRateRatio.

- 1 j) gmTimeBaseIndicator is set equal to clockSourceTimeBaseIndicator.
- 2 k) lastGmPhaseChange is set equal to clockSourcePhaseOffset.
- 3 l) lastGmFreqChange is set equal to clockSourceFreqOffset.
- 4 m) domainNumber is set equal to the domain number of this gPTP domain.

5 *Change 10.2.9.2.2 as follows:*

6 **10.2.9.2.2 txPSSyncCMSS (txPSSyncPtrCMSS):** Transmits a copy of the PortSyncSync structure pointed
7 to by txPSSyncPtrCMSS to the SiteSync state machine.

8 **10.2.9.2.3 ~~computeClockMasterSyncInterval~~computeClockTimeTransmitterSyncInterval():**
9 Computes the value of ~~clockMasterSyncInterval~~clockTimeTransmitterSyncInterval (see 10.2.4.2) as
10 1000000000 × ~~2~~clockTimeTransmitterLogSyncInterval~~clockMasterLogSyncInterval~~ ns, where
11 ~~clockMasterLogSyncInterval~~clockTimeTransmitterLogSyncInterval is the minimum
12 currentLogSyncInterval value, taken over all the PTP Ports of the PTP Instance (see 10.7.2.4).

13 *Change 10.2.9.3 as follows:*

14 **10.2.9.3 State diagram**

15 The ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine shall implement the function
16 specified by the state diagram in Figure 10-5, the local variables specified in 10.2.9.1, the functions
17 specified in 10.2.9.2, the structure specified in 10.2.2.3, and the relevant global variables and functions
18 specified in 10.2.4 through 10.2.6. The state machine receives ~~masterTime~~timeTransmitterTime and
19 clockSourceTimeBaseIndicator from the ~~ClockMasterSyncReceive~~ClockTimeTransmitterSyncReceive state
20 machine, and phase and frequency offset between ~~masterTime~~timeTransmitterTime and syncReceiptTime
21 from the ~~ClockMasterSyncOffset~~ClockTimeTransmitterSyncOffset state machine. It provides
22 ~~masterTime~~timeTransmitterTime (i.e., synchronized time) and the phase and frequency offset to the
23 SiteSync entity via a PortSyncSync structure.

24 The ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine is optional for PTP Instances that
25 are not grandmaster-capable (see 8.6.2.1, 10.1.3, and 10.2.1). This state machine may be present in a PTP
26 Instance that is not grandmaster-capable; however, any information supplied by it to the SiteSyncSync state
27 machine is not used by the SiteSyncSync state machine if the PTP Instance is not grandmaster-capable.

1 *Replace Figure 10-5 with the following figure:*

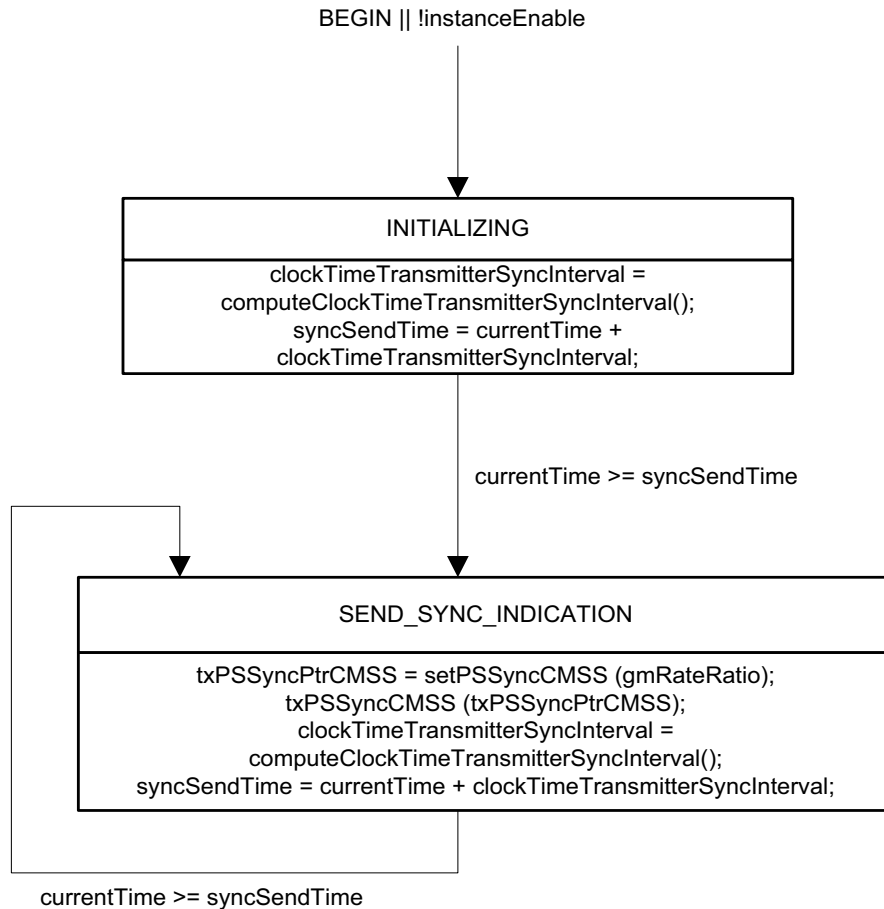


Figure 10-5—~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine

2 *Change the title of 10.2.10 as follows:*

3 10.2.10 ~~ClockMasterSyncOffset~~ClockTimeTransmitterSyncOffset state machine

4 10.2.10.1 State machine variables

5 *Change 10.2.10.1.1 as follows:*

6 10.2.10.1.1 **rcvdSyncReceiptTime**: A Boolean variable that notifies the current state machine that
7 syncReceiptTime has been updated by the ~~ClockSlave~~ClockTimeReceiver entity. This variable is reset by
8 this state machine.

9 10.2.10.2 State machine functions

10 *Change 10.2.10.2.1 as follows:*

1 **10.2.10.2.1 computeClockSourceFreqOffset():** Computes and returns clockSourceFreqOffset (see
2 10.2.4.6), using successive values of ~~masterTime~~timeTransmitterTime computed by the
3 ~~ClockMasterSyneReceive~~ClockTimeTransmitterSyncReceive state machine (see 10.2.11) and successive
4 values of syncReceiptTime computed by the ~~ClockSlave~~ClockTimeReceiverSync state machine (see
5 10.2.13). The data type for the returned value is Float64. Any scheme that uses this information to compute
6 clockSourceFreqOffset is acceptable as long as the performance requirements specified in B.2.4 are met.

7 NOTE—As one example, clockSourceFreqOffset can be estimated as the ratio of the duration of a time interval
8 measured by the ClockSource entity to the duration of the same time interval computed from
9 ~~ClockSlave~~ClockTimeReceiverTime values, minus 1.

10 *Change 10.2.10.3 as follows:*

11 **10.2.10.3 State diagram**

12 The ~~ClockMasterSyneOffset~~ClockTimeTransmitterSyncOffset state machine shall implement the function
13 specified by the state diagram in Figure 10-6, the local variable specified in 10.2.10.1, the function specified
14 in 10.2.10.2, and the relevant global variables and functions specified in 10.2.4 through 10.2.6. The state
15 machine receives syncReceiptTime from the ~~ClockSlave~~ClockTimeReceiverSync state machine and
16 ~~masterTime~~timeTransmitterTime from the ~~ClockMasterSyneReceive~~ClockTimeTransmitterSyncReceive
17 state machine. It computes clockSourcePhaseOffset and clockSourceFrequency offset if this PTP Instance is
18 not currently the Grandmaster PTP Instance, i.e., if selectedState[0] is equal to PassivePort.

19 The ~~ClockMasterSyneOffset~~ClockTimeTransmitterSyncOffset state machine is optional for PTP Instances
20 that are not grandmaster-capable (see 8.6.2.1, 10.1.3, and 10.2.1). This state machine may be present in a
21 PTP Instance that is not grandmaster-capable; however, any information supplied by it, via the
22 ~~ClockMasterSyneSend~~ClockTimeTransmitterSyncSend state machine, to the SiteSyncSync state machine is
23 not used by the SiteSyncSync state machine if the PTP Instance is not grandmaster-capable.

1 *Replace Figure 10-6 with the following figure:*

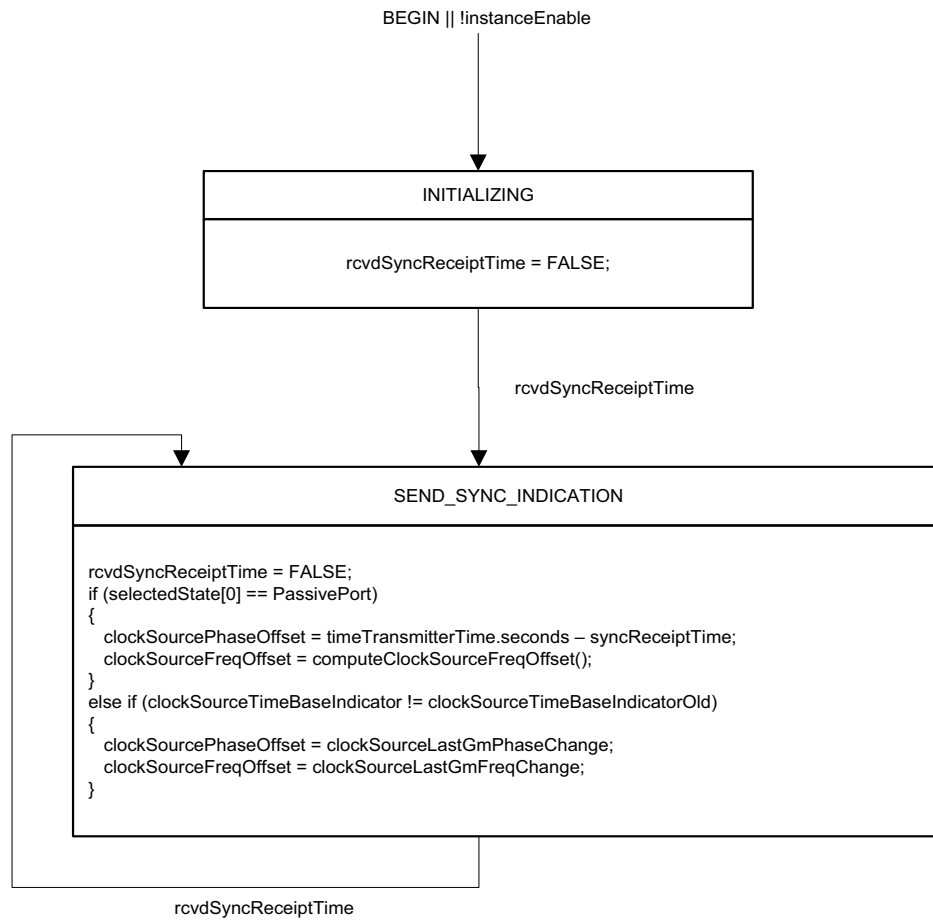


Figure 10-6—~~ClockMasterSyncOffset~~ClockTimeTransmitterSyncOffset state machine

1 *Change the title of 10.2.11 as follows:*

2 10.2.11 ~~ClockMasterSyncReceive~~ClockTimeTransmitterSyncReceive state machine

3 10.2.11.2 State machine functions

4 *Change 10.2.11.2.2 as follows:*

5 10.2.11.2.2 ~~updateMasterTime~~updateTimeTransmitterTime(): Updates the global variable
6 ~~masterTime~~timeTransmitterTime (see 10.2.4.21), based on information received from the ClockSource and
7 LocalClock entities. It is the responsibility of the application to filter ~~masterTime~~timeTransmitter times
8 appropriately. As one example, ~~masterTime~~timeTransmitterTime can be set equal to the sourceTime member
9 of the ClockSourceTime.invoke function when this function is invoked at the ClockSource entity and can be
10 incremented by localClockTickInterval (see 10.2.4.18) multiplied by gmRateRatio (see 10.2.4.14) when
11 rcvdLocalClockTickCMSR is TRUE.

12 *Change 10.2.11.3 as follows:*

13 10.2.11.3 State diagram

14 The ~~ClockMasterSyncReceive~~ClockTimeTransmitterSyncReceive state machine shall implement the
15 function specified by the state diagram in Figure 10-7, the local variables specified in 10.2.11.1, the
16 functions specified in 10.2.11.2, and the relevant global variables and functions specified in 10.2.4 through
17 10.2.6. The state machine updates the global variable ~~masterTime~~timeTransmitterTime with information
18 received from the ClockSource entity via the ClockSourceTime.invoke function and information received
19 from the LocalClock entity. It also computes gmRateRatio, i.e., the ratio of the ClockSource entity
20 frequency and the LocalClock entity frequency.

21 The ~~ClockMasterSyncReceive~~ClockTimeTransmitterSyncReceive state machine is optional for PTP
22 Instances that are not grandmaster-capable (see 8.6.2.1, 10.1.3, and 10.2.1). This state machine may be
23 present in a PTP Instance that is not grandmaster-capable; however, any information supplied by it, via the
24 ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine, to the SiteSyncSync state machine is
25 not used by the SiteSyncSync state machine if the PTP Instance is not grandmaster-capable.

1 **Replace Figure 10-7 with the following figure:**

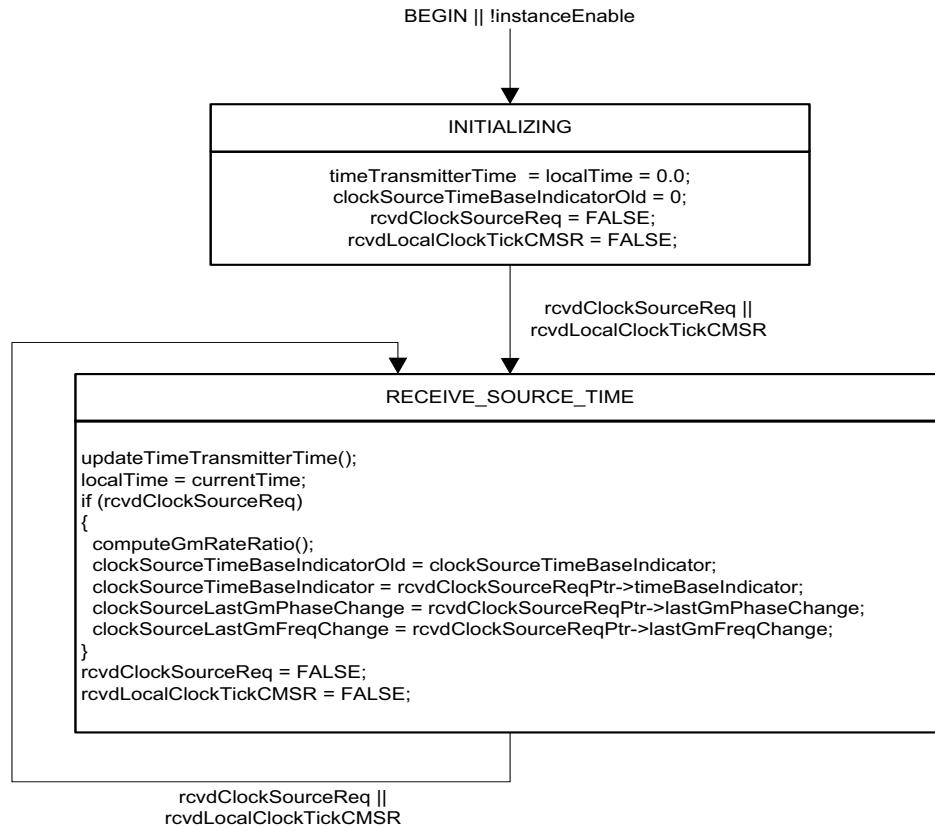


Figure 10-7—~~ClockMasterSyncReceive~~ClockTimeTransmitterSyncReceive state machine

2 10.2.12 PortSyncSyncSend state machine

3 **Change 10.2.12.3 as follows:**

4 10.2.12.3 State diagram

5 The PortSyncSyncSend state machine shall implement the function specified by the state diagram in
6 Figure 10-8, the local variables specified in 10.2.12.1, the functions specified in 10.2.12.2, the structures
7 specified in 10.2.2.1 through 10.2.2.3, and the relevant global variables and functions specified in 10.2.4
8 through 10.2.6. The state machine receives time-synchronization information from the SiteSyncSync state
9 machine, corresponding to the receipt of the most recent synchronization information on either the
10 ~~slaveTimeReceiver~~ port, if this PTP Instance is not the Grandmaster PTP Instance, or from the
11 ~~ClockMasterSyncSend~~ClockTimeTransmitterSyncSend state machine, if this PTP Instance is the
12 Grandmaster PTP Instance. The state machine causes time-synchronization information to be sent to the MD
13 entity if this PTP Port is a ~~MasterPort~~TimeTransmitterPort.

14 **Replace Figure 10-8 with the following figure:**

1 *Change the title of 10.2.13 as follows:*

2 **10.2.13 ~~ClockSlave~~ClockTimeReceiverSync state machine**

3 *Change 10.2.13.2 as follows:*

4 **10.2.13.2 State machine functions**

5 **10.2.13.2.1 update~~Slave~~TimeReceiverTime():** Updates the global variable clock~~Slave~~TimeReceiverTime
6 (see 10.2.4.3), based on information received from the SiteSync and LocalClock entities. It is the
7 responsibility of the application to filter ~~slave~~timeReceiver times appropriately (see B.3 and B.4 for
8 examples). As one example, clock~~Slave~~TimeReceiverTime can be:

- 9 a) Set to syncReceiptTime at every LocalClock update immediately after a PortSyncSync structure is
10 received, and
- 11 b) Incremented by localClockTickInterval (see 10.2.4.18) multiplied by the rateRatio member of the
12 previously received PortSyncSync structure during all other LocalClock updates.

13 If no PTP Instance is grandmaster-capable, i.e., gmPresent is FALSE, then clock~~Slave~~TimeReceiverTime is
14 set to the time provided by the LocalClock. This function is invoked when revdLocalClockTickCSS is
15 TRUE.

16 *Change 10.2.13.2.2 as follows:*

17 **10.2.13.2.2 invokeApplicationInterfaceFunction (functionName):** Invokes the application interface
18 function whose name is functionName. For the ~~ClockSlave~~ClockTimeReceiverSync state machine,
19 functionName is clockTargetPhaseDiscontinuity.result (see 9.6.2).

20 *Change 10.2.13.3 as follows:*

21 **10.2.13.3 State diagram**

22 The ~~ClockSlave~~ClockTimeReceiverSync state machine shall implement the function specified by the state
23 diagram in Figure 10-9, the local variables specified in 10.2.13.1, the functions specified in 10.2.13.2, and
24 the relevant global variables and functions specified in 10.2.4 through 10.2.6. The state machine receives a
25 PortSyncSync structure from the SiteSyncSync state machine. It computes syncReceiptTime and
26 clock~~Slave~~TimeReceiverTime, and sets syncReceiptLocalTime (i.e., the time relative to the LocalClock
27 entity corresponding to syncReceiptTime), GmTimeBaseIndicator, lastGmPhaseChange, and
28 lastGmFreqChange. It provides clock~~Slave~~TimeReceiverTime to the
29 ~~ClockMasterSyncOffset~~ClockTimeTransmitterSyncOffset state machine, and provides information to the
30 ClockTarget entity (via the ClockTargetPhaseDiscontinuity interface; see 9.6) to enable that entity to
31 determine if a phase or frequency discontinuity has occurred.

32 The per-PTP Port global variables used in the ~~ClockSlave~~ClockTimeReceiverSync state machine are
33 determined based on revdPSSyncPtrCSS->localPortNumber, as follows:

- 34 a) If revdPSSyncPtrCSS->localPortNumber > 0, the per-PTP Port global variables of PTP Port number
35 revdPSSyncPtrCSS->localPortNumber are used.
- 36 b) If revdPSSyncPtrCSS->localPortNumber == 0, the values of the used per-PTP Port global variables
37 are fixed as follows:
 - 38 1) meanLinkDelay = 0
 - 39 2) delayAsymmetry = 0

3) neighborRateRatio = 1.0

2 Replace Figure 10-9 with the following figure:

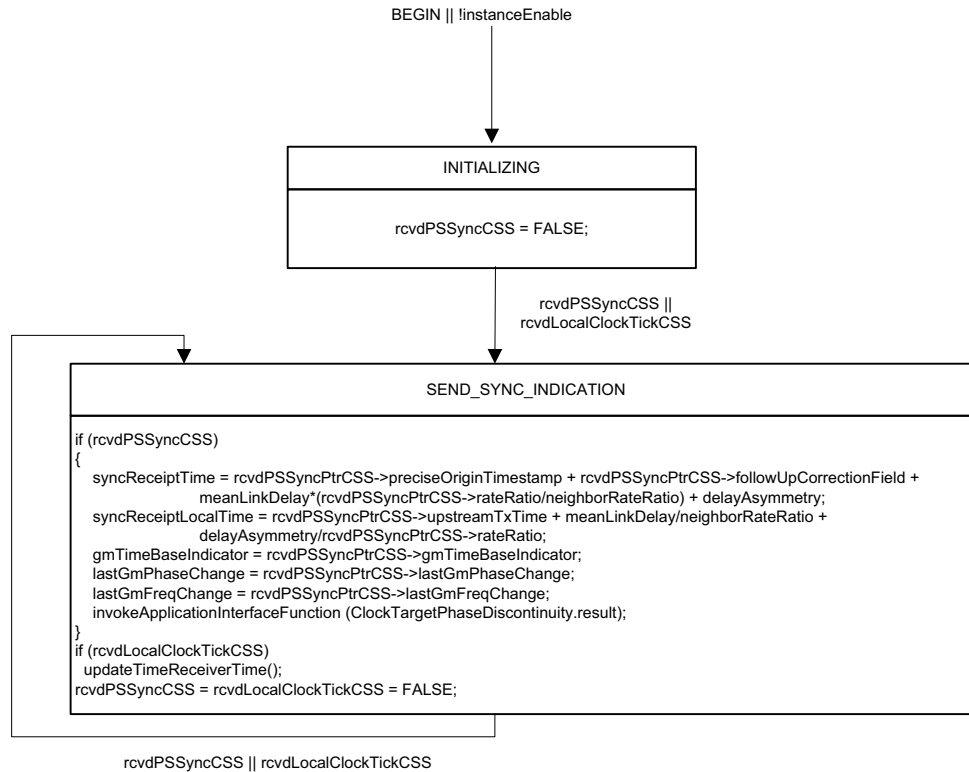


Figure 10-9—~~ClockSlave~~ClockTimeReceiverSync state machine

3 Change the title of 10.3 as follows:

4 10.3 Best ~~master~~timeTransmitter clock selection, external port configuration, and
5 announce interval setting state machines

6 Change the title of 10.3.1 as follows:

7 10.3.1 Best ~~master~~timeTransmitter clock selection and external port configuration overview

8 Change 10.3.1.1 as follows:

9 10.3.1.1 General

10 There are two methods for setting the Grandmaster PTP Instance and time-synchronization spanning tree for
11 a gPTP domain:

- 12 a) The ~~BMCABTCA~~ is used to determine the Grandmaster PTP Instance for a gPTP domain and
13 construct the time-synchronization spanning tree with that Grandmaster PTP Instance as the root. In

- 1 this case, the network is configured automatically, i.e., the PTP Port states are set, using the results
 2 of the ~~BMC~~~~A~~BTCA.
 3 b) The PTP Port states are configured to force a desired Grandmaster PTP Instance and to construct a
 4 desired time-synchronization spanning tree with the Grandmaster PTP Instance as the root.

5 The PTP Port state definitions are given in Table 10-2.

6 The per PTP Instance global variable externalPortConfigurationEnabled indicates whether method a) or b)
 7 is used; a value of TRUE indicates method b), and a value of FALSE indicates method a) (see 10.3.9.24).
 8 The data type of externalPortConfigurationEnabled is Boolean. Method a) is implemented and is the default
 9 mode of operation (i.e., externalPortConfigurationEnabled is FALSE) on domain 0 to maintain backward
 10 compatibility. For domains other than domain 0, the following statements apply:

- 11 c) At least one of the possibilities [method a) or b)] is implemented.
 12 d) Both possibilities can be implemented.
 13 e) If both possibilities are implemented, the default value of externalPortConfigurationEnabled is
 14 FALSE.

15 Once an Announce message is transmitted by a PTP Port, subsequent timing information (see 7.4)
 16 transmitted by that PTP Port is derived from the Grandmaster PTP Instance indicated in that Announce
 17 message.

Table 10-2—PTP Port state definitions

PTP Port state	Description
MasterPort <u>TimeTransmitterPort</u>	Any PTP Port, P, of the PTP Instance that is closer to the root than any other PTP Port of the gPTP communication path connected to P.
SlavePort <u>TimeReceiverPort</u>	The one PTP Port of the PTP Instance that is closest to the root PTP Instance. If the root is grandmaster-capable, the SlavePort <u>TimeReceiverPort</u> is also closest to the Grandmaster PTP Instance. The PTP Instance does not transmit Sync or Announce messages on the SlavePort <u>TimeReceiverPort</u> .
PassivePort	Any PTP Port of the PTP Instance whose PTP Port state is not MasterPort <u>TimeTransmitterPort</u> , SlavePort <u>TimeReceiverPort</u> , or DisabledPort.
DisabledPort	Any PTP Port of the PTP Instance for which the variables portOper, ptpPortEnabled, and asCapable are not all TRUE.
NOTE—PTP Port states are per PTP Port and per domain (i.e., per PTP Instance; see 8.1).	

18 NOTE—Information contained in Sync and associated Follow_Up messages received on PTP Ports whose PTP Port
 19 state is PassivePort is discarded; the SiteSyncSync state machine (see 10.2.7) uses only information received from a PTP
 20 Port whose PTP Port state is ~~SlavePort~~TimeReceiverPort.

21 An example ~~master~~timeTransmitter/~~slave~~timeReceiver hierarchy of PTP Instances is shown in Figure 10-10.
 22 The Grandmaster PTP Instance ports all have PTP Port state of ~~MasterPort~~TimeTransmitterPort. All the
 23 other PTP Instances have exactly one ~~slave~~timeReceiver port. The time-synchronization spanning tree is
 24 composed of the PTP Instances and the links that do not have an endpoint PTP Port whose PTP Port state is
 25 PassivePort.

26 **Replace Figure 10-10 with the following figure:**

27

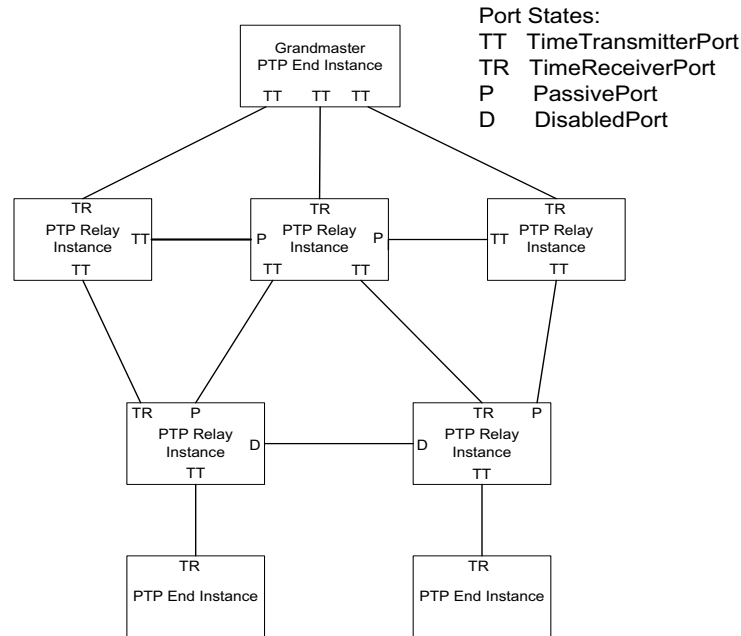


Figure 10-10—Example ~~master~~timeTransmitter/~~slave~~timeReceiver hierarchy of PTP Instances

1 Change 10.3.1.2 as follows:

2 10.3.1.2 Best ~~master~~timeTransmitter clock algorithm overview

3 In the ~~BMCA~~BTCA (i.e., method a) of 10.3.1.1), best ~~master~~timeTransmitter selection information is
4 exchanged between PTP Instances of time-aware systems via Announce messages (see 10.5 and 10.6). Each
5 Announce message contains time-synchronization spanning tree vector information that identifies one PTP
6 Instance as the root of the time-synchronization spanning tree and, if the PTP Instance is grandmaster-
7 capable, the Grandmaster PTP Instance. Each PTP Instance in turn uses the information contained in the
8 Announce messages it receives, along with its knowledge of itself, to compute which of the PTP Instances
9 that it has knowledge of ought to be the root of the spanning tree and, if grandmaster-capable, the
10 Grandmaster PTP Instance. As part of constructing the time-synchronization spanning tree, each PTP Port of
11 each PTP Instance is assigned a PTP Port state from Table 10-2 by state machines associated with the ports
12 and with the PTP Instance as a whole.

13 NOTE—The ~~BMCA~~BTCA described in this standard is the default ~~BMCA~~BTCA according to the specifications of 9.3
14 of IEEE Std 1588-2019. It is also equivalent to a subset of the Rapid Spanning Tree Protocol (RSTP) described in
15 IEEE Std 802.1Q-2018 (though the full RSTP described in IEEE Std 802.1Q-2018 is not equivalent to the full
16 ~~BMCA~~BTCA described in IEEE Std 1588-2019). The ~~BMCA~~BTCA description here uses the formalism of the RSTP
17 description in IEEE Std 802.1Q-2018.

18 Change 10.3.1.3 as follows:

1 10.3.1.3 external port configuration overview

2 In external port configuration (i.e., method b) of 10.3.1.1), an external entity determines the synchronization
3 spanning tree and sets the PTP Port states accordingly. The method used by the external entity to determine
4 the synchronization spanning tree is outside the scope of this standard. However, as with the **BMCA****BTCA**,
5 Announce messages are used to transport information on the time-synchronization spanning tree and
6 Grandmaster PTP Instance time properties information from one PTP Instance to the next in the tree. The
7 external entity sets the state of a PTP Port by setting the value of
8 externalPortConfigurationPortDS.desiredState to the desired state.

9 *Change 10.3.2 as follows:*

10 10.3.2 systemIdentity

11 The systemIdentity attribute of a PTP Instance is a `UInteger112` (i.e., a 14-byte, unsigned integer) formed by
12 concatenating the following attributes, in the following order, from most significant to least significant octet:

- 13 a) priority1 (1 octet; see 8.6.2.1)
- 14 b) clockClass (1 octet; see 8.6.2.2 and 6.4.3.8)
- 15 c) clockAccuracy (1 octet; see 8.6.2.3 and 6.4.3.8)
- 16 d) offsetScaledLogVariance (2 octets; see 8.6.2.4 and 6.4.3.8)
- 17 e) priority2 (1 octet; see 8.6.2.5)
- 18 f) clockIdentity (8 octets; see 8.5.2.2 and 6.4.3.6)

19 The systemIdentity attribute is defined for convenience when comparing two PTP Instances to determine,
20 when using the **BMCA****BTCA** (i.e., method a) of 10.3.1.1), which is a better candidate for root and if the PTP
21 Instance is grandmaster-capable (i.e., the value of priority1 is less than 255; see 8.6.2.1). Two PTP Instances
22 are compared as follows. Let the systemIdentity of PTP Instance A be S_A and the systemIdentity of PTP
23 Instance B be S_B . Let the clockIdentity of A be C_A and the clockIdentity of B be C_B . Then, if $C_A \neq C_B$, i.e.,
24 A and B represent different PTP Instances,

- 25 g) A is better than B if and only if $S_A < S_B$, and
- 26 h) B is better than A if and only if $S_B < S_A$.

27 If $C_A = C_B$, i.e., A and B represent the same PTP Instance,

- 28 i) $S_A < S_B$ means that A represents an upgrading of the PTP Instance compared to B or, equivalently, B
29 represents a downgrading of the PTP Instance compared to A,
- 30 j) $S_B < S_A$ means that B represents an upgrading of the PTP Instance compared to A or, equivalently,
31 A represents a downgrading of the PTP Instance compared to B, and
- 32 k) $S_A = S_B$ means that A and B represent the same PTP Instance that has not changed.

33 Comparisons g) and h) in this subclause imply that, with the ordering of attributes in the systemIdentity, the
34 clockIdentity is a tie-breaker when two different PTP Instances that have identical attributes a) through e)
35 are compared.

36 Comparisons g) and h) also imply that a PTP Instance that is grandmaster-capable is always better than
37 another PTP Instance that is not grandmaster-capable because the priority1 is less than 255 if the PTP
38 Instance is grandmaster-capable and is equal to 255 if it is not grandmaster-capable (see 8.6.2.1).

39 The cases where A and B represent different PTP Instances and represent the same PTP Instance are handled
40 separately in the **BMCA****BTCA**. When comparing two different PTP Instances, the better PTP Instance is

1 selected as the Grandmaster PTP Instance candidate. However, if A and B represent the same PTP Instance
2 with attributes that have changed, the PTP Instance is considered as having the most recent attributes when
3 doing subsequent comparisons with other PTP Instances.

4 *Change 10.3.3 as follows:*

5 **10.3.3 stepsRemoved**

6 Every PTP Instance has a stepsRemoved associated with it. For the root PTP Instance, and therefore the
7 Grandmaster PTP Instance when the root is grandmaster-capable, it is zero. For all other PTP Instances, it is
8 the number of gPTP communication paths in the path from the root to the respective PTP Instance.

9 NOTE—For example, stepsRemoved for a ~~slave~~timeReceiver port on the same gPTP communication path as the
10 Grandmaster PTP Instance will have a value of 1, indicating that a single path was traversed.

11 The stepsRemoved attributes of different ports of a PTP Instance are compared after comparisons of other
12 attributes that take precedence (i.e., priority1, clockClass, clockAccuracy, offsetScaledLogVariance,
13 priority2) do not result in one PTP Port being declared better than the other. Among the ports whose
14 stepsRemoved attributes are compared, the PTP Port on the PTP Instance with the lowest stepsRemoved is
15 assigned the state of ~~SlavePort~~TimeReceiverPort for that PTP Instance (the root PTP Instance does not have
16 a ~~SlavePort~~TimeReceiverPort). This lowest stepsRemoved is also considered the stepsRemoved for the PTP
17 Instance. If a PTP Instance has two or more ports with the same stepsRemoved, then the PTP Port with the
18 smallest portNumber is selected as the ~~SlavePort~~TimeReceiverPort.

19 *Change 10.3.4 as follows:*

20 **10.3.4 time-synchronization spanning tree priority vectors**

21 PTP Instances send best ~~master~~timeTransmitter selection information to each other in Announce messages.
22 The information is structured in a time-synchronization spanning tree priority vector. Time-synchronization
23 spanning tree priority vectors provide the basis for a concise specification of the ~~BMCABTCA~~'s
24 determination of the time-synchronization spanning tree and Grandmaster PTP Instance. A priority vector is
25 formed by concatenating the following attributes, in the following order, from most significant to least
26 significant octet:

- 27 a) rootSystemIdentity (14 octets; see 10.3.2)
- 28 b) stepsRemoved (2 octets; see 10.3.3)
- 29 c) sourcePortIdentity (i.e., portIdentity of the transmitting PTP Instance; 10 octets; see 8.5.2 and
30 10.6.2)
- 31 d) portNumber of the receiving PTP Port (2 octets; see 8.5.2.3)

32 The first two components of a priority vector are significant throughout the gPTP domain; they are
33 propagated via Announce messages and updated through invocation of ~~BMCABTCA~~ state machines. The
34 next component is assigned hop-by-hop for each gPTP communication path or PTP Instance and thus is of
35 local significance only. It is used as a tie-breaker in decisions between time-synchronization spanning tree
36 priority vectors that are otherwise equal. The fourth component is not conveyed in Announce messages, but
37 is used as a tie-breaker within a PTP Instance.

38 The set of all time-synchronization spanning tree priority vectors is totally ordered. For all components, a
39 lesser numerical value is better, and earlier components in the preceding list are more significant. In
40 addition, as mentioned earlier, a priority vector that reflects a root PTP Instance that is grandmaster-capable
41 is always better than a priority vector that reflects a root PTP Instance that is not grandmaster-capable. As
42 each PTP Port receives a priority vector, via an Announce message, from ports closer to the root, additions

1 are made to one or more components to yield a worse priority vector. This process of receiving information,
 2 adding to it, and passing it on, can be described in terms of the message priority vector received and a set of
 3 priority vectors used to facilitate the computation of a priority vector for each PTP Port, to be transmitted in
 4 further Announce Messages to PTP Instances further from the root.

5 *Change 10.3.5 as follows:*

6 **10.3.5 Priority vector calculations**

7 The portPriorityVector is the time-synchronization spanning tree priority vector held for the PTP Port when
 8 the reception of Announce messages and any pending update of information has been completed:

9 $\text{portPriorityVector} = \{\text{rootSystemIdentity} : \text{stepsRemoved} : \text{sourcePortIdentity} : \text{portNumber}\}$

10 A messagePriorityVector is the time-synchronization spanning tree priority vector conveyed in a received
 11 Announce Message. For a PTP Instance S receiving an Announce Message on PTP Port P_S with
 12 portNumber PN_S , from a ~~MasterPort~~ TimeTransmitterPort with portIdentity P_M on PTP Instance M claiming
 13 a rootSystemIdentity of R_M and a stepsRemoved of SR_M :

14 $\text{messagePriorityVector} = \{R_M : SR_M : P_M : PN_S\}$

15 This messagePriorityVector is superior to the portPriorityVector and will replace it if, and only if, the
 16 messagePriorityVector is better than the portPriorityVector, or the Announce message has been transmitted
 17 from the same ~~master~~ timeTransmitter PTP Instance and ~~MasterPort~~ TimeTransmitterPort as the
 18 portPriorityVector, i.e., if the following is true:

19 $((R_M < \text{rootSystemIdentity})) \parallel$

20 $((R_M == \text{rootSystemIdentity}) \ \&\& \ (SR_M < \text{stepsRemoved})) \parallel$

21 $((R_M == \text{rootSystemIdentity}) \ \&\& \ (SR_M == \text{stepsRemoved}) \ \&\& \ (P_M < \text{sourcePortIdentity (of current}$
 22 ~~master~~ timeTransmitter PTP Instance))) \parallel

23 $((R_M == \text{rootSystemIdentity}) \ \&\& \ (SR_M == \text{stepsRemoved})$

24 $\ \&\& \ (P_M == \text{sourcePortIdentity (of current } \del{master} \text{timeTransmitter PTP Instance)) } \ \&\& \ (PN_S <$
 25 $\text{portNumber})) \parallel$

26 $((P_M.\text{clockIdentity} == \text{sourcePortIdentity.clockIdentity (of current } \del{master} \text{timeTransmitter PTP}$
 27 $\text{Instance)) } \ \&\& \ (P_M.\text{portNumber} == \text{sourcePortIdentity.PortNumber (of the current}$
 28 ~~master~~ timeTransmitter PTP Instance)))

29 A gmPathPriorityVector can be calculated from a received portPriorityVector by adding one to the
 30 stepsRemoved component:

31 $\text{gmPathPriorityVector} = \{R_M : SR_M + 1 : P_M : PN_S\}$

1 The systemPriorityVector for a PTP Instance S with systemIdentity S_S and clockIdentity C_S is the priority
 2 vector that would, with the portIdentity of the ~~SlavePort~~TimeReceiverPort set equal to the portIdentity of the
 3 transmitting PTP Port, be used as the message priority vector in Announce Messages transmitted on S's
 4 ports whose state is ~~MasterPort~~TimeTransmitterPort if S was selected as the root:

5
$$\text{systemPriorityVector} = \{S_S : 0 : \{C_S : 0\} : 0\}$$

6 The gmPriorityVector for S is the best of the set comprising the systemPriorityVector vector plus every
 7 gmPathPriorityVector for which the clockIdentity of the ~~master~~timeTransmitter PTP Instance portIdentity is
 8 not the clockIdentity of S. If the systemPriorityVector is best, S has been selected as the root. When the best
 9 gmPathPriorityVector is that of PTP Port PN_S above, then:

10
$$\text{gmPriorityVector} = \{S_S : 0 : \{C_S : 0\} : 0\} \text{ if } S \text{ is better than } R_M, \text{ or}$$

11
$$\text{gmPriorityVector} = \{R_M : SR_M + 1 : P_M : PN_S\} \text{ if } S \text{ is worse than } R_M.$$

12 The ~~master~~timeTransmitterPriorityVector for a PTP Port Q on PTP Instance S is the gmPriorityVector with
 13 S's clockIdentity C_S substituted for the clockIdentity of the ~~master~~timeTransmitter portIdentity, and Q's
 14 portNumber PN_Q substituted for the portNumber of the ~~master~~timeTransmitter portIdentity and for the
 15 portNumber of the receiving PTP Port:

16
$$\text{masterTimeTransmitterPriorityVector} = \{S_S : 0 : \{C_S : PN_Q\} : PN_Q\} \text{ if } S \text{ is better than } R_M, \text{ or}$$

17
$$\text{masterTimeTransmitterPriorityVector} = \{R_M : SR_M + 1 : \{C_S : PN_Q\} : PN_Q\} \text{ if } S \text{ is worse than } R_M.$$

18 If the ~~master~~timeTransmitterPriorityVector is better than the portPriorityVector, the PTP Port will be the
 19 ~~MasterPort~~TimeTransmitterPort for the attached gPTP communication path and the portPriorityVector will
 20 be updated. The messagePriorityVector information in Announce messages transmitted by a PTP Port
 21 always includes the first three components of the ~~master~~timeTransmitterPriorityVector of the PTP Port.

22 NOTE—The consistent use of lower numerical values to indicate better information is deliberate as the
 23 ~~MasterPort~~TimeTransmitterPort that is closest to the root, i.e., has a numerically lowest path cost component, is selected
 24 from amongst potential alternatives for any given gPTP communication path. Adopting the conventions that lower
 25 numerical values indicate better information, that where possible more significant priority components are encoded
 26 earlier in the octet sequence of an Announce message, and that earlier octets in the encoding of individual components
 27 are more significant allows concatenated octets that compose a priority vector to be compared as if they were a multiple
 28 octet encoding of a single number, without regard to the boundaries between the encoded components. To reduce the
 29 confusion that naturally arises from having the lesser of two numerical values represent the better of the two, i.e., the one
 30 to be chosen all other factors being equal, this clause uses the following consistent terminology. Relative numeric values
 31 are described as “least,” “lesser,” “equal,” and “greater,” and their comparisons as “less than,” “equal to,” or “greater
 32 than,” while relative time-synchronization spanning tree priorities are described as “best,” “better,” “the same,”
 33 “different,” and “worse” and their comparisons as “better than,” “the same as,” “different from,” and “worse than.” The
 34 operators “<” and “=” represent less than and equal to, respectively. The terms “superior” and “inferior” are used for
 35 comparisons that are not simply based on priority, but can include the fact that the priority vector of a
 36 ~~MasterPort~~TimeTransmitterPort can replace an earlier vector transmitted in an Announce message by the same PTP
 37 Port.

38 10.3.6 PTP Port state assignments

39 *Change 10.3.6.1 as follows:*

1 10.3.6.1 PTP Port state assignments when the ~~BMCA~~BTCA is used

2 The ~~BMCA~~BTCA assigns one of the following PTP Port states to each PTP Port:
3 ~~MasterPort~~TimeTransmitterPort, ~~SlavePort~~TimeReceiverPort, PassivePort, or DisabledPort.

4 The DisabledPort state is assigned if portOper is FALSE (see 10.2.5.12), ptpPortEnabled is FALSE
5 (see 10.2.5.13), or asCapable is FALSE (see 10.2.5.1).

6 A PTP Port for which portOper, ptpPortEnabled, and asCapable are all TRUE has its PTP Port state assigned
7 according to the source and relative priority of the time-synchronization spanning tree portPriorityVector
8 (see 10.3.4 and 10.3.5) as follows:

- 9 a) If the PTP Instance is not the root, the source of the gmPriorityVector is the
10 ~~SlavePort~~TimeReceiverPort.
- 11 b) Each PTP Port whose portPriorityVector is its ~~master~~timeTransmitterPriorityVector is a
12 ~~MasterPort~~TimeTransmitterPort.
- 13 c) Each PTP Port, other than the ~~SlavePort~~TimeReceiverPort, whose portPriorityVector has been
14 received from another PTP Instance or another PTP Port on this PTP Instance is a PassivePort.

15 *Change 10.3.6.2 as follows:*

16 10.3.6.2 PTP Port state assignments when external port configuration is used

17 If external port configuration is used, one of the states ~~MasterPort~~TimeTransmitterPort,
18 ~~SlavePort~~TimeReceiverPort, PassivePort, or DisabledPort is assigned to each PTP Port by an external entity,
19 as described in this subclause.

20 The DisabledPort state is assigned if portOper is FALSE (see 10.2.5.12), ptpPortEnabled is FALSE (see
21 10.2.5.13), or asCapable is FALSE (see 10.2.5.1).

22 The member externalPortConfigurationPortDS.desiredState (see 14.12.2) is used by an external entity to set
23 the state of the respective PTP Port to ~~MasterPort~~TimeTransmitterPort, ~~SlavePort~~TimeReceiverPort, or
24 PassivePort. When this member is set, its value is copied to the per PTP Port local variable portStateInd (see
25 10.3.15.1.1). If portOper, ptpPortEnabled, and asCapable are all TRUE for this PTP Port, the PTP Port state
26 is set equal to the value of externalPortConfigurationPortDS.desiredState by copying the value of this
27 member to the element of the selectedState array (see 10.2.4.20) for this PTP Port.

28 *Change the title of 10.3.7 as follows:*

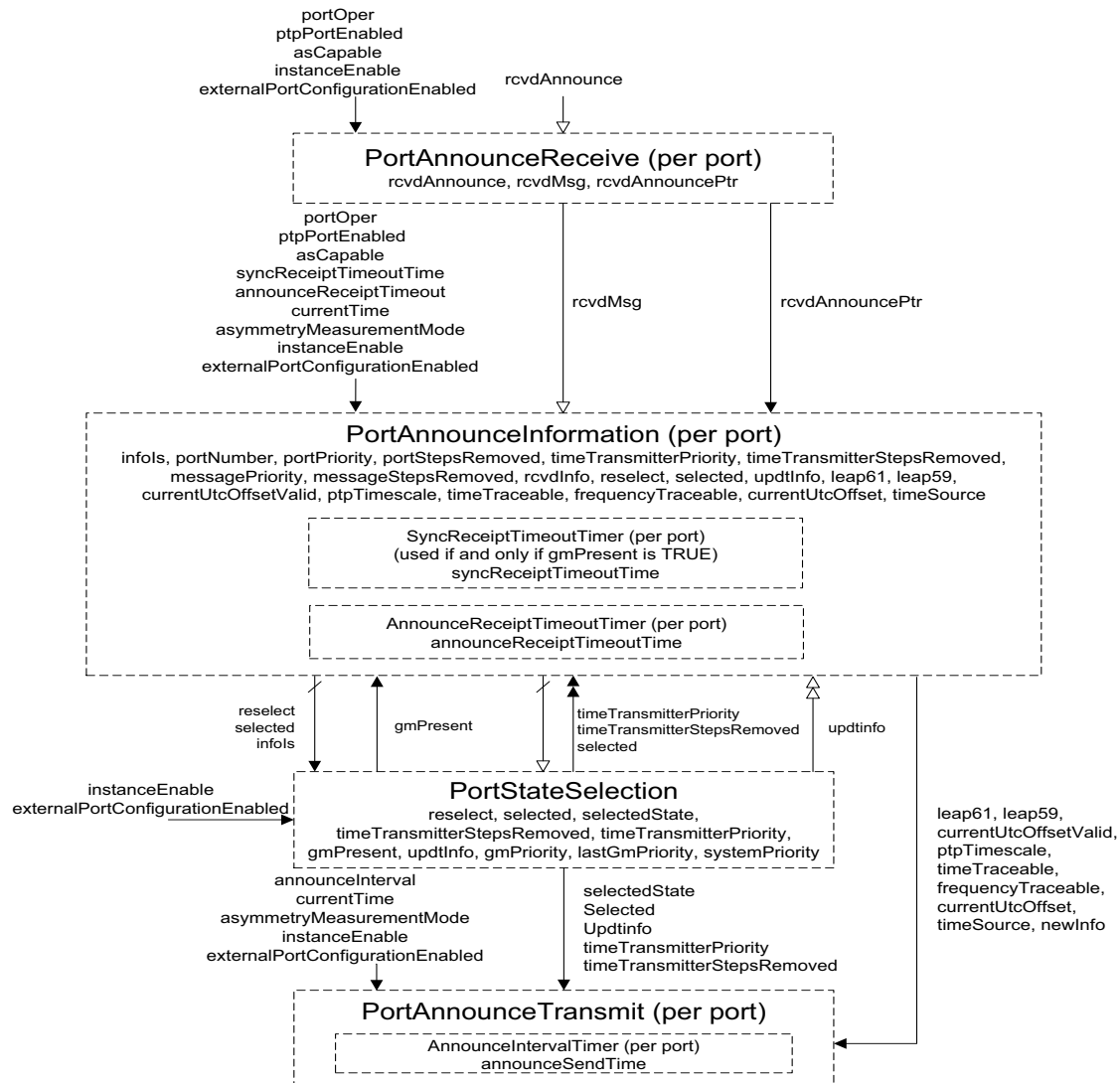
29 10.3.7 Overview of best ~~master~~timeTransmitter clock selection, external port configuration, 30 and announce interval setting state machines

31 *Change 10.3.7.1 as follows:*

32 10.3.7.1 Best ~~master~~timeTransmitter clock selection state machines overview

33 The best ~~master~~timeTransmitter clock selection function in a PTP Instance is specified by a number of
34 cooperating state machines. Figure 10-11 is not itself a state machine, but illustrates the machines, their local
35 variables, their interrelationships, their performance parameters, and the global variables and structures used
36 to communicate between them.

37 *Replace Figure 10-11 with the following figure:*



Notation:

Variables are shown both within the machine where they are principally used and between machines where they are used to communicate information. In the latter case a variety of arrow styles, running from one machine to another, show how each is typically used:

- Not changed by the target machine. Where the machines are both per port, this variable communicates between instances for the same port
- Set (or cleared) by the originating machine, cleared (or set) by the target machine. Where the machines are both per port, this communicates between instances for the same port.
- As above, except that the originating per-port machine instance communicates with multiple port machine instances (by setting or clearing variables owned by those ports).
- As above, except that multiple per-port instances communicate with (an)other instance(s) (by setting or clearing variables owned by the originating ports).

Figure 10-11—Best master time Transmitter clock selection state machines—overview and interrelationships

1 NOTE—The BMCA BTCA state machines are all invoked by the media-independent layer, i.e., by the SiteSync and 2 PortSync entities. The media-dependent layer, i.e., the MD entity, simply takes an Announce message received from the 3 PortSync entity of the same PTP Port and gives it to the next lower layer (e.g., IEEE 802.3, IEEE 802.11). It is the 4 PortSync entity that generates and consumes Announce messages.

1 The following media-independent layer state machines are in Figure 10-11:

- 2 a) PortAnnounceReceive (one instance per PTP Instance, per PTP Port): receives Announce
3 information from the MD entity of the same PTP Port, determines if the Announce message is
4 qualified and, if so, sets the rcvdMsg variable. This state machine is invoked by the PortSync entity
5 of the PTP Port.
- 6 b)
- 7 c) PortAnnounceTransmit (one instance per PTP Instance, per PTP Port): if the PTP Port state is
8 ~~MasterPort~~TimeTransmitterPort, transmits Announce information to the MD entity when an
9 announce interval has elapsed, PTP Port states have been updated, and portPriority and
10 portStepsRemoved information has been updated with newly determined
11 ~~master~~timeTransmitterPriority and ~~master~~timeTransmitterStepsRemoved information. This state
12 machine is invoked by the PortSync entity of the PTP Port and is also used when external port
13 configuration is used.

14

15

16

17 **Change 10.3.7.2 as follows:**

18 **10.3.7.2 External port configuration state machines overview**

19 The external port configuration function in a PTP Instance is specified by a number of cooperating state
20 machines. Figure 10-12 is not itself a state machine, but illustrates the machines, their local variables, their
21 interrelationships, their performance parameters, and the global variables and structures used to
22 communicate between them.

23 NOTE—The external port configuration state machines are all invoked by the media-independent layer and are per PTP
24 Port, i.e., they are invoked by the PortSync entity for the respective PTP Port. The media-dependent layer, i.e., the MD
25 entity, simply takes an Announce message received from the PortSync entity of the same PTP Port and gives it to the
26 next lower layer (e.g., IEEE 802.3, IEEE 802.11). It is the PortSync entity that generates and consumes Announce
27 messages.

28 The following media-independent layer state machines are in Figure 10-12:

- 29 a) PortAnnounceInformationExt (one instance per PTP Instance, per PTP Port): Receives and stores
30 new Announce information received in Announce messages.
- 31 b) PortStateSettingExt (one instance per PTP Instance): Copies the desired PTP Port state for the PTP
32 Port to the respective selectedState array element, updates gmPresent, computes
33 ~~master~~timeTransmitterStepsRemoved, stores the time properties information in the respective global
34 variables, and computes the gmPriorityVector and ~~master~~timeTransmitterPriorityVector.
- 35 c) PortAnnounceTransmit (one instance per PTP Instance, per PTP Port): If the PTP Port state is
36 ~~MasterPort~~TimeTransmitterPort, transmits Announce information to the MD entity when an
37 announce interval has elapsed, PTP Port states have been updated, and portPriority and
38 portStepsRemoved information has been updated with newly determined
39 ~~master~~timeTransmitterPriority and ~~master~~timeTransmitterStepsRemoved information. This state
40 machine is invoked by the PortSync entity of the PTP Port and is also used when the ~~BMCABTCA~~
41 is used.

1 **Replace Figure 10-12 with the following figure:**

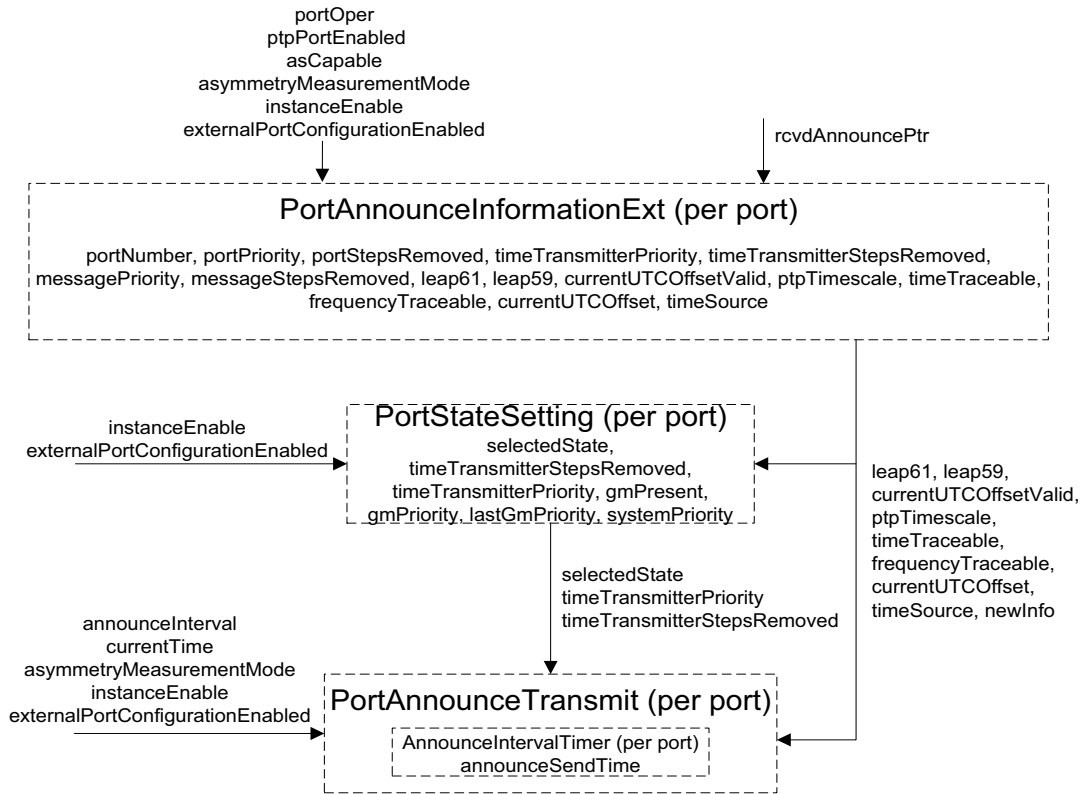


Figure 10-12—External port configuration state machines—overview and interrelationships

2 **Change 10.3.8 as follows:**

3 **10.3.8 Overview of global variables used by best ~~master~~timeTransmitter clock selection,**
4 **external port configuration, and announce interval setting state machines**

5 Subclauses 10.3.9 and 10.3.10 define global variables used by best ~~master~~timeTransmitter clock selection,
6 external port configuration, and announce interval setting state machines whose scopes are as follows:

- 7 — Per PTP Instance (i.e., per domain)
- 8 — Per PTP Instance, per PTP Port
- 9 — Instance used by CMLDS (see 11.2.17) (i.e., variable is common across all LinkPorts)
- 10 — Instance used by CMLDS, per LinkPort

11 Table 10-3 summarizes the scope of each global variable of 10.3.9 and 10.3.10.

12

13

14 **10.3.9 Per PTP Instance global variables**

15 **Change 10.3.9.1 as follows:**

**Table 10-3—Summary of scope of global variables used by
 best ~~master~~timeTransmitter clock selection, external port configuration, and announce
 interval setting state machines (see 10.3.9 and 10.3.10)**

Variable name	Subclause of definition	Per PTP Instance (i.e., per domain)	Per PTP Instance, per PTP Port	Instance used by CMLDS (i.e., variable is common across all LinkPorts)	Instance used by CMLDS, per LinkPort
reselect	10.3.9.1	Yes	No	No	No
selected	10.3.9.2	Yes	No	No	No
master timeTransmitterStepsRemoved	10.3.9.3	Yes	No	No	No
leap61	10.3.9.4	Yes	No	No	No
leap59	10.3.9.5	Yes	No	No	No
currentUtcOffsetValid	10.3.9.6	Yes	No	No	No
ptpTimescale	10.3.9.7	Yes	No	No	No
timeTraceable	10.3.9.8	Yes	No	No	No
frequencyTraceable	10.3.9.9	Yes	No	No	No
currentUtcOffset	10.3.9.10	Yes	No	No	No
timeSource	10.3.9.11	Yes	No	No	No
sysLeap61	10.3.9.12	Yes	No	No	No
sysLeap59	10.3.9.13	Yes	No	No	No
sysCurrentUtcOffsetValid	10.3.9.14	Yes	No	No	No
sysPtpTimescale	10.3.9.15	Yes	No	No	No
sysTimeTraceable	10.3.9.16	Yes	No	No	No
sysFrequencyTraceable	10.3.9.17	Yes	No	No	No
sysCurrentUtcOffset	10.3.9.18	Yes	No	No	No
sysTimeSource	10.3.9.19	Yes	No	No	No
systemPriority	10.3.9.20	Yes	No	No	No
gmPriority	10.3.9.21	Yes	No	No	No
lastGmPriority	10.3.9.22	Yes	No	No	No
pathTrace	10.3.9.23	Yes	No	No	No
externalPortConfigurationEnabled	10.3.9.24	Yes	No	No	No
lastAnnouncePort	10.3.9.25	Yes	No	No	No
announceReceiptTimeoutTimeInterval	10.3.10.1	No	Yes	No	No
announceSlowdown	10.3.10.2	No	Yes	No	No
oldAnnounceInterval	10.3.10.3	No	Yes	No	No
infoIs	10.3.10.4	No	Yes	No	No
master timeTransmitterPriority	10.3.10.5	No	Yes	No	No

Table 10-3—Summary of scope of global variables used by best master time Transmitter clock selection, external port configuration, and announce interval setting state machines (see 10.3.9 and 10.3.10) (continued)

Variable name	Subclause of definition	Per PTP Instance (i.e., per domain)	Per PTP Instance, per PTP Port	Instance used by CMLDS (i.e., variable is common across all LinkPorts)	Instance used by CMLDS, per LinkPort
currentLogAnnounceInterval	10.3.10.6	No	Yes	No	No
initialLogAnnounceInterval	10.3.10.7	No	Yes	No	No
announceInterval	10.3.10.8	No	Yes	No	No
messageStepsRemoved	10.3.10.9	No	Yes	No	No
newInfo	10.3.10.10	No	Yes	No	No
portPriority	10.3.10.11	No	Yes	No	No
portStepsRemoved	10.3.10.12	No	Yes	No	No
rcvdAnnouncePtr	10.3.10.13	No	Yes	No	No
rcvdMsg	10.3.10.14	No	Yes	No	No
updtInfo	10.3.10.15	No	Yes	No	No
annLeap61	10.3.10.16	No	Yes	No	No
annLeap59	10.3.10.17	No	Yes	No	No
annCurrentUtcOffsetValid	10.3.10.18	No	Yes	No	No
annPtpTimescale	10.3.10.19	No	Yes	No	No
annTimeTraceable	10.3.10.20	No	Yes	No	No
annFrequencyTraceable	10.3.10.21	No	Yes	No	No
annCurrentUtcOffset	10.3.10.22	No	Yes	No	No
annTimeSource	10.3.10.23	No	Yes	No	No
receivedPathTrace	10.3.10.24	No	Yes	No	No

10.3.9.1 reselect: A Boolean array of length numberPorts+1 (see 8.6.2.8). Setting reselect[j], where $0 \leq j \leq \text{numberPorts}$, to TRUE causes the STATE_SELECTION block of the PortStateSelection state machine (see 10.3.13) to be re-entered, which in turn causes the PTP Port state of each PTP Port of the PTP Instance to be updated (via the function updtStatesTree(); see 10.3.13.2.4). This variable is used only by the BMCA BTCA, i.e., not by the explicit port state configuration option.

6 Change 10.3.9.2 as follows:

10.3.9.2 selected: A Boolean array of length numberPorts+1 (see 8.6.2.8). selected[j], where $0 \leq j \leq \text{numberPorts}$, is set to TRUE immediately after the PTP Port states of all the ports are updated. This value indicates to the PortAnnounceInformation state machine (see 10.3.12) that it can update the portPriorityVector and other variables for each PTP Port. This variable is used by both the BMCA BTCA and the explicit port state configuration option; however, its value does not impact the explicit port state configuration option (see the NOTE in 10.3.16.3).

1 NOTE—Array elements 0 of the reselect and selected arrays are not used, except that the function clearReselectTree()
2 sets reselect[0] to FALSE when it sets the entire array to zero and the function setSelectedTree() sets selected[0] to
3 TRUE when it sets the entire array to TRUE. This action is taken only for convenience, so that array element j can
4 correspond to PTP Port j. Note also that, in contrast, selectedState[0] is not used (see 10.2.4.20).

5 **Change 10.3.9.3 as follows:**

6 **10.3.9.3 ~~master~~timeTransmitterStepsRemoved:** The value of stepsRemoved for the PTP Instance, after
7 the PTP Port states of all the ports have been updated (see 10.3.13.2.4 for details on the computation of
8 ~~master~~timeTransmitterStepsRemoved). The data type for ~~master~~timeTransmitterStepsRemoved is
9 UInteger16. This variable is used by both the ~~BMCABTCA~~ and the explicit port state configuration option.

10 **Change 10.3.9.4 as follows:**

11 **10.3.9.4 leap61:** A Boolean variable whose value is TRUE if the last minute of the current UTC day, relative
12 to the current Grandmaster Clock, contains 61 s and FALSE if the last minute of the current UTC day does
13 not contain 61 s. This variable is used by both the ~~BMCABTCA~~ and the explicit port state configuration
14 option.

15 **Change 10.3.9.5 as follows:**

16 **10.3.9.5 leap59:** A Boolean variable whose value is TRUE if the last minute of the current UTC day, relative
17 to the current Grandmaster Clock, contains 59 s and FALSE if the last minute of the current UTC day does
18 not contain 59 s. This variable is used by both the ~~BMCABTCA~~ and the explicit port state configuration
19 option.

20 **Change 10.3.9.6 as follows:**

21 **10.3.9.6 currentUtcOffsetValid:** A Boolean variable whose value is TRUE if currentUtcOffset (see
22 10.3.9.10), relative to the current Grandmaster Clock, is known to be correct and FALSE if currentUtcOffset
23 is not known to be correct. This variable is used by both the ~~BMCABTCA~~ and the explicit port state
24 configuration option.

25 **Change 10.3.9.7 as follows:**

26 **10.3.9.7 ptpTimescale:** A Boolean variable whose value is TRUE if the timescale of the current
27 Grandmaster Clock is PTP (see 8.2.1) and FALSE if the timescale is ARB. This variable is used by both the
28 ~~BMCABTCA~~ and the explicit port state configuration option.

29 **Change 10.3.9.8 as follows:**

30 **10.3.9.8 timeTraceable:** A Boolean variable whose value is TRUE if both
31 ~~clockSlave~~ClockTimeReceiverTime [i.e., the synchronized time maintained at the ~~slave~~timeReceiver (see
32 10.2.4.3)] and currentUtcOffset (see 10.3.9.10), relative to the current Grandmaster Clock, are traceable to a
33 primary reference and FALSE if one or both are not traceable to a primary reference. This variable is used by
34 both the ~~BMCABTCA~~ and the explicit port state configuration option.

35 **Change 10.3.9.9 as follows:**

36 **10.3.9.9 frequencyTraceable:** A Boolean variable whose value is TRUE if the frequency that determines
37 ~~clockSlave~~ClockTimeReceiverTime, i.e., the frequency of the LocalClockEntity multiplied by the most

1 recently computed rateRatio by the PortSyncSyncReceive state machine (see 10.2.8.1.4), is traceable to a
2 primary reference and FALSE if this frequency is not traceable to a primary reference. This variable is used
3 by both the ~~BMCABTCA~~ and the explicit port state configuration option.

4 *Change 10.3.9.10 as follows:*

5 **10.3.9.10 currentUtcOffset:** The difference between TAI time and UTC time, i.e., TAI time minus UTC
6 time, in seconds, and relative to the current Grandmaster Clock, when known. Otherwise, the value has no
7 meaning (see 10.3.9.6). The data type for currentUtcOffset is Integer16. This variable is used by both the
8 ~~BMCABTCA~~ and the explicit port state configuration option.

9 NOTE—For example, 2006-01-01 00:00:00 UTC and 2006-01-01 00:00:33 TAI represent the same instant of time. At
10 this time, currentUtcOffset was equal to 33 s.³

11 *Change 10.3.9.11 as follows:*

12 **10.3.9.11 timeSource:** The value of the timeSource attribute of the current Grandmaster PTP Instance. The
13 data type for timeSource is TimeSource (see 8.6.2.7). This variable is used by both the ~~BMCABTCA~~ and the
14 explicit port state configuration option.

15 *Change 10.3.9.12 as follows:*

16 **10.3.9.12 sysLeap61:** A Boolean variable whose value is TRUE if the last minute of the current UTC day,
17 relative to the ~~ClockMasterClockTimeTransmitter~~ entity of this PTP Instance, contains 61 s and FALSE if
18 the last minute of the current UTC day does not contain 61 s. This variable is used by both the ~~BMCABTCA~~
19 and the explicit port state configuration option.

20 *Change 10.3.9.13 as follows:*

21 **10.3.9.13 sysLeap59:** A Boolean variable whose value is TRUE if the last minute of the current UTC day,
22 relative to the ~~ClockMasterClockTimeTransmitter~~ entity of this PTP Instance, contains 59 s and FALSE if
23 the last minute of the current UTC day does not contain 59 s. This variable is used by both the ~~BMCABTCA~~
24 and the explicit port state configuration option.

25 *Change 10.3.9.14 as follows:*

26 **10.3.9.14 sysCurrentUtcOffsetValid:** A Boolean variable whose value is TRUE if currentUtcOffset (see
27 10.3.9.10), relative to the ~~ClockMasterClockTimeTransmitter~~ entity of this PTP Instance, is known to be
28 correct and FALSE if currentUtcOffset is not known to be correct. This variable is used by both the
29 ~~BMCABTCA~~ and the explicit port state configuration option.

30 *Change 10.3.9.15 as follows:*

31 **10.3.9.15 sysPtpTimescale:** A Boolean variable whose value is TRUE if the timescale of the
32 ~~ClockMasterClockTimeTransmitter~~ entity of this PTP Instance is PTP (see 8.2.1) and FALSE if the
33 timescale of the ~~ClockMasterClockTimeTransmitter~~ entity of this PTP Instance is ARB. This variable is
34 used by both the ~~BMCABTCA~~ and the explicit port state configuration option.

³Note also that a leap second was not added at the end of the last UTC minute of 2005-12-31.

1 **Change 10.3.9.16 as follows:**

2 **10.3.9.16 sysTimeTraceable:** A Boolean variable whose value is TRUE if both
3 ~~masterTime~~~~timeTransmitterTime~~ [i.e., the time maintained by the ~~ClockMaster~~~~ClockTimeTransmitter~~ entity
4 of this PTP Instance (see 10.2.4.21)] and currentUtcOffset (see 10.3.9.10), relative to the
5 ~~ClockMaster~~~~ClockTimeTransmitter~~ entity of this PTP Instance, are traceable to a primary reference and
6 FALSE if one or both are not traceable to a primary reference. This variable is used by both the
7 ~~BMCABTCA~~ and the explicit port state configuration option.

8 **Change 10.3.9.17 as follows:**

9 **10.3.9.17 sysFrequencyTraceable:** A Boolean variable whose value is TRUE if the frequency that
10 determines ~~masterTime~~~~timeTransmitterTime~~ of the ~~ClockMaster~~~~ClockTimeTransmitter~~ entity of this PTP
11 Instance, i.e., the frequency of the LocalClockEntity multiplied by the most recently computed gmRateRatio
12 by the ~~ClockMasterSyncReceive~~~~ClockTimeTransmitterSyncReceive~~ state machine (see 10.2.4.14 and
13 10.2.11), is traceable to a primary reference and FALSE if this frequency is not traceable to a primary
14 reference. This variable is used by both the ~~BMCABTCA~~ and the explicit port state configuration option.

15 **Change 10.3.9.18 as follows:**

16 **10.3.9.18 sysCurrentUtcOffset:** The difference between TAI time and UTC time, i.e., TAI time minus UTC
17 time, in seconds, and relative to the ~~ClockMaster~~~~ClockTimeTransmitter~~ entity of this PTP Instance, when
18 known. Otherwise, the value has no meaning (see 10.3.9.14). The data type for sysCurrentUtcOffset is
19 Integer16. This variable is used by both the ~~BMCABTCA~~ and the explicit port state configuration option.

20 NOTE—See the NOTE in 10.3.9.10 for more detail on the sign convention.

21 **Change 10.3.9.19 as follows:**

22 **10.3.9.19 sysTimeSource:** The value of the timeSource attribute of the ~~ClockMaster~~~~ClockTimeTransmitter~~
23 entity of this PTP Instance (see 8.6.2.7). The data type for sysTimeSource is TimeSource.

24 **Change 10.3.9.22 as follows:**

25 **10.3.9.22 lastGmPriority:** The previous gmPriorityVector for the PTP Instance, prior to the most recent
26 invocation of the PortStateSelection state machine. The data type for lastGmPriority is UInteger224 (see
27 10.3.4). lastGmPriority is used only by the ~~BMCABTCA~~, i.e., not by the explicit port state configuration
28 option.

29 **Change 10.3.9.23 as follows:**

30 **10.3.9.23 pathTrace:** An array that contains the clockIdentities of the successive PTP Instances that receive,
31 process, and send Announce messages. The data type for pathTrace is ClockIdentity[N], where N is the
32 number of PTP Instances, including the Grandmaster PTP Instance, that the Announce information has
33 traversed. This variable is used by both the ~~BMCABTCA~~ and the explicit port state configuration option.

34 NOTE 1—N is equal to stepsRemoved+1 (see 10.6.3.2.6). The size of the pathTrace array can change after each
35 reception of an Announce message, up to the maximum size for the respective medium. For example, the maximum
36 value of N for a full-duplex IEEE 802.3 medium is 179. This is obtained from the fact that the number of PTP octets in
37 an Announce message is $68 + 8N$, where N is the number of entries in the pathTrace array (see 10.6.3.1 and Table 10-
38 11), and the maximum payload size for full-duplex IEEE 802.3 media is 1500 octets. Setting $68 + 8N = 1500$, and
39 solving for N gives $N = 179$.

1 NOTE 2—The current behavior for the path trace feature is documented in 10.3.11.2.1 and 10.3.16.2.1 and is as follows:
 2 — Item c) of 10.3.11.2.1, the description of the qualifyAnnounce() function of the PortAnnounceReceive state
 3 machine, indicates that if a path trace TLV is present and one of the elements of the pathSequence array field is
 4 equal to the clockIdentity of the clock where the TLV is being processed, the Announce message is not
 5 qualified.
 6 — Item d) of 10.3.11.2.1 (qualifyAnnounce() function) indicates that if the Announce message is qualified and a
 7 path trace TLV is present, the pathSequence array of the TLV is copied to the pathTrace array (described in this
 8 subclause) and the clockIdentity of the PTP Instance that processes the Announce message is appended to the
 9 array. However, if a path trace TLV is not present, the path trace array is empty.
 10 — Item f) of 10.3.16.2.1, the description of the txAnnounce() function of the PortAnnounceTransmit state
 11 machine, indicates that a path trace TLV is constructed and appended to an Announce message just before the
 12 Announce message is transmitted only if the pathTrace array is not empty and appending the TLV does not
 13 cause the media-dependent layer frame to exceed any respective maximum size. If appending the TLV does
 14 cause a respective maximum frame size to be exceeded or if the pathTrace array is empty, the TLV is not
 15 appended.
 16 — As a result of the behaviors of the qualifyAnnounce() and txAnnounce() functions described in this note, the
 17 path trace feature is not used, i.e., a path trace TLV is not appended to an Announce message and the pathTrace
 18 array is empty, once appending a clockIdentity to the TLV would cause the frame carrying the Announce
 19 message to exceed its maximum size.

20 NOTE 3—Once the value of stepsRemoved of an Announce message reaches 255, the Announce message is not
 21 qualified [see item b) of 10.3.11.2.1].

22 *Change 10.3.9.24 as follows:*

23 **10.3.9.24 externalPortConfigurationEnabled:** A variable whose value indicates whether PTP Port states
 24 are externally configured or determined by the **BMCABTCA**. The data type shall be Boolean. The value
 25 TRUE indicates that the PTP Port states are externally configured; the value FALSE indicates that the PTP
 26 Port states are determined by the **BMCABTCA**. This variable is used by both the **BMCABTCA** and the
 27 external port configuration option.

28 *Change 10.3.9.25 as follows:*

29 **10.3.9.25 lastAnnouncePort:** The PTP Port number of the PTP Port on which the most recent Announce
 30 message was received. This variable is used by the PortAnnounceInformationExt and PortStateSettingExt
 31 state machines for the external port configuration option. This variable is not used by the **BMCABTCA**. The
 32 data type for this variable is UInteger16.

33 **10.3.10 Per-port global variables**

34 *Change 10.3.10.1 as follows:*

35 **10.3.10.1 announceReceiptTimeoutTimeInterval:** The time interval after which announce receipt timeout
 36 occurs if an Announce message has not been received during the interval. The value of
 37 announceReceiptTimeoutTimeInterval is equal to announceReceiptTimeout (see 10.7.3.2) multiplied by the
 38 announceInterval (see 10.3.10.8) for the PTP Port at the other end of the link to which this PTP Port is
 39 attached. The value of announceInterval for the PTP Port at the other end of the link is computed from
 40 logMessageInterval of the received Announce message (see 10.6.2.2.14). The data type for
 41 announceReceiptTimeoutTimeInterval is UScaledNs. This variable is used only by the **BMCABTCA**, i.e.,
 42 not by the explicit port state configuration option.

43 *Change 10.3.10.2 as follows:*

10.3.10.2 announceSlowdown: A Boolean that is set to TRUE if the AnnounceIntervalSetting state machine (see Figure 10-19 in item 10.3.17.3) receives a TLV that requests a larger Announce message transmission interval (see 10.7.2.2) and FALSE otherwise. When announceSlowdown is set to TRUE, the PortAnnounceTransmit state machine (see Figure 10-18) continues to send Announce messages at the old (i.e., faster) rate until a number of Announce messages equal to announceReceiptTimeout (see 10.7.3.2) have been sent, but with the logMessageInterval field of the PTP common header set equal to the new announce interval (i.e., corresponding to the slower rate). After announceReceiptTimeout Announce messages have been sent, subsequent Announce messages are sent at the new (i.e., slower) rate and with the logMessageInterval field of the PTP common header set to the new announce interval. This variable is used by both the **BMCA BTCA** and the explicit port state configuration option. When announceSlowdown is set to FALSE, the PortAnnounceTransmit state machine immediately sends Announce messages at the new (i.e., faster or the same) rate.

NOTE—If a receiver of Announce messages requests a slower rate, the receiver will continue to use the upstream announceInterval value, which it obtains from the logMessageInterval field of received Announce messages, until it receives an Announce message where that value has changed. If, immediately after requesting a slower Announce message rate, up to announceReceiptTimeout minus one consecutive Announce messages sent to the receiver are lost, announce receipt timeout could occur if the sender had changed to the slower rate immediately. Delaying the slowing down of the sending rate of Announce messages for announceReceiptTimeout messages prevents announce receipt timeout from occurring until at least announceReceiptTimeout Announce messages have been lost. Note that networks with high packet loss can still experience announce receipt timeout under high-packet-loss conditions; however, the announce receipt timeout condition occurs only after at least announceReceiptTimeout Announce messages have been lost.

Change 10.3.10.3 as follows:

10.3.10.3 oldAnnounceInterval: The saved value of the previous announce interval, when a new announce interval is requested via a Signaling message that contains a message interval request TLV. The data type for oldAnnounceInterval is UScaledNs. This variable is used by both the **BMCA BTCA** and the explicit port state configuration option.

Change 10.3.10.4 as follows:

10.3.10.4 infoIs: An Enumeration2 that takes the values Received, Mine, Aged, or Disabled to indicate the origin and state of the PTP Port's time-synchronization spanning tree information:

- a) If infoIs is Received, the PTP Port has received current information (i.e., announce receipt timeout has not occurred and, if gmPresent is TRUE, sync receipt timeout also has not occurred) from the **masterTimeTransmitter** PTP Instance for the attached gPTP communication path.
- b) If infoIs is Mine, information for the PTP Port has been derived from the **SlavePortTimeReceiverPort** for the PTP Instance (with the addition of **SlavePortTimeReceiverPort** stepsRemoved). This includes the possibility that the **SlavePortTimeReceiverPort** is the PTP Port whose portNumber is 0, i.e., the PTP Instance is the root of the gPTP domain.
- c) If infoIs is Aged, announce receipt timeout or, when gmPresent is TRUE, sync receipt timeout has occurred.
- d) If portOper, ptpPortEnabled, and asCapable are not all TRUE, infoIs is Disabled.

The variable infoIs is used only by the **BMCA BTCA**, i.e., not by the explicit port state configuration option.

Change 10.3.10.5 as follows:

10.3.10.5 masterTimeTransmitterPriority: The **masterTimeTransmitterPriorityVector** for the PTP Port. The data type for **masterTimeTransmitterPriority** is UInteger224 (see 10.3.4). This variable is used by both the **BMCA BTCA** and the explicit port state configuration option.

1 **Change 10.3.10.6 as follows:**

2 **10.3.10.6 currentLogAnnounceInterval:** The current value of the logarithm to base 2 of the mean time
3 interval, in seconds, between the sending of successive Announce messages (see 10.7.2.2). This value is set
4 in the AnnounceIntervalSetting state machine (see 10.3.17). The data type for currentLogAnnounceInterval
5 is Integer8. This variable is used by both the [BMCA](#)[BTCA](#) and the explicit port state configuration option.

6 **Change 10.3.10.7 as follows:**

7 **10.3.10.7 initialLogAnnounceInterval:** The initial value of the logarithm to base 2 of the mean time
8 interval, in seconds, between the sending of successive Announce messages (see 10.7.2.2). The data type for
9 initialLogAnnounceInterval is Integer8. This variable is used by both the [BMCA](#)[BTCA](#) and the explicit port
10 state configuration option.

11 **Change 10.3.10.8 as follows:**

12 **10.3.10.8 announceInterval:** A variable containing the mean Announce message transmission interval for
13 the PTP Port. This value is set in the AnnounceIntervalSetting state machine (see 10.3.17). The data type for
14 announceInterval is UScaledNs. This variable is used by both the [BMCA](#)[BTCA](#) and the explicit port state
15 configuration option.

16 **Change 10.3.10.9 as follows:**

17 **10.3.10.9 messageStepsRemoved:** The value of stepsRemoved contained in the received Announce
18 information. The data type for messageStepsRemoved is UInteger16. This variable is used by both the
19 [BMCA](#)[BTCA](#) and the explicit port state configuration option.

20 **Change 10.3.10.10 as follows:**

21 **10.3.10.10 newInfo:** A Boolean variable that is set to cause a PTP Port to transmit Announce information;
22 specifically, it is set when an announce interval has elapsed (see Figure 10-18), PTP Port states have been
23 updated, and portPriority and portStepsRemoved information has been updated with newly determined
24 ~~master~~[timeTransmitter](#)Priority and ~~master~~[timeTransmitter](#)StepsRemoved information. This variable is used
25 by both the [BMCA](#)[BTCA](#) and the explicit port state configuration option.

26 **Change 10.3.10.11 as follows:**

27 **10.3.10.11 portPriority:** The portPriorityVector for the PTP Port. The data type for portPriority is
28 UInteger224 (see 10.3.4). This variable is used only by the [BMCA](#)[BTCA](#), i.e., not by the explicit port state
29 configuration option.

30 **Change 10.3.10.12 as follows:**

31 **10.3.10.12 portStepsRemoved:** The value of stepsRemoved for the PTP Port. portStepsRemoved is set
32 equal to ~~master~~[timeTransmitter](#)StepsRemoved (see 10.3.9.3) after ~~master~~[timeTransmitter](#)StepsRemoved is
33 updated. The data type for portStepsRemoved is UInteger16. This variable is used by both the [BMCA](#)[BTCA](#)
34 and the explicit port state configuration option.

35 **Change 10.3.10.13 as follows:**

1 **10.3.10.13 rcvdAnnouncePtr:** A pointer to a structure that contains the fields of a received Announce
2 message. This variable is used by both the **BMCA**BTCA and the explicit PTP Port state configuration
3 option.

4 ***Change 10.3.10.14 as follows:***

5 **10.3.10.14 rcvdMsg:** A Boolean variable that is TRUE if a received Announce message is qualified and
6 FALSE if it is not qualified. This variable is used only by the **BMCA**BTCA, i.e., not by the explicit port state
7 configuration option.

8 ***Change 10.3.10.15 as follows:***

9 **10.3.10.15 updtInfo:** A Boolean variable that is set to TRUE to indicate that the PortAnnounceInformation
10 state machine (see 10.3.12) should copy the newly determined ~~master~~timeTransmitterPriority and
11 ~~master~~timeTransmitterStepsRemoved to portPriority and portStepsRemoved, respectively. This variable is
12 used by both the **BMCA**BTCA and the explicit port state configuration option; however, its value does not
13 impact the explicit port state configuration option (see the NOTE in 10.3.16.3).

14 ***Change 10.3.10.16 as follows:***

15 **10.3.10.16 annLeap61:** A global variable in which the leap61 flag (see 10.6.2.2.8) of a received Announce
16 message is saved. The data type for annLeap61 is Boolean. This variable is used by both the **BMCA**BTCA
17 and the explicit port state configuration option.

18 ***Change 10.3.10.17 as follows:***

19 **10.3.10.17 annLeap59:** A global variable in which the leap59 flag (see 10.6.2.2.8) of a received Announce
20 message is saved. The data type for annLeap59 is Boolean. This variable is used by both the **BMCA**BTCA
21 and the explicit port state configuration option.

22 ***Change 10.3.10.18 as follows:***

23 **10.3.10.18 annCurrentUtcOffsetValid:** A global variable in which the currentUtcOffsetValid flag (see
24 10.6.2.2.8) of a received Announce message is saved. The data type for annCurrentUtcOffsetValid is
25 Boolean. This variable is used by both the **BMCA**BTCA and the explicit port state configuration option.

26 ***Change 10.3.10.19 as follows:***

27 **10.3.10.19 annPtpTimescale:** A global variable in which the ptpTimescale flag (see 10.6.2.2.8) of a
28 received Announce message is saved. The data type for annPtpTimescale is Boolean. This variable is used
29 by both the **BMCA**BTCA and the explicit port state configuration option.

30 ***Change 10.3.10.20 as follows:***

31 **10.3.10.20 annTimeTraceable:** A global variable in which the timeTraceable flag (see 10.6.2.2.8) of a
32 received Announce message is saved. The data type for annTimeTraceable is Boolean. This variable is used
33 by both the **BMCA**BTCA and the explicit port state configuration option.

34 ***Change 10.3.10.21 as follows:***

1 **10.3.10.21 annFrequencyTraceable:** A global variable in which the frequencyTraceable flag (see
2 10.6.2.2.8) of a received Announce message is saved. The data type for annFrequencyTraceable is Boolean.
3 This variable is used by both the ~~BMCA~~BTCA and the explicit port state configuration option.

4 *Change 10.3.10.22 as follows:*

5 **10.3.10.22 annCurrentUtcOffset:** A global variable in which the currentUtcOffset field (see 10.6.3.2.1) of
6 a received Announce message is saved. The data type for annCurrentUtcOffset is Integer16. This variable is
7 used by both the ~~BMCA~~BTCA and the explicit port state configuration option.

8 *Change 10.3.10.23 as follows:*

9 **10.3.10.23 annTimeSource:** A global variable in which the timeSource field (see 10.6.3.2.1) of a received
10 Announce message is saved. The data type for annTimeSource is TimeSource (see 8.6.2.7). This variable is
11 used by both the ~~BMCA~~BTCA and the explicit port state configuration option.

1 10.3.12 PortAnnounceInformation state machine

2 10.3.12.2 State machine functions

3 *Change 10.3.12.2.1as follows:*

4 **10.3.12.2.1 revInfo (revdAnnouncePtr):** Decodes the messagePriorityVector (see 10.3.4 and 10.3.5) and
 5 stepsRemoved 10.6.3.2.6) field from the Announce information pointed to by revdAnnouncePtr
 6 (see 10.3.10.13), and then:

- 7 a) Stores the messagePriorityVector and stepsRemoved field value in messagePriorityPAI and
 8 messageStepsRemoved, respectively, and then:
 - 9 1) If the received message conveys the PTP Port state ~~MasterPort~~TimeTransmitterPort and the
 10 messagePriorityVector is the same as the portPriorityVector of the PTP Port, returns
 11 Repeated~~Master~~TimeTransmitterInfo; else
 - 12 2) If the received message conveys the PTP Port state ~~MasterPort~~TimeTransmitterPort and the
 13 messagePriorityVector is superior to the portPriorityVector of the PTP Port, returns
 14 Superior~~Master~~TimeTransmitterInfo; else
 - 15 3) If the received message conveys the PTP Port state ~~MasterPort~~TimeTransmitterPort, and the
 16 messagePriorityVector is worse than the portPriorityVector of the PTP Port, returns
 17 Inferior~~Master~~TimeTransmitterInfo; else
 - 18 4) Returns OtherInfo.

19 NOTE—In accordance with 10.3.5, the messagePriorityVector is superior to the portPriorityVector of the PTP Port if,
 20 and only if, the messagePriorityVector is better than the portPriorityVector, or the Announce message has been
 21 transmitted from the same ~~master~~timeTransmitter PTP Instance and ~~MasterPort~~TimeTransmitterPort as the
 22 portPriorityVector. In steps a) 1) to a) 4) in this subclause, revInfo() first checks whether the messagePriorityVector and
 23 portPriorityVector are the same (and the received message conveys the PTP Port state ~~MasterPort~~TimeTransmitterPort),
 24 before checking whether the messagePriorityVector is superior to the portPriorityVector. The reason for this sequence is
 25 that Repeated~~Master~~TimeTransmitterInfo needs to be returned if the messagePriorityVector and portPriorityVector are
 26 the same, while Superior~~Master~~TimeTransmitterInfo needs to be returned in other instances where the Announce
 27 message has been transmitted from the same ~~master~~timeTransmitter PTP Instance and ~~MasterPort~~TimeTransmitterPort
 28 as the portPriorityVector (if the test for Superior~~Master~~TimeTransmitterInfo were done before the test for
 29 Repeated~~Master~~TimeTransmitterInfo, Superior~~Master~~TimeTransmitterInfo would be returned when
 30 Repeated~~Master~~TimeTransmitterInfo is desired).

31 *Change 10.3.12.3 as follows:*

32 10.3.12.3 State diagram

33 The PortAnnounceInformation state machine shall implement the function specified by the state diagram in
 34 Figure 10-14, the local variables specified in 10.3.12.1, the functions specified in 10.3.12.2, and the relevant
 35 global variables specified in 10.2.4, 10.2.5, 10.3.9, 10.3.10, and 11.2.13. This state machine is used only if
 36 externalPortConfigurationEnabled is FALSE (if this variable is TRUE, the PortAnnounceInformationExt
 37 state machine is used instead). The state machine receives new qualified Announce information from the
 38 PortAnnounceReceive state machine (see 10.3.11) of the same PTP Port and determines if the Announce
 39 information is better than the current best ~~master~~timeTransmitter information it knows. The state machine
 40 also updates the current best ~~master~~timeTransmitter information when it receives updated PTP Port state
 41 information from the PortStateSelection state machine (see 10.3.13) and when announce receipt timeout or,
 42 when gmPresent is TRUE, sync receipt timeout occurs.

1 Replace Figure 10-14 with the following figure:

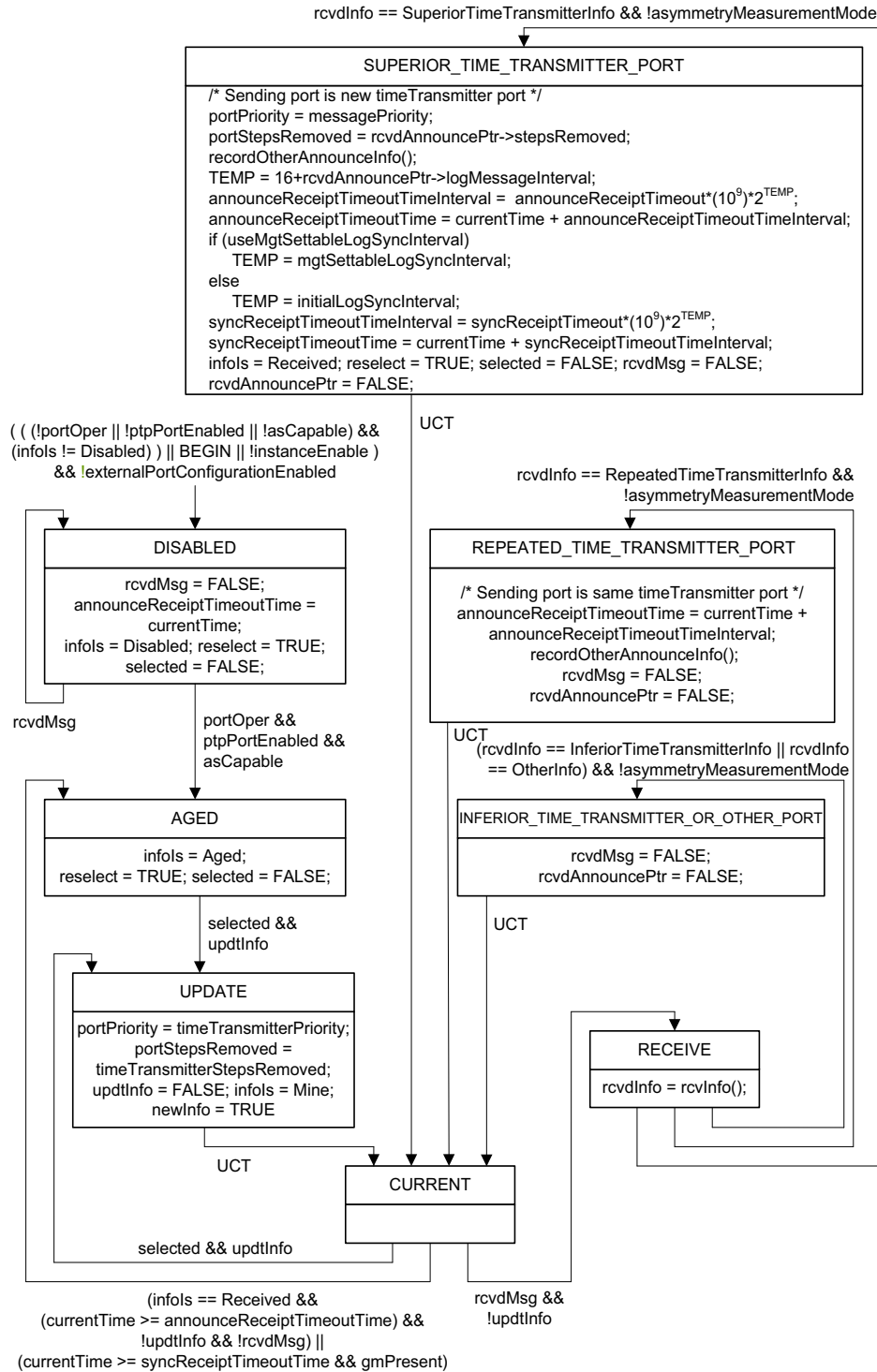


Figure 10-14—PortAnnounceInformation state machine

1 10.3.13 PortStateSelection state machine

2 10.3.13.2 State machine functions

3 *Change 10.3.13.2.4 as follows:*

4 **10.3.13.2.4 updtStatesTree():** Performs the following operations (see 10.3.4 and 10.3.5 for details on the
5 priority vectors):

- 6 a) Computes the gmPathPriorityVector for each PTP Port that has a portPriorityVector and for which
7 neither announce receipt timeout nor, if gmPresent is TRUE, sync receipt timeout have occurred,
- 8 b) Saves gmPriority (see 10.3.9.21) in lastGmPriority (see 10.3.9.22), computes the gmPriorityVector
9 for the PTP Instance and saves it in gmPriority, chosen as the best of the set consisting of the
10 systemPriorityVector (for this PTP Instance) and the gmPathPriorityVector for each PTP Port for
11 which the clockIdentity of the ~~master~~timeTransmitter port is not equal to thisClock (see 10.2.4.22),
- 12 c) Sets the per PTP Instance global variables leap61, leap59, currentUtcOffsetValid, ptpTimescale,
13 timeTraceable, frequencyTraceable, currentUtcOffset, and timeSource as follows:
 - 14 1) If the gmPriorityVector was set to the gmPathPriorityVector of one of the ports, then leap61,
15 leap59, currentUtcOffsetValid, ptpTimescale, timeTraceable, frequencyTraceable,
16 currentUtcOffset, and timeSource are set to annLeap61, annLeap59,
17 annCurrentUtcOffsetValid, annPtpTimescale, annTimeTraceable, annFrequencyTraceable,
18 annCurrentUtcOffset, and annTimeSource, respectively, for that PTP Port.
 - 19 2) If the gmPriorityVector was set to the systemPriorityVector, then leap61, leap59,
20 currentUtcOffsetValid, ptpTimescale, timeTraceable, frequencyTraceable, currentUtcOffset,
21 and timeSource are set to sysLeap61, sysLeap59, sysCurrentUtcOffsetValid, sysPtpTimescale,
22 sysTimeTraceable, sysFrequencyTraceable, sysCurrentUtcOffset, and sysTimeSource,
23 respectively.
- 24 d) Computes the ~~master~~timeTransmitterPriorityVector for each PTP Port.
- 25 e) Computes ~~master~~timeTransmitterStepsRemoved, which is equal to one of the following:
 - 26 1) messageStepsRemoved (see 10.3.10.9) for the PTP Port associated with the gmPriorityVector,
27 incremented by 1, if the gmPriorityVector is not the systemPriorityVector, or
 - 28 2) 0 if the gmPriorityVector is the systemPriorityVector.
- 29 f) Assigns the PTP Port state for PTP Port j, and sets selectedState[j] equal to this PTP Port state, as
30 follows, for j = 1, 2, ..., numberPorts:
 - 31 1) If the PTP Port is disabled (infoIs == Disabled), then selectedState[j] is set to DisabledPort.
 - 32 2) If asymmetryMeasurementMode is TRUE, then selectedState[j] is set to PassivePort, and
33 updtInfo is set to FALSE.
 - 34 3) If announce receipt timeout, or sync receipt timeout with gmPresent set to TRUE, has occurred
35 (infoIs = Aged), then selectedState[j] is set to ~~MasterPort~~TimeTransmitterPort, and updtInfo is
36 set to TRUE.
 - 37 4) If the portPriorityVector was derived from another PTP Port on the PTP Instance or from the
38 PTP Instance itself as the root (infoIs == Mine), then selectedState[j] is set to
39 ~~MasterPort~~TimeTransmitterPort. In addition, updtInfo is set to TRUE if the portPriorityVector
40 differs from the ~~master~~timeTransmitterPriorityVector or portStepsRemoved differs from
41 ~~master~~timeTransmitterStepsRemoved.
 - 42 5) If the portPriorityVector was received in an Announce message, announce receipt timeout, or
43 sync receipt timeout with gmPresent TRUE, has not occurred (infoIs == Received), and the
44 gmPriorityVector is now derived from the portPriorityVector, then selectedState[j] is set to
45 ~~SlavePort~~TimeReceiverPort, and updtInfo is set to FALSE. The per port global variable

- 1 receivedPathTrace, for this port, is copied to the per PTP Instance global array pathTrace, and,
 2 if it is not empty, thisClock is appended to pathTrace.
- 3 6) If the portPriorityVector was received in an Announce message, announce receipt timeout, or
 4 sync receipt timeout with gmPresent TRUE, has not occurred (infoIs == Received), the
 5 gmPriorityVector is not now derived from the portPriorityVector, the
 6 ~~master~~timeTransmitterPriorityVector is not better than the portPriorityVector, and the
 7 sourcePortIdentity component of the portPriorityVector *does not* reflect another PTP Port on
 8 the PTP Instance, then selectedState[j] is set to PassivePort, and updtInfo is set to FALSE.
- 9 7) If the portPriorityVector was received in an Announce message, announce receipt timeout, or
 10 sync receipt timeout with gmPresent TRUE, has not occurred (infoIs == Received), the
 11 gmPriorityVector is not now derived from the portPriorityVector, the
 12 ~~master~~timeTransmitterPriorityVector is not better than the portPriorityVector, and the
 13 sourcePortIdentity component of the portPriorityVector *does* reflect another PTP Port on the
 14 PTP Instance, then selectedState[j] set to PassivePort, and updtInfo is set to FALSE.
- 15 8) If the portPriorityVector was received in an Announce message, announce receipt timeout, or
 16 sync receipt timeout with gmPresent TRUE, has not occurred (infoIs == Received), the
 17 gmPriorityVector is not now derived from the portPriorityVector, and the
 18 ~~master~~timeTransmitterPriorityVector is better than the portPriorityVector, then
 19 selectedState[j] is set to ~~MasterPort~~TimeTransmitterPort, and updtInfo is set to TRUE.
- 20 g) Updates gmPresent as follows:
- 21 1) gmPresent is set to TRUE if the priority1 field of the rootSystemIdentity of the
 22 gmPriorityVector is less than 255.
- 23 2) gmPresent is set to FALSE if the priority1 field of the rootSystemIdentity of the
 24 gmPriorityVector is equal to 255.
- 25 h) Assigns the PTP Port state for PTP Port 0 (see 8.5.2.3), and sets selectedState[0] as follows:
- 26 1) if selectedState[j] is set to ~~SlavePort~~TimeReceiverPort for any PTP Port with portNumber j, j =
 27 1, 2, ..., numberPorts, selectedState[0] is set to PassivePort.
- 28 2) if selectedState[j] is *not* set to ~~SlavePort~~TimeReceiverPort for any PTP Port with portNumber j,
 29 j = 1, 2, ..., numberPorts, selectedState[0] is set to ~~SlavePort~~TimeReceiverPort.
- 30 i) If the clockIdentity member of the systemIdentity (see 10.3.2) member of gmPriority (see 10.3.9.21)
 31 is equal to thisClock (see 10.2.4.22), i.e., if the current PTP Instance is the Grandmaster PTP
 32 Instance, the pathTrace array is set to contain the single element thisClock (see 10.2.4.22).

33 **Change 10.3.13.3 as follows:**

34 **10.3.13.3 State diagram**

35 The PortStateSelection state machine shall implement the function specified by the state diagram in
 36 Figure 10-15, the functions specified in 10.3.13.1, and the relevant global variables specified in 10.2.4,
 37 10.2.5, 10.3.9, 10.3.10, and 11.2.13. This state machine is used only if externalPortConfigurationEnabled is
 38 FALSE (if this variable is TRUE, the PortStateSettingExt state machine is used instead). The state machine
 39 updates the gmPathPriority vector for each PTP Port of the PTP Instance, the gmPriorityVector for the PTP
 40 Instance, and the ~~master~~timeTransmitterPriorityVector for each PTP Port of the PTP Instance. The state
 41 machine determines the PTP Port state for each PTP Port and updates gmPresent.

1 10.3.14 PortAnnounceInformationExt state machine

2 *Change 10.3.14.2 as follows:*

3 10.3.14.2 State machine functions

4 **10.3.14.2.1 rcvInfoExt (rcvdAnnouncePtr):** Decodes the messagePriorityVector (see 10.3.4 and 10.3.5)
5 and stepsRemoved 10.6.3.2.6) field from the Announce information pointed to by rcvdAnnouncePtr (see
6 10.3.10.13), and then stores the messagePriorityVector and stepsRemoved field value in
7 messagePriorityPAIE and messageStepsRemoved, respectively. If a path trace TLV is present in the
8 Announce message and the portState of the PTP Port is ~~SlavePort~~TimeReceiverPort, the pathSequence array
9 field of the TLV is copied to the global array pathTrace, and thisClock is appended to pathTrace (i.e., is
10 added to the end of the array).

11 10.3.15 PortStateSettingExt state machine

12 10.3.15.1 State machine variables

13 The following variables are used in the state diagram in Figure 10-17 (in 10.3.15.3):

14 *Change 10.3.15.1.5 as follows:*

15 **10.3.15.1.1 portStateInd:** An Enumeration2 that indicates the PTP Port state that has been set. The values
16 are ~~MasterPort~~TimeTransmitterPort, ~~SlavePort~~TimeReceiverPort, and PassivePort.

17 10.3.15.2 State machine functions

18 *Change 10.3.15.2.1 as follows:*

19 **10.3.15.2.1 resetStateTree(j):** Sets selectedState[j] (see 10.2.4.20) to
20 externalPortConfigurationPortDS.desiredState. Sets the pathTrace array (see 10.3.9.23) to contain the single
21 element thisClock (see 10.2.4.22) if no PTP Port of the PTP Instance has the PTP Port state
22 ~~SlavePort~~TimeReceiverPort.

23 *Change 10.3.15.2.2 as follows:*

24 **10.3.15.2.2 updtPortState(j):** Performs the following operations for PTP Port j (see 10.3.4 and 10.3.5 for
25 details on the priority vectors):

- 26 a) Sets the per PTP Instance global variables leap61, leap59, currentUtcOffsetValid, ptpTimescale,
27 timeTraceable, frequencyTraceable, currentUtcOffset, and timeSource as follows:
- 28 1) If the PTP Port state of any PTP Port of this PTP Instance other than PTP Port 0 (see 8.5.2.3) is
29 ~~SlavePort~~TimeReceiverPort, then leap61, leap59, currentUtcOffsetValid, ptpTimescale,
30 timeTraceable, frequencyTraceable, currentUtcOffset, and timeSource are set to annLeap61,
31 annLeap59, annCurrentUtcOffsetValid, annPtpTimescale, annTimeTraceable,
32 annFrequencyTraceable, annCurrentUtcOffset, and annTimeSource, respectively, for that PTP
33 Port.

- 1 2) If no PTP Port of this PTP Instance other than PTP Port 0 has the PTP Port state
2 ~~SlavePort~~TimeReceiverPort, then leap61, leap59, currentUtcOffsetValid, ptpTimescale,
3 timeTraceable, frequencyTraceable, currentUtcOffset, and timeSource are set to sysLeap61,
4 sysLeap59, sysCurrentUtcOffsetValid, sysPtpTimescale, sysTimeTraceable,
5 sysFrequencyTraceable, sysCurrentUtcOffset, and sysTimeSource, respectively.
- 6 b) Computes ~~master~~timeTransmitterStepsRemoved as follows:
 - 7 1) If the PTP Port state of any PTP Port of this PTP Instance other than PTP Port 0 is
8 ~~SlavePort~~TimeReceiverPort, then ~~master~~timeTransmitterStepsRemoved is set equal to
9 portStepsRemoved for that PTP Port.
 - 10 2) If no PTP Port of this PTP Instance other than PTP Port 0 has the PTP Port state
11 ~~SlavePort~~TimeReceiverPort, then ~~master~~timeTransmitterStepsRemoved is set equal to 0.
- 12 c) Assigns the PTP Port state for PTP Port j, and sets selectedState[j] equal to this PTP Port state, as
13 follows:
 - 14 1) If disabledExt is TRUE, selectedState[j] is set to DisabledPort, else
 - 15 2) If asymmetryMeasurementMode is TRUE, selectedState[j] is set to PassivePort, else
 - 16 3) selectedState[j] is set to portStateInd.
- 17 d) Updates gmPresent as follows:
 - 18 1) If the PTP Port state of any PTP Port of this PTP Instance other than PTP Port 0 is
19 ~~SlavePort~~TimeReceiverPort and the priority1 field of the rootSystemIdentity of the
20 messagePriorityPAIE of the ~~slave~~timeReceiver port is less than 255, gmPresent is set to TRUE,
21 else
 - 22 2) If the PTP Port state of any PTP Port of this PTP Instance other than PTP Port 0 is
23 ~~SlavePort~~TimeReceiverPort and the priority1 field of the rootSystemIdentity of the
24 messagePriorityPAIE of the ~~slave~~timeReceiver PTP Port is equal to 255, gmPresent is set to
25 FALSE, else
 - 26 3) If no PTP Port of this PTP Instance other than PTP Port 0 has the PTP Port state
27 ~~SlavePort~~TimeReceiverPort, gmPresent is set to TRUE if priority1 for this PTP Instance is less
28 than 255 and FALSE if priority1 for this PTP Instance is equal to 255.
- 29 e) Assigns the PTP Port state for PTP Port 0, and sets selectedState[0] as follows:
 - 30 1) If selectedState[j] is set to ~~SlavePort~~TimeReceiverPort, selectedState[0] is set to PassivePort.
 - 31 2) If selectedState[j] is *not* set to ~~SlavePort~~TimeReceiverPort and selectedState[k] is not equal to
32 ~~SlavePort~~TimeReceiverPort for every k not equal to 0 or j, selectedState[0] is set to
33 ~~SlavePort~~TimeReceiverPort.
- 34 f) Computes the gmPriorityVector as follows:
 - 35 1) If selectedState[j] is set to ~~SlavePort~~TimeReceiverPort, the gmPriorityVector is set equal to
36 messagePriorityPAIE for PTP Port j.
 - 37 2) If selectedState[j] is *not* set to ~~SlavePort~~TimeReceiverPort and selectedState[k] is not equal to
38 ~~SlavePort~~TimeReceiverPort for every k not equal to 0 or j, the gmPriorityVector is set equal to
39 the systemPriorityVector.
- 40 g) Computes the ~~master~~timeTransmitterPriorityVector for PTP Port j.
- 41 h) If no PTP Port of this PTP Instance has the PTP Port state ~~SlavePort~~TimeReceiverPort, the
42 pathTrace array is set to contain the single element thisClock (see 10.2.4.22).

43 **Change 10.3.15.3 as follows:**

1 10.3.15.3 State diagram

2 The PortStateSettingExt state machine shall implement the function specified by the state diagram
3 in Figure 10-17, the local variables specified in 10.3.15.1, the functions specified in 10.3.15.2, and the
4 relevant global variables specified in 10.2.4, 10.2.5, 10.3.9, 10.3.10, and 11.2.13. This state machine is used
5 only if externalPortConfigurationEnabled is TRUE (if this variable is FALSE, the PortStateSelection state
6 machine of 10.3.13.3 is used instead). A separate instance of this state machine runs on each PTP Port
7 (unlike the PortStateSelection state machine, for which a single instance runs in the PTP Instance and
8 performs operations on all the ports).

9 The state machine updates the gmPriorityVector for the PTP Instance and the
10 ~~master~~timeTransmitterPriorityVector for each PTP Port of the PTP Instance. The state machine determines
11 the PTP Port state for each PTP Port and updates gmPresent.

12 NOTE—It is possible to use the external port configuration mechanism to misconfigure the network, e.g., to produce a
13 configuration where one or more PTP Instances have more than one ~~slave~~timeReceiver port. Detecting and correcting
14 misconfigurations is outside the scope of this standard.

15

1 10.3.16 PortAnnounceTransmit state machine

2 10.3.16.2 State machine functions

3 *Change 10.3.16.2.1 as follows:*

4 **10.3.16.2.1 txAnnounce ():** Transmits Announce information to the MD entity of this PTP Port. The
 5 Announce information is set as follows:

- 6 a) The components of the messagePriorityVector are set to the values of the respective components of
 7 the ~~master~~timeTransmitterPriorityVector of this PTP Port.
- 8 b) The grandmasterIdentity, grandmasterClockQuality, grandmasterPriority1, and
 9 grandmasterPriority2 fields of the Announce message are set equal to the corresponding
 10 components of the messagePriorityVector.
- 11 c) The value of the stepsRemoved field of the Announce message is set equal to
 12 ~~master~~timeTransmitterStepsRemoved.
- 13 d) The Announce message flags leap61, leap59, currentUtcOffsetValid, ptpTimescale, timeTraceable,
 14 and frequencyTraceable, and the Announce message fields currentUtcOffset and timeSource, are set
 15 equal to the values of the global variables leap61, leap59, currentUtcOffsetValid, ptpTimescale,
 16 timeTraceable, frequencyTraceable, currentUtcOffset, and timeSource, respectively (see 10.3.9.4
 17 through 10.3.9.11).
- 18 e) The sequenceId field of the Announce message is set in accordance with 10.5.7.
- 19 f) A path trace TLV (see 10.6.3.3) is constructed, with its pathSequence field (see 10.6.3.3.4) set equal
 20 to the pathTrace array (see 10.3.9.23). If appending the path trace TLV to the Announce message
 21 does not cause the media-dependent layer frame to exceed any respective maximum size, the path
 22 trace TLV is appended to the Announce message; otherwise, it is not appended. If the pathTrace
 23 array is empty, the path trace TLV is not appended. See 10.3.9.23 for a description of the path trace
 24 feature.

25 *Change 10.3.16.3 as follows:*

26 10.3.16.3 State diagram

27 The PortAnnounceTransmit state machine shall implement the function specified by the state diagram in
 28 Figure 10-18, the local variables specified in 10.3.16.1, the functions specified in 10.3.16.2, and the relevant
 29 global variables specified in 10.2.4, 10.2.5, 10.3.9, 10.3.10, and 11.2.13. The state machine transmits
 30 Announce information to the MD entity when an announce interval has elapsed, PTP Port states have been
 31 updated, and portPriority and portStepsRemoved information has been updated with newly determined
 32 ~~master~~timeTransmitterPriority and ~~master~~timeTransmitterStepsRemoved information.

33 *Replace Figure 10-18 with the following figure:*

34

35

36

37

38

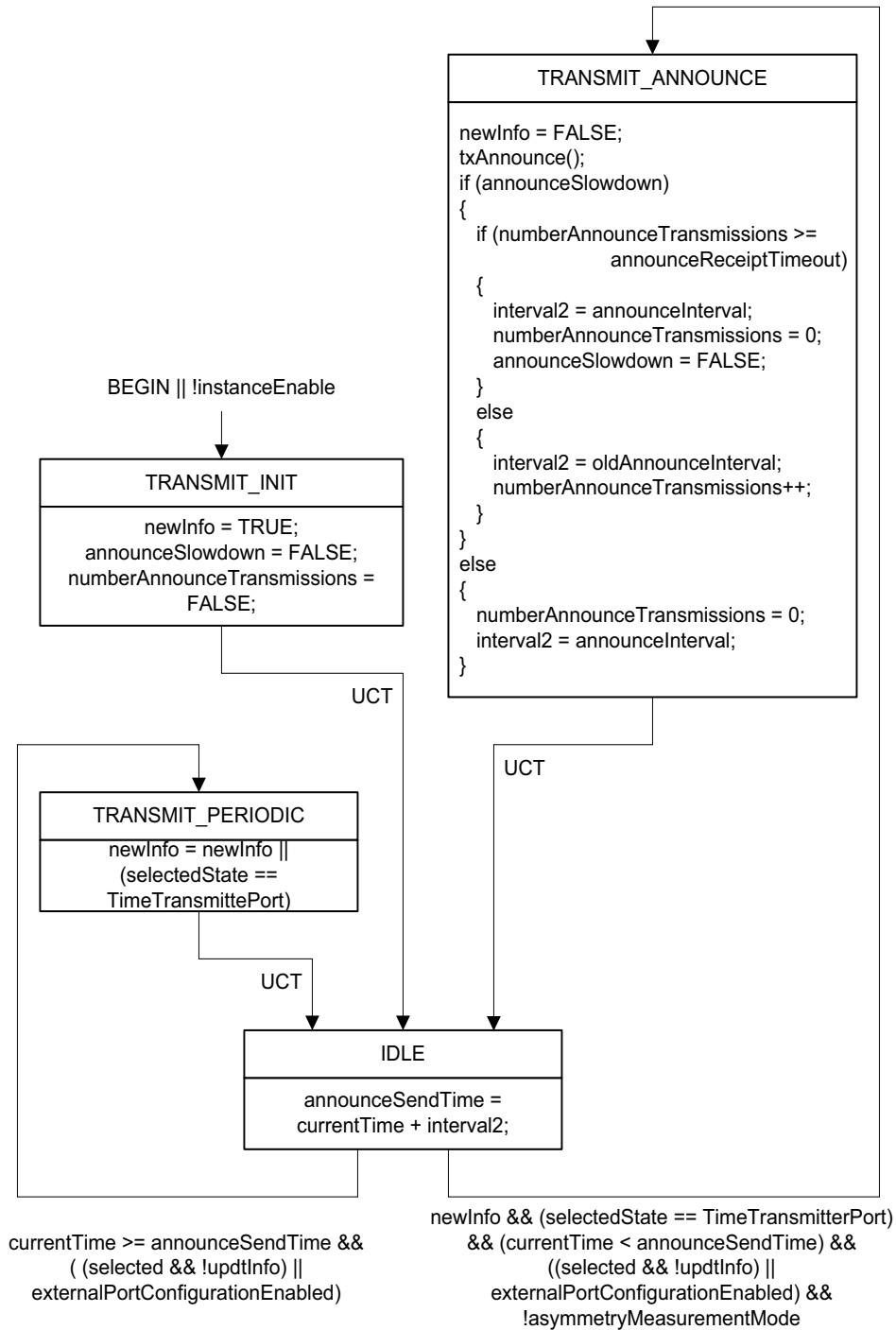


Figure 10-18—PortAnnounceTransmit state machine

1 NOTE—When the external port configuration option is used (i.e., externalPortConfigurationEnabled is TRUE; see 2 10.3.9.24) the values of the variables updInfo and selected do not affect the operation of the PortAnnounceTransmit 3 state machine because the term of the conditions in which they appear, i.e., (selected && !updInfo) || 4 externalPortConfigurationEnabled, evaluates to TRUE when externalPortConfigurationEnabled is TRUE.

1 10.5 Message attributes

2 *Change 10.5.2 as follows:*

3 10.5.2 Message class

4 The Announce message is a general message, i.e., it is not timestamped. An Announce message provides
5 status and characterization information of the PTP Instance that transmitted the message and the
6 Grandmaster PTP Instance. This information is used by the receiving PTP Instance when executing the
7 ~~BMCA~~BTCA.

8 The Signaling message is a general message, i.e., it is not timestamped. A Signaling message carries
9 information, requests, and/or commands between PTP Instances, via one or more TLVs.

10 NOTE—In this standard, the Signaling message is used by a port of a PTP Instance to request that the port at the other
11 end of the link send time-synchronization event messages, link delay measurement messages, or Announce messages at
12 desired intervals; to indicate whether the port at the other end of the link should compute neighborRateRatio and/or
13 meanLinkDelay; and to indicate whether a PTP Port can receive and correctly process one-step Syncs. The message
14 interval request TLV is defined to carry this information (see 10.6.4.3). One usage of this functionality is to allow a time-
15 aware system in power-saving mode to remain connected to a gPTP domain via the port on which the Signaling message
16 is sent.

17 10.6 Message formats

18 *Change 10.6.1 as follows:*

19 10.6.1 General

20 The PTP messages Announce and Signaling each have a header, body, and, if present, a suffix that contains
21 one or more TLVs (see 10.6.2, 10.6.3, and 10.6.4 of this standard and Clause 14 of IEEE Std 1588-2019).
22 Reserved fields shall be transmitted with all bits of the field 0 and ignored by the receiver, unless otherwise
23 specified. The data type of the field shall be the type indicated in brackets in the title of each subclause.

24 Subclause 10.6 defines the path trace TLV, which is carried by the Announce message (see 10.6.3.2.8), and
25 the message interval request TLV, which is carried by the Signaling message (see 10.6.4.3).

26 PTP Management Messages are not used in this standard. They are specified in IEEE Std 1588-2019.

27 IEEE Std 1588-2019 specifies various optional features that have associated TLVs. These optional features,
28 including the associated TLVs, may be supported by an implementation of this standard. IEEE Std 1588-
29 2019 also specifies that certain TLVs are propagated by a Boundary Clock if they are attached to an
30 Announce message and are not supported (see 14.2.2.2 and Table 52 of IEEE Std 1588-2019). These TLVs
31 are listed in Table 10-6. The TLV Propagate requirement in IEEE Std 1588-2019 means that a Propagate
32 TLV is propagated through a PTP Relay Instance (e.g., from an ingress PTP Port in the ~~Slave~~TimeReceiver
33 state to an egress PTP Port in the ~~Master~~TimeTransmitter state, even when the TLV is unsupported by the
34 PTP Relay Instance). If the corresponding optional feature is not supported by the PTP Relay Instance, the
35 PTP Relay Instance shall propagate the TLV unchanged.

36 If a PTP Instance cannot parse a non-forwarding TLV, it shall ignore it and attempt to parse the next TLV
37 (see 14.1 of IEEE Std 1588-2019).

38 NOTE—Any overhead specific to the respective medium is added to each message.

1 10.6.2 Header

2 10.6.2.2 Header field specifications

3 *Change 10.6.2.2.8 as follows:*

4 10.6.2.2.8 flags (Octet2)

5 The value of the bits of the array are defined in Table 10-9. For message types where the bit is not defined in
 6 Table 10-9, the value of the bit is set to FALSE.

Table 10-9—Values of flag bits

Octet	Bit	Message types	Name	Value
0	0	All	alternate Master TimeTransmit terFlag in Announce, Sync, Follow_Up, and Delay_Resp messages	Not used in this standard; transmitted as FALSE and ignored on reception
0	1	Sync, Pdelay_Resp	twoStepFlag	<i>For Sync messages:</i> a) For a one-step transmitting PTP Port (see 11.1.3 and 11.2.13.9), the value is FALSE. b) For a two-step transmitting PTP Port, the value is TRUE. <i>For Pdelay_Resp messages:</i> The value is transmitted as TRUE and ignored on reception.
0	2	All	unicastFlag	Not used in this standard; transmitted as FALSE and ignored on reception
0	3	All	Reserved	Not used by IEEE Std 1588-2019; reserved as FALSE and ignored on reception
0	4	All	Reserved	Not used by IEEE Std 1588-2019; reserved as FALSE and ignored on reception
0	5	All	PTP profileSpecific 1	Not used in this standard; transmitted as FALSE and ignored on reception
0	6	All	PTP profileSpecific 2	Not used in this standard; transmitted as FALSE and ignored on reception
0	7	All	Reserved	Not used in this standard; transmitted as FALSE and ignored on reception
1	0	Announce	leap61	The value of the global variable leap61 (see 10.3.9.4)
1	1	Announce	leap59	The value of the global variable leap59 (see 10.3.9.5)
1	2	Announce	currentUtcOffsetValid	The value of the global variable currentUtcOffsetValid (see 10.3.9.6)
1	3	Announce	ptpTimescale	The value of the global variable ptpTimescale (see 10.3.9.7)

Table 10-9—Values of flag bits (continued)

Octet	Bit	Message types	Name	Value
1	4	Announce	timeTraceable	The value of the global variable timeTraceable (see 10.3.9.8)
1	5	Announce	frequencyTraceable	The value of the global variable frequencyTraceable (see 10.3.9.9)
1	6	All	Reserved	Not used by IEEE Std 1588-2019; reserved as FALSE and ignored on reception
1	7	All	Reserved	Not used in this standard; reserved as FALSE and ignored on reception

1 10.6.3 Announce message

2 10.6.3.2 Announce message field specifications

3 *Change 10.6.3.2.6 as follows:*

4 10.6.3.2.6 stepsRemoved (UInteger16)

5 The value is the value of ~~master~~timeTransmitterStepsRemoved (see 10.3.9.3) for the PTP Instance that
6 transmits the Announce message.

7 10.7 Protocol timing characterization

8 10.7.2 Message transmission intervals

9 *Change 10.7.2.4 as follows:*

10 10.7.2.4 Interval for providing synchronization information by

11 ~~ClockMaster~~ClockTimeTransmitter entity

12 The clockMasterLogSyncInterval specifies the mean time interval between successive instants at which the
13 ~~ClockMaster~~ClockTimeTransmitter entity provides time-synchronization information to the SiteSync entity.
14 The value is less than or equal to the smallest currentLogSyncInterval (see 10.7.2.3) value for all the ports of
15 the PTP Instance. The ~~clockMasterLogSyncInterval~~clockTimeTransmitterLogSyncInterval is an internal,
16 per PTP Instance variable.

17 10.7.3 Timeouts

18 *Change 10.7.3.1 as follows:*

19 10.7.3.1 syncReceiptTimeout

20 The value of this attribute tells a ~~slave~~timeReceiver port the number of sync intervals to wait without
21 receiving synchronization information, before assuming that the ~~master~~timeTransmitter is no longer
22 transmitting synchronization information and that the ~~BMCABTCA~~ needs to be run, if appropriate. The

1 condition of the ~~slave~~timeReceiver port not receiving synchronization information for syncReceiptTimeout
2 sync intervals is known as *sync receipt timeout*.

3 The default value shall be 3. The syncReceiptTimeout is a per-PTP Port attribute.

4 *Change 10.7.3.2 as follows:*

5 **10.7.3.2 announceReceiptTimeout**

6 The value of this attribute tells a ~~slave~~timeReceiver port the number of announce intervals to wait without
7 receiving an Announce message, before assuming that the ~~master~~timeTransmitter is no longer transmitting
8 Announce messages, and that the ~~BMCA~~BTCA needs to be run, if appropriate. The condition of the
9 ~~slave~~timeReceiver port not receiving an Announce message for announceReceiptTimeout announce intervals
10 is known as *announce receipt timeout*.

11 The default value shall be 3. The announceReceiptTimeout is a per-PTP Port attribute.

12

11. Media-dependent layer specification for full-duplex point-to-point links

11.1 Overview

11.1.3 Transport of time-synchronization information

Change the first paragraph in 11.1.3 as follows:

The transport of time-synchronization information by a PTP Instance, using Sync and Follow_Up (or just Sync) messages, is illustrated in Figure 11-2. The mechanism is mathematically equivalent to the mechanism described in IEEE Std 1588-2019 for a peer-to-peer Transparent Clock that is syntonized (see 10.1, 10.3, 11.1, and 11.4 of IEEE Std 1588-2019). However, the processes of transporting synchronization by a peer-to-peer Transparent Clock that is syntonized and by a Boundary Clock are mathematically and functionally equivalent. The main functional difference between the two types of clocks is that the Boundary Clock participates in best ~~master~~timeTransmitter selection and invokes the ~~BMCABTCA~~, while the peer-to-peer Transparent Clock does not participate in best ~~master~~timeTransmitter selection and does not invoke the ~~BMCABTCA~~ (and implementations of the two types of clocks can be different).

Replace Figure 11-2 with the following figure:

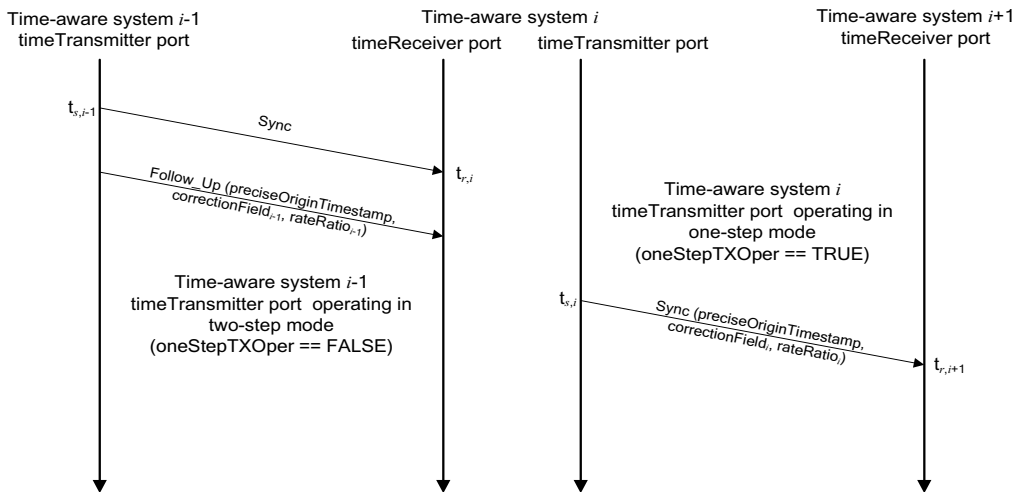


Figure 11-2—Transport of time-synchronization information

Change the NOTE in 11.1.3 as follows:

NOTE—The sending of time-synchronization information by the ~~master~~timeTransmitter ports of a PTP Instance might or might not be tightly synchronized with the receipt of time-synchronization information by the ~~slave~~timeReceiver port. If a ~~master~~timeTransmitter port has the same logMessageInterval as the ~~slave~~timeReceiver port, it will transmit timing event messages as soon as possible after the ~~slave~~timeReceiver port has received the corresponding timing event messages and the ~~master~~timeTransmitter port is operating in “syncLocked” mode (see 10.2.5.15). If a ~~master~~timeTransmitter port and ~~slave~~timeReceiver port have different logMessageInterval values, then the

1 ~~master~~timeTransmitter port can send timing event messages without any synchronization with the ~~slave~~timeReceiver
 2 port.

3 11.1.4 Model of operation

4 **Replace Figure 11-2 with the following figure:**

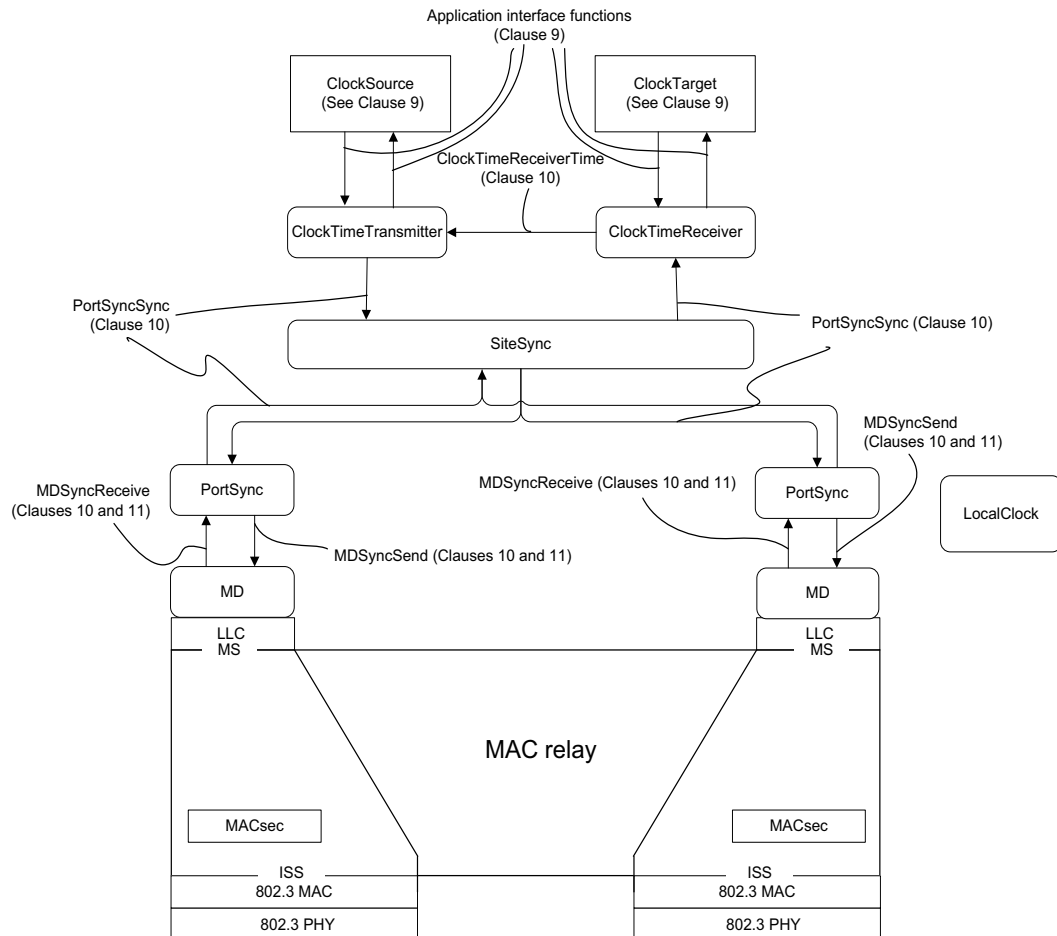


Figure 11-3—Model for a PTP Instance of a time-aware system with full-duplex point-to-point links

5 11.2 State machines for MD entity specific to full-duplex point-to-point links

6 11.2.5 Use of link aggregation

7 **Change the second paragraph in 11.2.5 as follows:**

8 Assuming that ptpPortEnabled is true for all the physical links (Aggregation Links) in a Link Aggregation
 9 Group and that all the physical links are connected to the same two systems, gPTP will measure the delay on
 10 each physical link, and the IEEE 802.1AS protocol will choose one of the physical links for transmitting
 11 time from the ~~master~~timeTransmitter clock.

1 11.3 Message attributes

2 11.3.2 Message types contained in each message class

3 11.3.2.1 Event message class

4 *Change 11.3.2.1 a) as follows:*

5 The event message class contains the following message types:

- 6 a) Sync: A Sync message contains time-synchronization information that originates at a
7 ~~ClockMaster~~ClockTimeTransmitter entity. The appearance of a Sync message at the reference plane
8 of the PTP Port corresponding to an MD entity is an event to which the LocalClock assigns a
9 timestamp, the syncEventIngressTimestamp or syncEventEgressTimestamp, based on the time of
10 the LocalClock. The syncEventIngressTimestamp and syncEventEgressTimestamp are measured
11 relative to the timestamp measurement plane; the MD entity corrects them for ingress and egress
12 latencies, respectively (see 8.4.3). The Sync message is followed by a Follow_Up message
13 containing synchronization information that is based in part on the sum of the
14 syncEventEgressTimestamp and any egressLatency (see 8.4.3).

15 11.4 Message formats

16 11.4.3 Sync message

17 11.4.3.2 Sync message field specifications if twoStep flag is FALSE

18 11.4.3.2.1 originTimestamp (Timestamp)

19 *Change the first paragraph in 11.4.3.2.1 as follows:*

20 The value of the originTimestamp field is the sourceTime of the ~~ClockMaster~~ClockTimeTransmitter entity
21 of the Grandmaster PTP Instance, when the Sync message was sent by that Grandmaster PTP Instance, with
22 any fractional nanoseconds truncated (see 10.2.9).

23 11.4.4 Follow_Up message

24 11.4.4.2 Follow_Up message field specifications

25 11.4.4.2.1 preciseOriginTimestamp (Timestamp)

26 *Change the first paragraph in 11.4.4.2.1 as follows:*

27 The value of the preciseOriginTimestamp field is the sourceTime of the ~~ClockMaster~~ClockTimeTransmitter
28 entity of the Grandmaster PTP Instance, when the associated Sync message was sent by that Grandmaster
29 PTP Instance, with any fractional nanoseconds truncated (see 10.2.9).

1 **11.4.4.3 Follow_Up information TLV definition**

2 **11.4.4.3.7 gmTimeBaseIndicator (UInteger16)**

3 ***Change NOTE in 11.4.4.3.7 as follows:***

4 NOTE—The timeBaseIndicator is supplied by the ClockSource entity to the ~~ClockMaster~~ClockTimeTransmitter entity
5 via the ClockSourceTime.invoke function (see 9.2.2.3).

6

1 12. Media-dependent layer specification for IEEE 802.11 links

2 12.1 Overview

3 12.1.1 General

4 *Change first paragraph in 12.1.1 as follows:*

5 Accurate synchronized time is distributed across a domain through time measurements between adjacent
6 PTP Instances in a packet network. Time is communicated from the root of the clock spanning tree (i.e., the
7 Grandmaster PTP Instance) to the leaves of the tree, by recursively propagating time from a leaf-facing
8 “masterTimeTransmitter” port to some number of root-facing “slaveTimeReceiver” ports in PTP Instances at
9 the next level of the tree through measurements made across the links connecting the PTP Instances. While
10 the time semantics are consistent across the time-aware packet network, the method for communicating
11 synchronized time from a masterTimeTransmitter port to the immediate downstream link partner varies
12 depending on the type of link interconnecting the two systems.

13 12.1.2 IEEE 802.11 Timing Measurement and Fine Timing Measurement procedures

14 *Change 12.1.2.1 as follows:*

15 12.1.2.1 General

16 IEEE Std 802.11-2016 defines a family of wireless measurements, including both “Timing Measurement”
17 (TM) and “Fine Timing Measurement” (FTM), which captures timestamps of the transmit time and receive
18 time of a round-trip message exchange between associated wireless local area network (WLAN) stations.

19 In contrast to the protocol defined for full-duplex point-to-point links, this clause does not define any new
20 frames nor the transmission of any frames. Rather, it makes use of a MAC layer management entity
21 (MLME) interface, which causes the IEEE 802.11 layer to not only take timestamps of measurement frames
22 as they are transmitted and received, but to also *generate* and *consume* the measurement frames, all within
23 the IEEE 802.11 MLME layer, and then to provide timestamp information from the MLME to this media-
24 dependent layer through a set of well-defined service primitives. However, as an aid to the reader, the
25 protocol and frames used by the IEEE 802.11 MLME for both Timing Measurement and Fine Timing
26 Measurement are described briefly as follows and illustrated in Figure 12-1 and Figure 12-2, respectively.

27 Both Timing Measurement and Fine Timing Measurement are accomplished through a round-trip frame
28 exchange. For Timing Measurement, the first frame of the round-trip measurement is generated by the
29 masterTimeTransmitter within the IEEE 802.11 MLME when the MLME-TIMINGMSMT.request primitive
30 is invoked. For Fine Timing Measurement, an initial Fine Timing Measurement request frame is generated
31 by the slaveTimeReceiver within the IEEE 802.11 MLME when the MLME-
32 FINETIMINGMSMTRQ.request primitive is invoked. After this frame is successfully received by the
33 masterTimeTransmitter, the first frame of the round-trip measurement is generated by the
34 masterTimeTransmitter within the IEEE 802.11 MLME when the MLME-FINETIMINGMSMT.request
35 primitive is invoked. As defined by IEEE Std 802.11-2016, upon receipt of the resulting Timing
36 Measurement or Fine Timing Measurement frame, the slaveTimeReceiver station transmits an IEEE 802.11
37 Ack control frame to the masterTimeTransmitter station. Four timestamps are captured during this two-frame
38 exchange, as follows:

- 39 a) t1 is when (in the masterTimeTransmitter station’s time base) the request frame is transmitted
- 40 b) t2 is when (in the slaveTimeReceiver station’s time base) the request frame is received
- 41 c) t3 is when (in the slaveTimeReceiver station’s time base) the Ack control frame is transmitted

- 1 d) t_4 is when (in the **masterTimeTransmitter** station's time base) the Ack control frame is received
- 2 When the **masterTimeTransmitter** sends either a Fine Timing Measurement or a Timing Measurement frame,
- 3 it passes the t_1 and t_4 timestamps (and other end-to-end synchronization information) and
- 4 FollowUpInformation, from the previous measurement to the **slaveTimeReceiver**. A pair of tokens is passed
- 5 in each timing or Fine Timing Measurement frame, one to identify the current measurement and the other to
- 6 allow the **slaveTimeReceiver** to associate the timestamp information with the previous measurement

7 **Replace Figure 12-1 with the following figure:.**

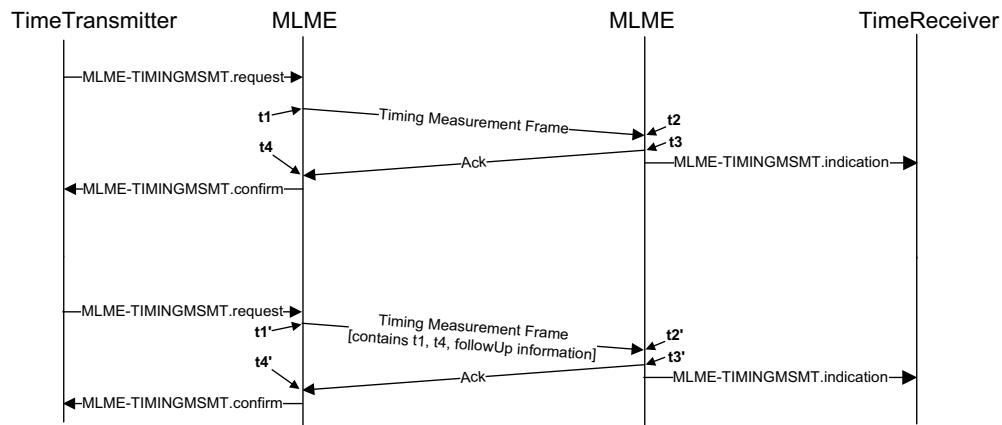


Figure 12-1—Timing measurement procedure for IEEE 802.11 links

8 NOTE 1—TM also can include a Timing Measurement Request Frame; however, this frame type is not used by this
9 standard.

10 **Replace Figure 12-2 with the following figure:.**

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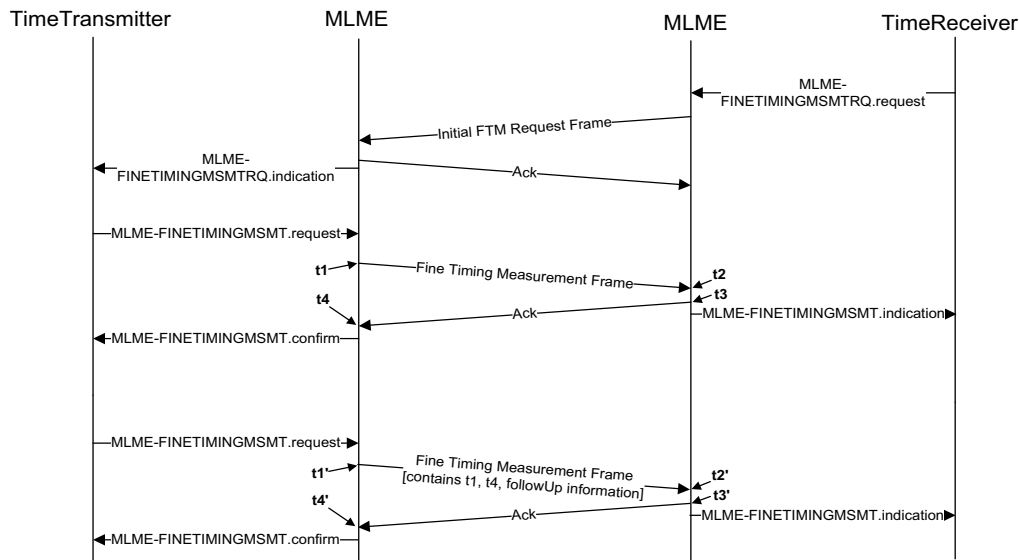


Figure 12-2—Fine Timing Measurement procedure for IEEE 802.11 links

1 Note that, unlike full-duplex point-to-point ports, IEEE 802.11 ports do not compute the link delay
2 measurements in both directions since only a PTP Port in the **SlaveTimeReceiver** state makes use of that
3 information. A PTP Port that transitions from the **MasterTimeTransmitter** state to the **SlaveTimeReceiver**
4 state (e.g., due to selection of a new Grandmaster PTP Instance) can collect a number of link delay
5 measurements and perform averaging or other filtering to achieve the desired accuracy.

6 NOTE 2—Fine Timing Measurement can be used for time synchronization as described in this standard; however, it can
7 also be used for location services as defined in IEEE Std 802.11-2016. Since FTM supports only one configuration at a
8 time, it is possible that setting that single configuration for time synchronization might disable its previous configuration
9 for use by another application for location services or, conversely, an application that configures FTM for location
10 services could disable this standard's use for time synchronization. Implementations that use FTM for time
11 synchronization and other applications need to coordinate usage of the FTM protocol.

12 The **masterTimeTransmitter** generates MLME-TIMINGMSMT.request primitives for Timing Measurement,
13 as described in this standard, in a manner such that the requirements of 10.7.2.3 and 12.8 for the time
14 synchronization message interval are satisfied. Timing measurement frames are then sent from the
15 **masterTimeTransmitter** to the **slaveTimeReceiver** continuously and at a rate that satisfies the requirements of
16 those two subclauses. It is not necessary for the **slaveTimeReceiver** to continually request timing information
17 from the **masterTimeTransmitter**. In contrast, the **slaveTimeReceiver** must request timing information from
18 the **masterTimeTransmitter** for Fine Timing Measurement. A Fine Timing Measurement frame carries
19 timestamp information for a previous measurement. The **slaveTimeReceiver** requests a burst of Fine Timing
20 Measurement frames from the **masterTimeTransmitter**. Figure 12-2 shows an example of a burst of Fine
21 Timing Measurement frames (there are two frames in that example). The Fine Timing Measurement process
22 is described in more detail in 12.1.2.2 and is illustrated in Figure 12-3. In that discussion, the focus is on the
23 transmission of the frames. In the simplified example, service primitives are omitted from Figure 12-3.

24 **Change 12.1.2.2 as follows:**

25 12.1.2.2 Detailed description of Fine Timing Measurement (FTM)

26 Figure 12-3 is adapted from Figure 11-37 of IEEE Std 802.11-2016. Additional details on the FTM
27 procedure are given in 11.24.6 of IEEE Std 802.11-2016. The example of this figure is for when the

1 initiating station (STA), i.e., the **slaveTimeReceiver**, requests a single burst of three FTM frames from the
2 responding STA, i.e., the **masterTimeTransmitter**, as soon as possible. The **slaveTimeReceiver** makes this
3 request by sending an initial FTM Request to the **masterTimeTransmitter** with respective parameters set to
4 appropriate values. The FTM parameters that are relevant to time synchronization in this standard are
5 described in 12.6, and all the FTM parameters are described in more detail in 9.4.2.168 of IEEE Std 802.11-
6 2016. However, in the example here, the parameter ASAP is set to 1 to indicate to the **masterTimeTransmitter**
7 that the FTM frames are desired as soon as possible, and the Number of Bursts Exponent parameter is set to
8 0 to indicate a single burst. Figure 12-3 is a simplified view; the **slaveTimeReceiver** causes the frame to be
9 sent by invoking the MLME-FINETIMINGSMSTRQ.request primitive, which includes the FTM
10 parameter values. The **masterTimeTransmitter** sends an acknowledgment (Ack) frame to the
11 **slaveTimeReceiver** to indicate it received the initial FTM request. The **masterTimeTransmitter** then sends an
12 initial FTM frame at a time that is recommended to be no more than 10 ms later than the receipt of the initial
13 FTM request. The initial FTM frame indicates to the **slaveTimeReceiver** whether the **masterTimeTransmitter**
14 was able to grant the values of the FTM parameters that the **slaveTimeReceiver** requested. If the requested
15 parameters are granted, the procedure continues (Figure 12-3 illustrates this case). If the requested
16 parameters are not granted, the **slaveTimeReceiver** sends a new initial FTM request for a burst of two FTM
17 frames. If the new request is granted, the procedure continues. If the new request is not granted, the
18 **slaveTimeReceiver** and **masterTimeTransmitter** use TM if they both support TM. If, at this point, the
19 **slaveTimeReceiver** or the **masterTimeTransmitter**, or both, do not support TM, the procedure terminates and
20 asCapable is set to FALSE (see 12.4).

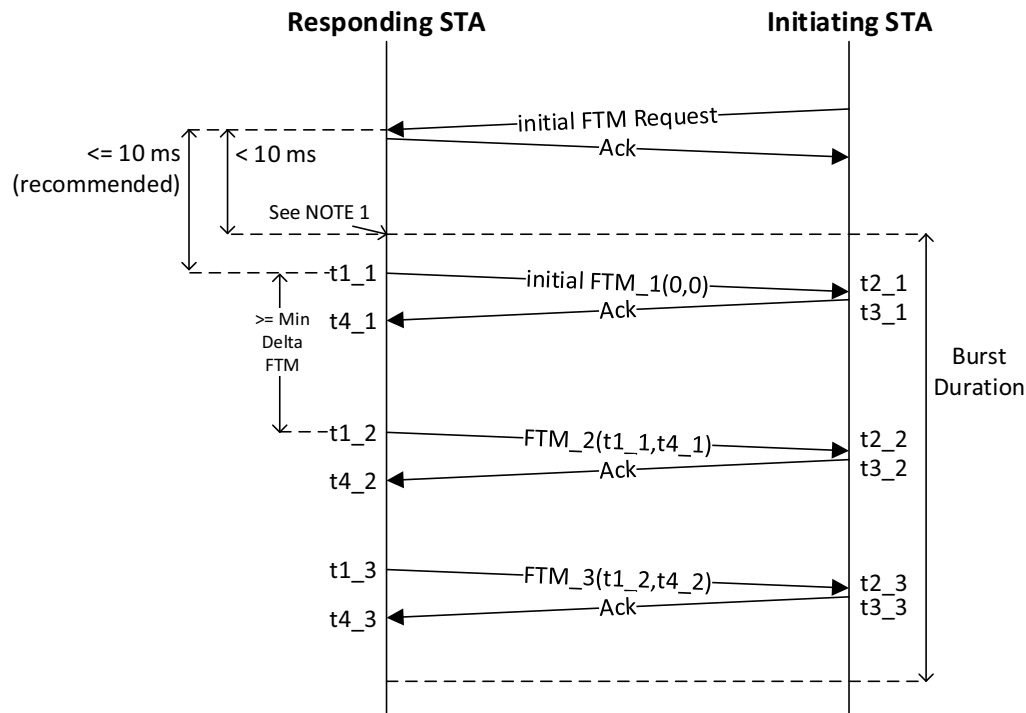


Figure 12-3—Illustration of Fine Timing Measurement burst

21 NOTE—IEEE Std 802.11-2016 allows various options in case the **masterTimeTransmitter** does not grant the request. The
22 above procedure is used in this subclause.

23 The initial FTM frame (initial FTM_1 in Figure 12-3) sent by the **masterTimeTransmitter** is timestamped
24 with the value t1_1 on transmission from the **masterTimeTransmitter** and timestamped with the value t2_1 on
25 receipt by the **slaveTimeReceiver**. The initial FTM frame has fields that carry the t1 and t4 timestamps of the
26 previous FTM frame and corresponding Ack; however, since this is the first FTM frame of the burst, these

1 fields are set to zero. The **slaveTimeReceiver** responds to the **masterTimeTransmitter** with an Ack, which is
2 timestamped with the value $t3_1$ on transmission from the **slaveTimeReceiver** and with the value $t4_1$ on
3 receipt by the **masterTimeTransmitter**.

4 The **masterTimeTransmitter** sends the second FTM frame (FTM_2 in Figure 12-3) after a time interval since
5 sending the initial FTM frame that is greater than or equal to the Min Delta FTM parameter that was
6 requested by the **slaveTimeReceiver**. This FTM frame is timestamped with $t1_2$ on transmission and $t2_2$ on
7 reception. This FTM frame also carries the values of the timestamps $t1_1$ and $t4_1$ of the initial FTM frame
8 and corresponding Ack. On receipt of the second FTM frame, the **slaveTimeReceiver** sends an Ack frame to
9 the **masterTimeTransmitter**; this frame is timestamped with $t3_2$ on transmission and $t4_2$ on reception.
10 Finally, the **masterTimeTransmitter** sends the third FTM frame (FTM_3 in Figure 12-3) to the
11 **slaveTimeReceiver**, also at a time interval since sending FTM_2 that is greater than or equal to the Min Delta
12 FTM parameter that was requested by the **slaveTimeReceiver**. As with FTM_2, this frame is timestamped
13 with $t1_3$ on transmission and $t2_3$ on reception. This FTM frame also carries the values of the timestamps
14 $t1_2$ and $t4_2$ of the second FTM frame and corresponding Ack. On receipt of the third FTM frame, the
15 **slaveTimeReceiver** sends an Ack frame to the **masterTimeTransmitter**; this frame is timestamped with $t3_3$ on
16 transmission and $t4_3$ on reception.

17 On completion of the above exchanges of FTM frames and corresponding acknowledgments, the
18 **slaveTimeReceiver** knows the transmission and reception times for the initial FTM frame ($t1_1$, $t2_1$, $t3_1$,
19 and $t4_1$) and second FTM frame ($t1_2$, $t2_2$, $t3_2$, and $t4_2$) and the reception time for the third FTM
20 frame ($t2_3$) and transmission time for the corresponding Ack ($t3_3$). The **slaveTimeReceiver** can use this
21 information (along with FollowUpInformation contained in the VendorSpecific information element; see
22 12.7) to synchronize to the **masterTimeTransmitter**. In this standard, timestamps for the minimum delay FTM
23 frames are used. Specifically, the **slaveTimeReceiver** computes the quantities $D1 = t2_1 - t1_1$, and $D2 =$
24 $t2_2 - t1_2$, and uses the timestamps $t1_i$ and $t2_i$, where $i = 1$ if $D1 < D2$ and $i = 2$ if $D1 \geq D2$, to compute
25 the respective members of the MDSyncReceive structure. The timestamps of FTM_3 and its corresponding
26 Ack are not used; FTM_3 is used only to convey the timestamps of FTM_2 and its corresponding Ack.

27 If the **masterTimeTransmitter** does not grant the parameters requested initially by the **slaveTimeReceiver**, i.e.,
28 for a burst of three FTM frames, but it does grant the subsequent request for a burst of two FTM frames, the
29 **slaveTimeReceiver** has a full set of timestamps for only the initial FTM_1 frame. In this case, the
30 **slaveTimeReceiver** uses the timestamps $t1_1$, $t2_1$, $t3_1$, and $t4_1$ to compute the respective members of the
31 MDSyncReceive structure.

32 With the above procedure for FTM, the **slaveTimeReceiver** controls the rate at which time synchronization
33 information is sent from the **masterTimeTransmitter**. This is different from TM, full-duplex IEEE 802.3,
34 IEEE 802.3 EPON, and CSN transports. In those cases, the sending of time synchronization information
35 from the **masterTimeTransmitter** to the **slaveTimeReceiver** is controlled by the **masterTimeTransmitter**; this is
36 true for syncLocked (see 10.2.5.15) TRUE, in which case the information is sent as soon as it is received
37 from further upstream, and syncLocked FALSE, in which case it is sent independently of information
38 received from further upstream. For FTM, the **slaveTimeReceiver** requests time synchronization information
39 from the **masterTimeTransmitter** at an average rate equal to the inverse of the current synchronization
40 message interval currentLogSyncInterval (see 12.8 and 14.8.18). In addition, the actual intervals between
41 successive requests by the **slaveTimeReceiver** for time synchronization information meet the requirements of
42 10.7.2.3. Also, the value of syncLocked at the **masterTimeTransmitter** port will not affect the sending of time
43 synchronization information from the **masterTimeTransmitter** to the **slaveTimeReceiver**; the requests for time
44 synchronization information from the **slaveTimeReceiver** are asynchronous to the receipt of time
45 synchronization information from upstream at the node that contains the **masterTimeTransmitter** port.

46 **Change 12.1.3 as follows:**

12.1.3 Layering for IEEE 802.11 links

The *media-dependent* (MD) entity is tailored to the link technology and is responsible for translating the PortSync entity's media-independent actions to media-dependent PDUs or primitives as necessary for communicating synchronized time from the *masterTimeTransmitter* port over the link to a single *slaveTimeReceiver* port. For an IEEE 802.11 link, this one-to-one relationship between the MD entities of the *masterTimeTransmitter* and *slaveTimeReceiver* implies that if the one physical IEEE 802.11 port is associated with multiple stations, each association requires its own instantiation of the IEEE 802.1AS PortSync entity and MD entity. The MLME-TIMINGMSMT and MLME-FINETIMINGMSMT service primitives defined in IEEE Std 802.11-2016 are used to perform Timing Measurements and Fine Timing Measurements, respectively, between a *masterTimeTransmitter* IEEE 802.11 station and associated IEEE 802.11 *slaveTimeReceiver* stations. Figure 12-4 illustrates how the MD entity interacts with the higher and lower layers.

Replace Figure 12-4 with the following figure:

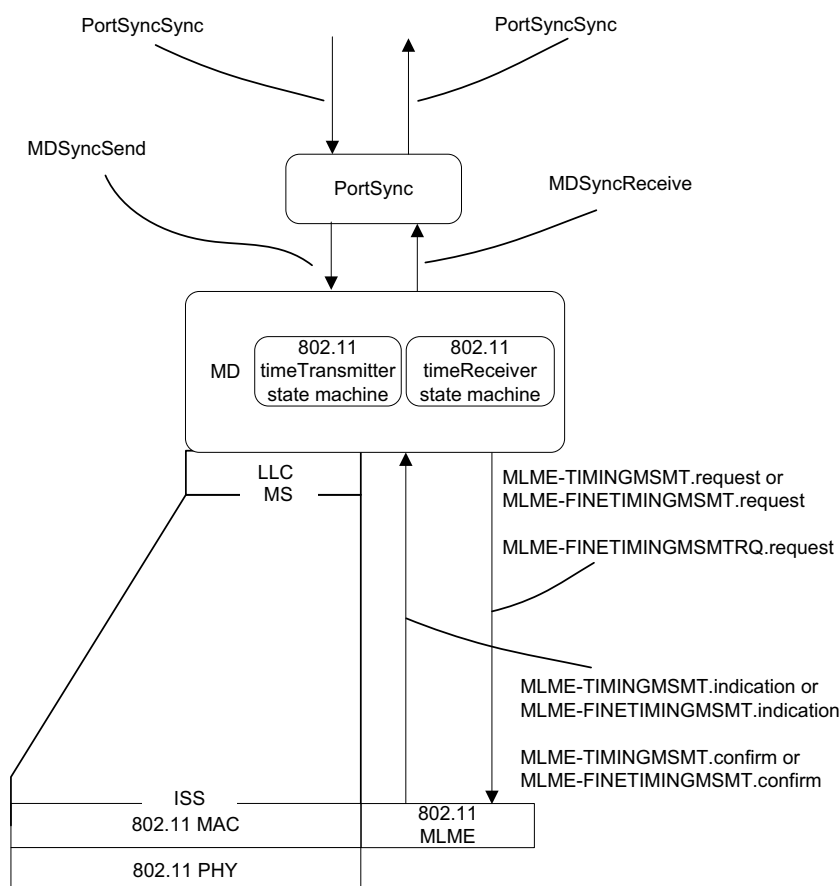


Figure 12-4—Media-dependent and lower entities in stations with IEEE 802.11 links

1 12.4 Determination of asCapable

2 Change 12.4 c) as follows:

- 3 c) At least one of the following conditions hold:
- 4 1) Bit 0 of tmFtmSupport is TRUE.
- 5 2) Bit 1 of tmFtmSupport is TRUE and, if the PTP Port is a ~~master~~timeTransmitter port, it can
6 support (i.e., grant) the parameters requested by the ~~slave~~timeReceiver with either FTMs per
7 burst equal to 3 or FTMs per burst equal to 2.
- 8 3) Bit 1 of tmFtmSupport is TRUE and, if the PTP Port is a ~~slave~~timeReceiver port, the
9 ~~master~~timeTransmitter port at the other end of the link can support (i.e., grant) the parameters
10 requested by the ~~slave~~timeReceiver with either FTMs per burst equal to 3 or FTMs per burst
11 equal to 2.

12 12.5 State machines

13 Change the title of 12.5.1 as follows:

14 12.5.1 Media-dependent ~~master~~timeTransmitter state machines

15 Change 12.5.1.1 as follows:

16 12.5.1.1 Overview

17 The MD entity of an IEEE 802.11 port whose port state is ~~MasterPort~~TimeTransmitterPort (see Table 10-2)
18 shall behave in a manner that is indistinguishable, relative to an observer external to a system, from a strict
19 implementation of the ~~master~~timeTransmitter state machines in Figure 12-5 and Figure 12-6 (denoted as
20 ~~master~~timeTransmitter state machine A and ~~master~~timeTransmitter state machine B, respectively, in
21 12.5.1.2), the local variables specified in 12.5.1.3, the functions specified in 12.5.1.4, the shared variables
22 specified in 12.5.1.5, and the primitives defined in 12.5.1.6.

23 For Timing Measurement, ~~master~~timeTransmitter state machine A is responsible for initiating a time
24 measurement whenever the PortSync entity requests it do so, as indicated by the
25 rcvdMDSyncDot11~~Master~~TimeTransmitterA Boolean (see 12.5.1.3.8). ~~Master~~TimeTransmitter state
26 machine A invokes the IEEE 802.11 MLME-TIMINGMSMT.request primitive and waits for the subsequent
27 MLME-TIMINGMSMT.confirm primitive. It collects local timestamp information from the measurement
28 (t1 and t4, provided by the confirm primitive) and includes the information in the subsequent request. See
29 8.4.3 for more information on timestamps. ~~Master~~TimeTransmitter state machine B is not used for Timing
30 Measurement.

31 For Fine Timing Measurement, ~~master~~timeTransmitter state machine A receives and stores information from
32 the PortSync entity. ~~Master~~TimeTransmitter state machine B receives the MLME-
33 FINETIMINGMSMTRQ.indication caused by the initial FTM request from the ~~slave~~timeReceiver. It sets
34 asCapable as specified in 12.4. It then generates successive MLME-FINETIMINGMSMT.request primitives
35 to indicate to the ~~slave~~timeReceiver whether it can grant the requested parameters and also to cause
36 information saved by ~~master~~timeTransmitter state machine A to be sent to the ~~slave~~timeReceiver. It receives
37 MLME-FINETIMINGMSMT.confirm primitives caused by Acks received from the ~~slave~~timeReceiver. It
38 collects local timestamp information from the current measurement (t1 and t4, provided by the confirm
39 primitive) and includes the information in the subsequent MLME-FINETIMINGMSMT.request.

1 ***Change 12.5.1.2 as follows:***

2 **12.5.1.2 State diagrams**

3 NOTE—In the computation of the burstDuration in ~~master~~timeTransmitter state machine B, the burst duration
4 parameter from IEEE Std 802.11-2016 is converted to UScaledNs (i.e., units of 2^{-16} ns; see 6.4.3.2). The burst duration
5 in UScaledNs (see 6.4.3.2) is related to the quantity $A = \text{initReqParamsDot11MasterTimeTransmitterB.burstDuration} - 2$
6 by:

7

$$\text{burst duration in UScaledNs} = 1000 \cdot (2^{16}) \cdot 250 \cdot 2^A$$

8 i.e., A is the logarithm to base 2 of the burst duration, in microseconds, divided by 250. Also, it is assumed that the burst
9 duration starts when the initial FTM request is received. In actuality, the timer begins by the partial TSF timer value
10 indicated in the initial FTM frame, which is slightly after the initial FTM request is received. _ _

11 ***Replace Figure 12-5 with the following figure:***

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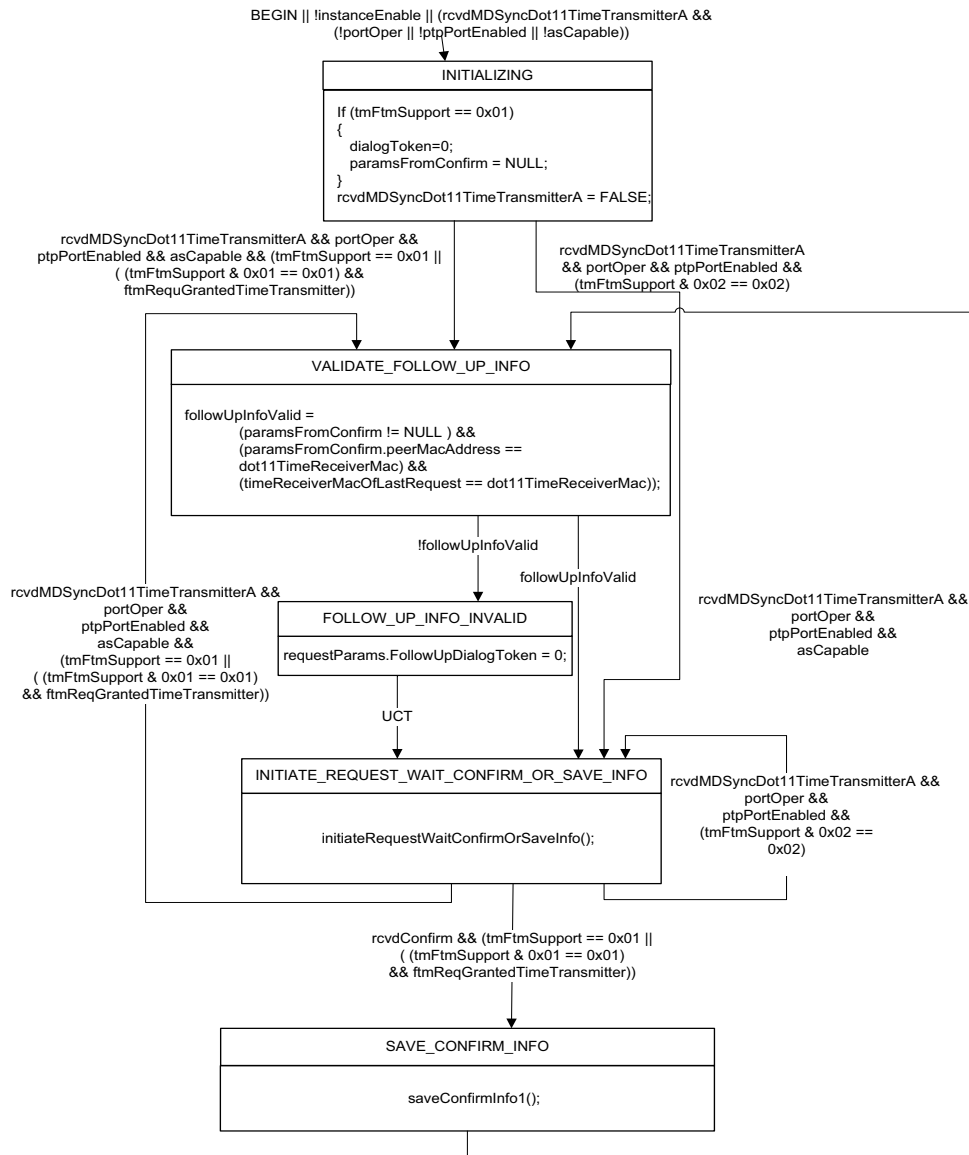


Figure 12-5—**MasterTimeTransmitter** state machine A

(a) For TM, receives information from the PortSync entity and sends to **slaveTimeReceiver**, and

(b) for FTM, receives and stores information from the PortSync entity

1 Replace Figure 12-6 with the following figure:

2

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4

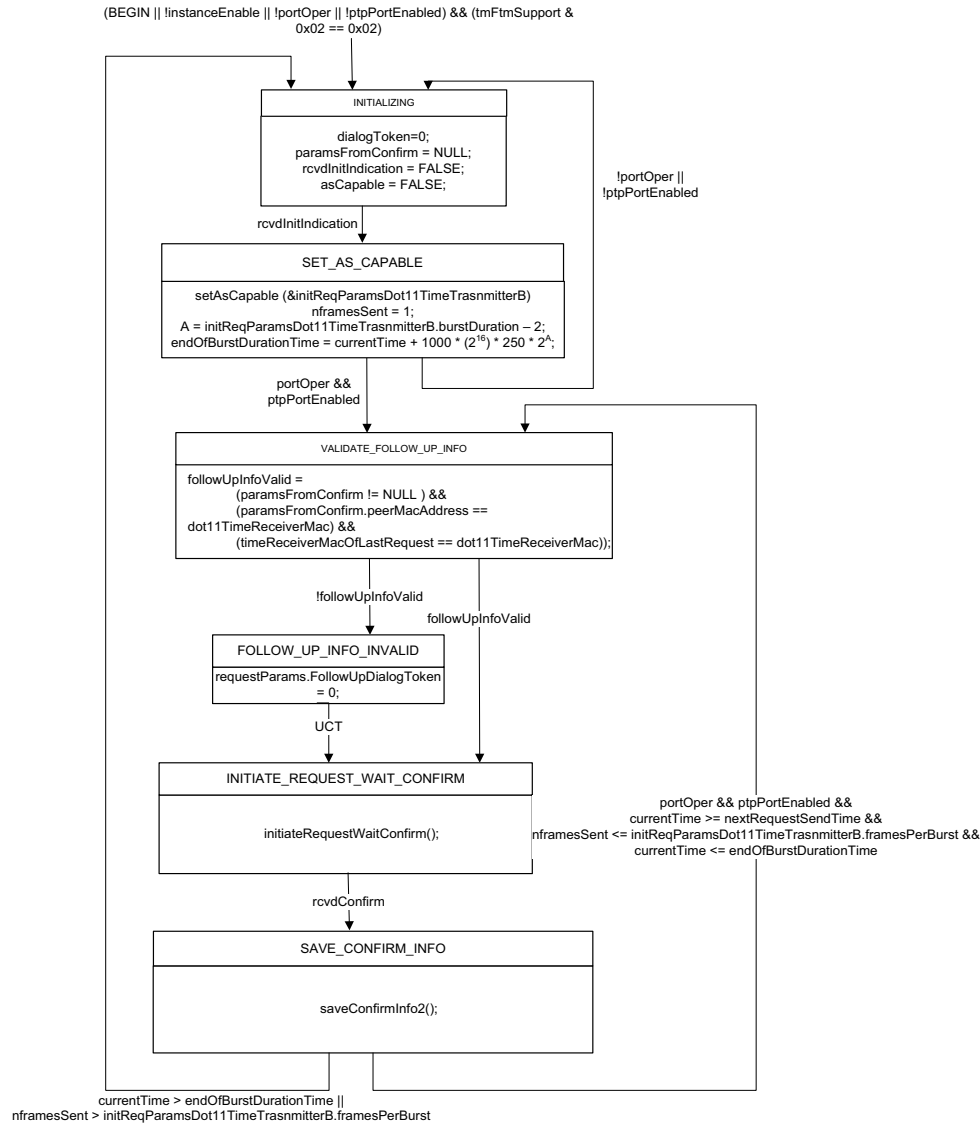


Figure 12-6—Master Time Transmitter state machine B

(a) For TM, not invoked and

(b) for FTM, receives initial FTM request from slave time Receiver and sends information received from upstream to slave time Receiver in successive FTM frames

1 12.5.1.3 State machine local variables

2 Change 12.5.1.3.5 as follows:

3 12.5.1.3.5 dot11SlaveTimeReceiverMac: The MAC address of the station associated with the current port.

4 Change 12.5.1.3.6 as follows:

5 12.5.1.3.6 slaveTimeReceiverMacOfLastRequest: The MAC address of the station of the previous request,
6 used to validate FollowUpInformation.

1 *Change 12.5.1.3.8 as follows:*

2 12.5.1.3.8 rcvdMDSyncDot11~~Master~~TimeTransmitterA: A Boolean variable that is set to TRUE when an
3 MDSyncSend structure is provided by the PortSync entity.

4 *Change 12.5.1.3.10 as follows:*

5 12.5.1.3.10 nframesSent: An unsigned 8-bit integer used to count the number of frames sent by the
6 ~~slave~~timeReceiver (the number of indications received is counted).

7 *Change 12.5.1.3.12 as follows:*

8 12.5.1.3.12 initReqParamsDot11~~Master~~TimeTransmitterB: A structure whose members contain the
9 values of the fields of an MLME-FINETIMINGMSMTRQ.indication primitive.

10 *Change 12.5.1.3.14 as follows:*

11 12.5.1.3.14 nextRequestSendTime: A UScaledNs variable whose value is the expected time that the next
12 MLME-FINETIMINGMSMTRQ.indication primitive, for the next request from the ~~slave~~timeReceiver, will
13 be received.

14 12.5.1.4 State machine functions

15 *Change 12.5.1.4.1 a) as follows:*

16 12.5.1.4.1 setRequestParams(&requestParams, MDSyncSend): Assigns values to the parameters of the
17 request primitive of either MLME-TIMINGMSMT or MLME-FINETIMINGMSMT (see 12.5.1.6) as
18 follows:

19 a) Members of the FollowUpInformation member of the VendorSpecific information element, as
20 defined in 12.7, are assigned as defined in 11.4.4 with the exception of the correctionField, which is
21 assigned, for TM, by the function saveConfirmInfo1() in ~~Master~~TimeTransmitter state machine A
22 (see Figure 12-5) and, for FTM, by the function saveConfirmInfo2() in ~~Master~~TimeTransmitter state
23 machine B (see Figure 12-6).

24 *Change 12.5.1.4.2 as follows:*

25 12.5.1.4.2 setAsCapable (&initReqParamsDot11~~Master~~TimeTransmitterB): Determines the value of
26 asCapable consistent with 12.4 and whether the ~~master~~timeTransmitter is able to grant the parameters
27 requested by the ~~slave~~timeReceiver. This function is used only for FTM.

28 *Change 12.5.1.4.3 as follows:*

29 12.5.1.4.3 initiateRequestWaitConfirmOrSaveInfo(): This function is defined as indicated below. It is
30 used in ~~Master~~TimeTransmitter state machine A. It is defined here so that the detailed code that it invokes
31 does not need to be placed into the state machine diagram.

```
32     initiateRequestWaitConfirmOrSaveInfo()
33     {
34         rcvdMDSyncDot11MasterTimeTransmitterA = FALSE;
35     }
```

```

1      If (tmFtmSupport == 0x01)
2      {
3          if ((++dialogToken % 256) == 0) dialogToken++;
4          requestParams.DialogToken=dialogToken;
5          requestParams.PeerMACAddress = dot11SlaveTimeReceiverMac;
6          setRequestParams(&requestParams, MDSyncSend);
7          MLME-TIMINGMSMT.request(requestParams);
8          requestParams.FollowUpDialogToken = 0;
9          //In case no confirm is received
10         slaveTimeReceiverMacOfLastRequest = dot11SlaveTimeReceiverMac;
11     }
12 }

```

13 Change the first paragraph of 12.5.1.4.4 as follows:

14 **12.5.1.4.4 saveConfirmInfo1():** This function is defined as indicated below. It is used in
15 MasterTimeTransmitter state machine A. It is defined here so that the detailed code that it invokes does not
16 need to be placed into the state machine diagram.

17 Change 12.5.1.4.5 as follows:

18 **12.5.1.4.5 initiateRequestWaitConfirm():** This function is defined as indicated below. It is used in
19 MasterTimeTransmitter state machine B. It is defined here so that the detailed code that it invokes does not
20 need to be placed into the state machine diagram.

```

21     initiateRequestWaitConfirm()
22     {
23         If ((++dialogToken % 256) == 0) dialogToken++;
24         If (nframesSent ==
25 initReqParamsDot11MasterTimeTransmitterB.framesPerBurst)
26             dialogToken = 0;
27
28         requestParams.DialogToken=dialogToken;
29         requestParams.PeerMACAddress = dot11SlaveTimeReceiverMac;
30         setRequestParams(&requestParams, MDSyncSend);
31         // In the following statement, MinDeltaFTM, which is in units of 100
32         // microseconds, is converted to UScaledNs (i.e., units of 2-16 ns; see 6.3.3.2)
33         nextRequestSendTime = currentTime +
34             initReqParamsDot11MasterTimeTransmitterB.MinDeltaFTM * (65536 x
35 105);
36         MLME-FINETIMINGMSMT.request(requestParams);
37         requestParams.FollowUpDialogToken = 0; //In case no confirm is received
38         slaveTimeReceiverMacOfLastRequest = dot11SlaveTimeReceiverMac;
39     }

```

40 Change the first paragraph of 12.5.1.4.6 as follows:

41 **12.5.1.4.6 saveConfirmInfo2():** This function is defined as indicated below. It is used in
42 MasterTimeTransmitter state machine B. It is defined here so that the detailed code that it invokes does not
43 need to be placed into the state machine diagram.

44 12.5.1.5 Shared variables

45 Change 12.5.1.5.6 as follows:

1 **12.5.1.5.6 ftmReqGrantedMasterTimeTransmitter**: A Boolean whose value is TRUE if the
2 ~~master~~timeTransmitter grants the current initial FTM request and FALSE otherwise.

3 *Change the title of 12.5.1.6 as follows:*

4 **12.5.1.6 MasterTimeTransmitter** primitives

5 *Change 12.5.1.6.1 as follows:*

6 **12.5.1.6.1 MLME-TIMINGMSMT.request**

7 The MLME-TIMINGMSMT.request primitive is used by a ~~master~~timeTransmitter station to initiate a
8 Timing Measurement and also communicates timestamps t1 and t4 captured by the ~~master~~timeTransmitter
9 during a previous measurement. The primitive and its parameters are specified in 6.3.57.2 of IEEE Std
10 802.11-2016.

11 *Change 12.5.1.6.3 as follows:*

12 **12.5.1.6.3 MLME-FINETIMINGMSMT.request**

13 The MLME-FINETIMINGMSMT request primitive is used by a ~~master~~timeTransmitter station to initiate a
14 Fine Timing Measurement and also communicates timestamps t1 and t4 captured by the
15 ~~master~~timeTransmitter during a previous measurement. The primitive and its parameters are specified in
16 6.3.58.2 of IEEE Std 802.11-2016.

17 *Change 12.5.1.6.5 as follows:*

18 **12.5.1.6.5 MLME-FINETIMINGMSMTRQ.indication**

19 The MLME-FINETIMINGMSMTRQ.indication primitive indicates to a ~~master~~timeTransmitter station that
20 the ~~slave~~timeReceiver is requesting a burst of FTM frames with the indicated parameters. The primitive and
21 its parameters are specified in 6.3.70.3 of IEEE Std 802.11-2016.

22 *Change the title of 12.5.2 as follows:*

23 **12.5.2 Media-dependent ~~slave~~timeReceiver state machine**

24 *Change 12.5.2.1 as follows:*

25 **12.5.2.1 Overview**

26 The MD entity of an IEEE 802.11 port whose PTP Port state is ~~SlavePort~~TimeReceiverPort or PassivePort
27 (see 10.3.6) shall behave in a manner that is indistinguishable, relative to an observer external to a system,
28 from a strict implementation of the ~~slave~~timeReceiver state machine in 12.5.2.2, the local variables specified
29 in 12.5.2.3, the functions specified in 12.5.2.4, the shared variables specified in 12.5.2.5, and the primitives
30 defined in 12.5.2.6.

31 The ~~slave~~timeReceiver state machine is responsible for collecting information from the Timing
32 measurement or Fine Timing measurement indications, constructing an MDSyncReceive structure with the
33 relevant information, and passing the structure to the PortSync entity for further processing. In order to do
34 this, the state machine saves locally captured timestamps (i.e., t2 and t3) received in the indication and

1 associates them with the timestamps sent from the ~~master~~timeTransmitter port in a future indication (i.e., t1
2 and t4). In addition, for Fine Timing measurement, the ~~slave~~timeReceiver state machine is responsible for
3 generating the MLME-FINETIMINGMSMTRQ.request primitive, which causes the initial FTM request
4 frame to be sent to the ~~master~~timeTransmitter.

5 *Change 12.5.2.2 as follows:*

6 **12.5.2.2 State diagram**

7 Figure 12-7 presents the ~~slave~~timeReceiver state machine. While quantities are shown to be computed from
8 information in consecutive indications, an implementation can choose to compute over longer intervals as
9 long as the clock performance requirements of Annex B are met.

10 **12.5.2.3 State machine local variables**

11 *Change 12.5.2.3.6 as follows:*

12 **12.5.2.3.6 nframesRcvd:** An unsigned 8-bit integer used to count the number of frames received by the
13 ~~master~~timeTransmitter in the burst (the number of indications received from the ~~master~~timeTransmitter are
14 counted).

15 *Change 12.5.2.3.7 as follows:*

16 **12.5.2.3.7 initReqParamsDot11~~Slave~~TimeReceiver:** A structure whose members contain the values of the
17 fields of an MLME-FINETIMINGMSMTRQ.indication primitive.

18 *Change 12.5.2.3.8 as follows:*

19 **12.5.2.3.8 ftmsPerBurst:** The value of the FTM parameter ‘FTMs per burst’ (see 12.6), i.e., the number of
20 FTM frames in the burst granted by the ~~master~~timeTransmitter.

21 *Change 12.5.2.3.9 as follows:*

22 **12.5.2.3.9 ftmReqGranted~~Slave~~TimeReceiver:** A Boolean that is TRUE if the ~~master~~timeTransmitter has
23 granted the respective request for a burst and FALSE otherwise.

24 *Change 12.5.2.3.11 as follows:*

25 **12.5.2.3.11 D1, D2:** Temporary local variables used to hold the values of delay computed for the first two
26 FTM frames and corresponding Acks when the ~~master~~timeTransmitter grants the request for three FTM
27 frames.

28 **12.5.2.4 State machine functions**

29 *Change 12.5.2.4.1 as follows:*

30 **12.5.2.4.1 setMDSyncReceiveDot11~~Slave~~TimeReceiver(indParams):** Creates an MDSyncReceive
31 structure and returns the structure. All fields are assigned from FollowUpInformation (contained in the
32 VendorSpecific information element) of indParams as in 11.2.14.2.1.

Replace Figure 12-7 with the following figure.

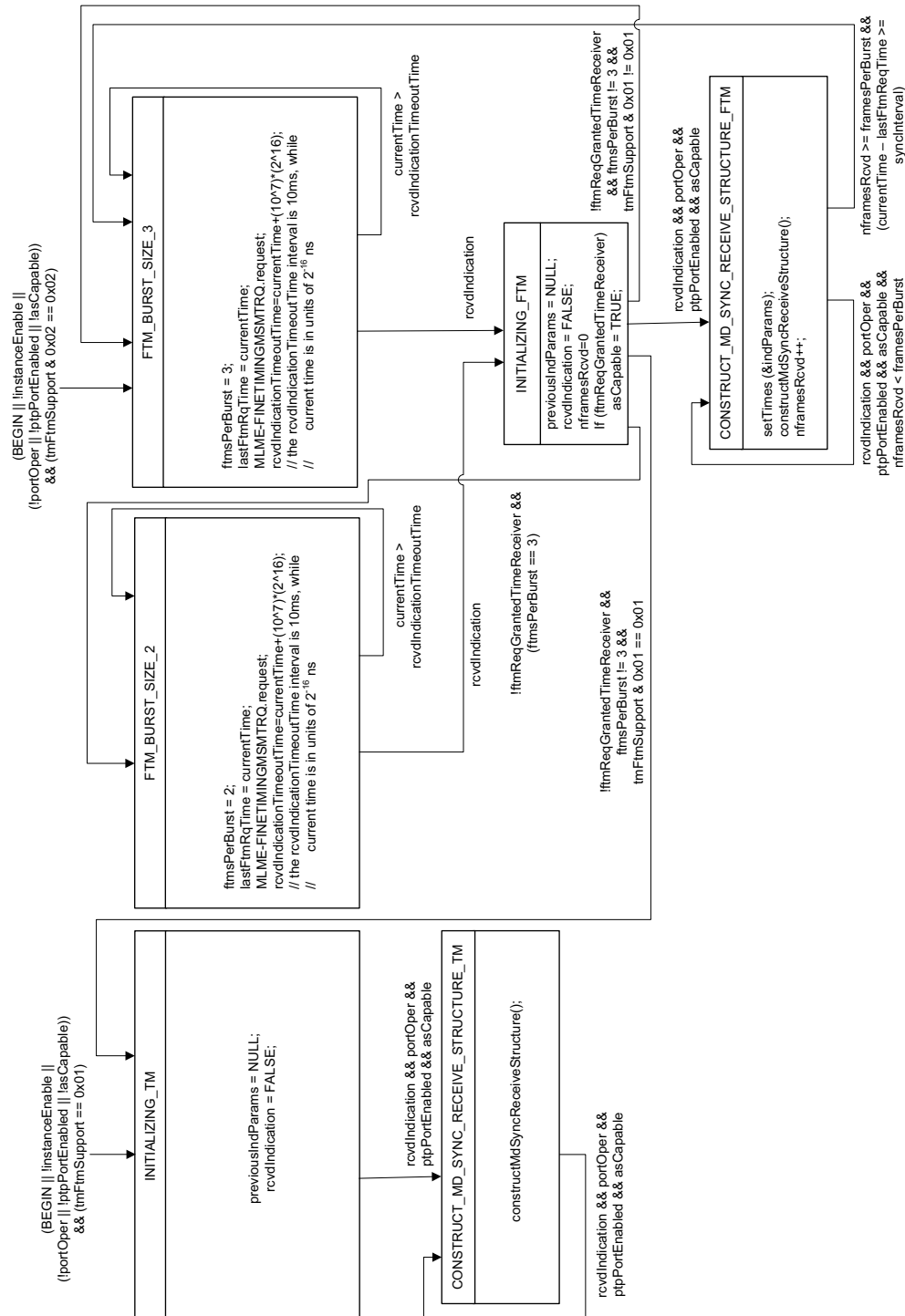


Figure 12-7—**SlaveTimeReceiver** state machine

1 Change the first paragraph of 12.5.2.4.3 as follows:

12.5.2.4.3 setTimes (&indParams): extracts the timestamp values from the successive indParams structures returned by the multiple FTM frame exchanges of a burst, and places the correct times (corresponding to minimum delay frames and Acks) in the final indParams structure. This final indParams structure is then used in the function constructMdSyncReceiveStructure(). This procedure is needed when the **masterTimeTransmitter** grants three FTM frames for the burst. If the **masterTimeTransmitter** grants only two FTM frames for the burst, the timestamp values returned in the indication primitive of the second frame are used. The function setTimes is used in the **SlaveTimeReceiver** state machine and is defined here so that the detailed code that it invokes does not need to be placed into the state machine diagram.

9 Change 12.5.2.4.4 as follows:

12.5.2.4.4 constructMdSyncReceiveStructure(): This function constructs the MD Sync Receive structure and is defined as indicated below. It is used in the **SlaveTimeReceiver** state machine. It is defined here so that the detailed code that it invokes does not need to be placed into the state machine diagram.

```

13     constructMdSyncReceiveStructure()
14     {
15         if (tmFtmSupport == 0x01)
16             MLME-TIMINGMSMT.indication(&indParams);
17         else if (tmFtmSupport & 0x02 == 0x02)
18             {
19                 MLME-FINETIMINGMSMT.indication(&indParams);
20                 nframesRcvd++;
21                 if (nframesRcvd ==
22 initReqParamsDot11SlaveTimeReceiver.framesPerBurst) ||
23                     (currentTime > endofBurstDurationTime)
24                     RESTART=1;
25             }
26
27         if ((previousIndParams != NULL) &&
28             (previousIndParams.PeerMacAddress == dot11SlaveTimeReceiverMac)
29 &&
30             (indParams.FollowUpDialogToken != 0))
31             {
32
33                 neighborRateRatio =
34                     (indParams.T1-previousIndParams.T1) /
35                     (indParams.T2-previousIndParams.T2);
36                 //NOTE: Other methods of computing neighborRateRatio
37                     can be used.
38
39                 if (tmFtmSupport == 0x01)
40                     K = 1;
41                 else if (tmFtmSupport & 0x02 == 0x02)
42                     K = -3;
43                 //K = 1 for Timing Measurement and K = -3 for Fine Timing Measurement
44                 meanLinkDelay =
45                     (((indParams.T4 - indParams.T1) -
46                     neighborRateRatio * (indParams.T3 - indParams.T2)) /
47                     (2.0)) * (10^K);
48
49                 //NOTE: Other methods of computing meanLinkDelay
50                     can be used.
51
52                 MD Sync Receive =
53 setMD Sync ReceiveDot11SlaveTimeReceiver(indParams);
54                 MD Sync Receive.VendorSpecific.rateRatio +=

```

```

1          (neighborRateRatio – 1);
2      MDSyncReceive.VendorSpecific.upstreamTxTime =
3          indParams.T2* (216) *(10K) -
4          meanLinkDelay*(216)/neighborRateRatio;
5      //NOTE: Actions performed with the timestampError
6          parameters of indParams are implementation independent.
7
8          passMDSyncReceiveToPortSync(&MDSyncReceive);
9      }
10     previousIndParams = indParams;
11     rcvdIndication = FALSE;
12 }

```

13 *Change the title of 12.5.2.6 as follows:*

14 **12.5.2.6 SlaveTimeReceiver primitives**

15 *Change 12.5.2.6.1 as follows:*

16 **12.5.2.6.1 MLME-TIMINGMSMT.indication**

17 The MLME-TIMINGMSMT.indication primitive is received by a slaveTimeReceiver station as the natural
18 result of the peer masterTimeTransmitter station issuing the corresponding request primitive and carries the
19 same parameters plus local timestamp information. The primitive and its parameters are specified in 6.3.57.4
20 of IEEE Std 802.11-2016.

21 *Change 12.5.2.6.2 as follows:*

22 **12.5.2.6.2 MLME-FINETIMINGMSMT.indication**

23 The MLME-FINETIMINGMSMT.indication primitive is received by a slaveTimeReceiver station as the
24 natural result of the peer masterTimeTransmitter station issuing the corresponding request primitive and
25 carries the same parameters plus local timestamp information. The primitive and its parameters are specified
26 in 6.3.58.4 of IEEE Std 802.11-2016.

27 *Change 12.5.2.6.3 as follows:*

28 **12.5.2.6.3 MLME-FINETIMINGMSMTRQ.request**

29 The MLME-FINETIMINGMSMTRQ.request primitive is used by the slaveTimeReceiver to request a burst
30 of FTM frames from the masterTimeTransmitter, with respective FTM parameters. The primitive and its
31 parameters are specified in 6.3.70.2 of IEEE Std 802.11-2016.

32 **12.6 FTM parameters**

33 *Change the second paragraph of 12.6 as follows:*

34 The values of the FTM parameters given in Table 12-2 shall be used in the MLME-
35 FINETIMINGMSMTRQ.request invoked by the slaveTimeReceiver STA (i.e., in the initial FTM Request).
36 The values for Burst Duration and Min Delta FTM given in Table 12-3 shall be used in the MLME-
37 FINETIMINGMSMTRQ.request invoked by the slaveTimeReceiver STA.

1 **Change 12.6 Table 12-2 as follows:**

Table 12-2—FTM parameters relevant to time-synchronization transport

Parameter	Value	Description
Number of Bursts Exponent	0	Log to base 2 of the number of bursts requested by the slave timeReceiver (value of 0 indicates that one burst is requested)
Burst Duration	See Table 12-3	Duration of the burst of FTM frames and their corresponding Acks
Min Delta FTM	See Table 12-3	Minimum time between consecutive FTM frames
Partial TSF Timer	1	See 9.4.2.168 of IEEE Std 802.11-2016
Partial TSF Timer No Preference	Reserved in the initial FTM request	See 9.4.2.168 of IEEE Std 802.11-2016
ASAP	1	ASAP = 1 indicates that the slave timeReceiver would like the master timeTransmitter to respond as soon as possible
ASAP Capable	Reserved in the initial FTM request	See 9.4.2.168 of IEEE Std 802.11-2016
FTMs per burst	3 in the first initial FTM Request 2 in the first retry, if the first initial FTM Request is not granted	Desired number of FTM frames and corresponding Acks in the requested burst
Burst Period	Reserved when Number of Bursts Exponent is zero	See 9.4.2.168 of IEEE Std 802.11-2016

2

3 **12.7 Format of VendorSpecific information element**

4 **Change the last paragraph of 12.7 as follows:**

5 This mechanism shall be used to carry end-to-end link-independent timing information from the
6 ~~master~~timeTransmitter port to the associated ~~slave~~timeReceiver port, including preciseOriginTimestamp,
7 rateRatio, correctionField, and other fields of the Follow-Up message, as described in 12.5.1.4. For
8 consistency, all of these fields are packed into the FollowUpInformation field using exactly the same format
9 as used for full-duplex point-to-point links. In other words, the ~~master~~timeTransmitter state machine
10 communicates an entire Follow_Up message [i.e., including all the fields of the common header (see 11.4.2
11 and 10.6.2), the preciseOriginTimestamp, and all the fields of the Follow_Up information TLV (see 11.4.4)]
12 using this mechanism. The Type field, illustrated in Figure 12-8, identifies this use of the OUI or CID within
13 the VendorSpecific information element. Table 12-4 lists values for the Type field.

12.8 Synchronization message interval

12.8.2 Synchronization message interval default value

3 *Change NOTE 1 of 12.8.2 as follows:*

NOTE 1—For TM, a ~~slave~~*timeReceiver* port that requests (using a Signaling message that contains a message interval request TLV; see 10.6.4 and 10.3.18) that the PTP Port at the other end of the attached link set its currentLogSyncInterval to a specific value can determine if the request was honored by examining the logMessageInterval field of a FollowUpInformation contained in the VendorSpecific information element of a subsequent MLME indication primitive.

9

1 13. Media-dependent layer specification for interface to IEEE 802.3 Ethernet 2 passive optical network link

3 13.1 Overview

4 13.1.1 General

5 *Change the second paragraph in 13.1.1 as follows:*

6 A time-aware system may contain more than one OLT and/or ONU. Each PTP Instance of a time-aware
7 system uses at most one ONU port, but may serve, i.e., provide timing to, more than one OLT port (i.e., each
8 PTP Instance of a time-aware system is a clock ~~slave~~timeReceiver to at most one EPON link, but can be
9 clock ~~master~~timeTransmitter to more than one EPON link). Two different PTP Instances of a time-aware
10 system may use different ONU ports.

11 *Change 13.1.2 as follows:*

12 13.1.2 Description of the EPON timing process

13 The timing process in EPON relies on the 32-bit counters (see 64.2.2.2 and 77.2.2.2 of IEEE Std 802.3-
14 2018) at both the OLT and the ONU. The 32-bit counter used by EPON is the LocalClock entity of the PTP
15 Instance that uses the respective OLT or ONU. These counters increment every time_quantum, which is
16 equal to 16 ns (see 64.2.2.1 and 77.2.2.1 of IEEE Std 802.3-2018). IEEE Std 802.3-2018 defines multipoint
17 control protocol (MPCP), which is one of the protocols that enable MAC clients to communicate over a
18 point-to-multipoint optical network. When either the clock ~~master~~timeTransmitter (OLT) or the clock
19 ~~slave~~timeReceiver (ONU) transmits an MPCP data unit (MPCPDU), its counter value is mapped into the
20 timestamp field. Clause 64 and Clause 77 of IEEE Std 802.3-2018 specify the EPON timing mechanism.

21 *Change the title of 13.1.3 as follows:*

22 13.1.3 Best ~~master~~timeTransmitter selection

23 *Change 13.1.3.1 as follows:*

24 13.1.3.1 General

25 An EPON link contains one OLT and the associated ONUs. The OLT is the clock ~~master~~timeTransmitter and
26 the associated ONUs are clock ~~slave~~timeReceivers. The OLT initiates the time synchronization as a
27 requester. The ONUs are the responders of the time synchronization. In other words, the invocation of the
28 ~~BMCA~~BTCA results in the OLT having the PTP Port state ~~MasterPort~~TimeTransmitterPort and the ONU
29 having the PTP Port state ~~SlavePort~~TimeReceiverPort (see 10.3.1.1 and Table 10-2), for all PTP Instances
30 using these PTP Ports, regardless of the attributes of PTP Instances downstream from the ONU. This
31 behavior is achieved using the acceptable ~~master~~timeTransmitter table feature defined in 17.5 of IEEE Std
32 1588-2019.

33 A PTP Instance that contains an ONU port shall maintain a configured table, the
34 acceptable~~Master~~TimeTransmitterTable, and a per-PTP Port Boolean variable
35 acceptable~~Master~~TimeTransmitterTableEnabled. The data type of acceptable~~Master~~TimeTransmitterTable is
36 Acceptable~~Master~~TimeTransmitterTable (see 13.1.3.2).

1 **Change 13.1.3.2 as follows:**

2 **13.1.3.2 Acceptable~~Master~~TimeTransmitterTable**

3 The Acceptable~~Master~~TimeTransmitterTable type represents a table of Acceptable~~Master~~TimeTransmitter
4 entries.

```
5 struct AcceptableMasterTimeTransmitterTable {
6     UInteger16 maxTableSize;
7     UInteger16 actualTableSize;
8     AcceptableMasterTimeTransmitter[actualTableSize] acceptableMasterTimeTransmitter;
9 }
```

10 The maxTableSize member is the maximum size of the Acceptable~~Master~~TimeTransmitterTable. The
11 actualTableSizeMember is the actual size of the Acceptable~~Master~~TimeTransmitterTable. The
12 Acceptable~~Master~~TimeTransmitter array contains a list of Acceptable~~Master~~TimeTransmitter PTP Ports.
13 The value of maxTableSize is implementation specific. actualTableSize shall be less than or equal to
14 maxTableSize.

15 An Acceptable~~Master~~TimeTransmitterTable is configurable and may contain a number of
16 Acceptable~~Master~~TimeTransmitter entries up to maxTableSize.

17 **Change 13.1.3.3 as follows:**

18 **13.1.3.3 Acceptable~~Master~~TimeTransmitter**

19 The Acceptable~~Master~~TimeTransmitter type represents a PTP Port that can be considered, in the execution
20 of the ~~BMCA~~BTCA, as a candidate for ~~master~~timeTransmitter.

```
21 struct AcceptableMasterTimeTransmitter {
22     PortIdentity acceptablePortIdentity;
23     UInteger8 alternatePriority1;
24 }
```

25 The acceptablePortIdentity member is the PortIdentity of an acceptable ~~master~~timeTransmitter port. The
26 alternatePriority1 member contains an alternate value for the priority1 attribute of the acceptable
27 ~~master~~timeTransmitter port (see 13.1.3.4).

28 **Change 13.1.3.4 as follows:**

29 **13.1.3.4 Acceptable ~~master~~timeTransmitter table feature**

30 The acceptable ~~master~~timeTransmitter table feature shall modify the operation of the ~~BMCA~~BTCA (see
31 10.3) as follows:

- 32 a) If acceptable~~Master~~TimeTransmitterTableEnabled for a PTP Port is FALSE, the ~~BMCA~~BTCA
33 operates as described in 10.3.
- 34 b) If acceptable~~Master~~TimeTransmitterTableEnabled for a PTP Port is TRUE, then the following
35 apply:
 - 36 1) The function qualifyAnnounce() of the PortAnnounceReceive state machine (see 10.3.11.2.1)
37 is replaced by the following:
38

- 1 **qualifyAnnounce (rcvdAnnouncePtr):** qualifies the received Announce message pointed to
2 by rcvdAnnouncePtr as follows:
- 3 i) if the Announce message was sent by the current PTP Instance, i.e., if
4 sourcePortIdentity.clockIdentity (see 10.6.2.2.11 and 8.5.2) is equal to thisClock (see
5 10.2.4.22), the Announce message is not qualified, and FALSE is returned;
 - 6 ii) if the stepsRemoved field is greater than or equal to 255, the Announce message is not
7 qualified, and FALSE is returned;
 - 8 iii) if the sourcePortIdentity of the Announce message is not equal to the sourcePortIdentity
9 of one of the entries of the acceptableMasterTimeTransmitterTable, FALSE is returned;
 - 10 iv) if a path trace TLV is present and one of the elements of the pathSequence array field of
11 the path trace TLV is equal to thisClock (i.e., the clockIdentity of the current PTP
12 Instance; see 10.2.4.22), the Announce message is not qualified, and FALSE is returned;
13 otherwise, the Announce message is qualified, and TRUE is returned. If a path trace
14 TLV is present, it is saved in the per port global variable receivedPathTrace. If a path
15 trace TLV is not present, the per port global variable receivedPathTrace is set to the
16 empty array.
- 17 2) If the alternatePriority1 member of the AcceptableMasterTimeTransmitter array element that
18 corresponds to the sourcePortIdentity of a received Announce message is 0, the
19 alternatePriority1 member has no effect on the operation of the BMCA BTCA.
 - 20 3) If the alternatePriority1 member of the AcceptableMasterTimeTransmitter array element that
21 corresponds to the sourcePortIdentity of a received Announce message is greater than 0, the
22 value of the grandmasterPriority1 field of the Announce message is replaced by the value of
23 alternatePriority1 of this AcceptableMasterTimeTransmitter array element for use in the
24 invocation of the BMCA BTCA.

25 **Change 13.1.3.5 as follows:**

26 **13.1.3.5 Default configuration of acceptable master time transmitter table feature**

27 The default configuration of the acceptable master time transmitter table feature for a PTP Instance that is
28 attached to an IEEE 802.3 EPON link shall be as follows:

- 29 a) If the PTP Instance does not contain an ONU port, the default
30 acceptableMasterTimeTransmitterTable is empty, i.e., the member actualTableSize is 0 and there are
31 no AcceptableMasterTimeTransmitter array entries. The variable
32 acceptableMasterTimeTransmitterTableEnabled for each PTP Port is set to FALSE.
- 33 b) If the PTP Instance contains an ONU port, the default acceptableMasterTimeTransmitterTable
34 contains one element in the AcceptableMasterTimeTransmitter array. The member actualTableSize
35 is 1. The acceptablePortIdentity of that element is set equal to the portIdentity of the OLT port that
36 the ONU port is attached to, and alternatePriority1 set equal to 244. The variable
37 acceptableMasterTimeTransmitterTableEnabled for each PTP Port is set to TRUE.

38 NOTE—These default settings ensure that, with the default priority1 values of 8.6.2.1, Table 8-1, used for all PTP
39 Instances, the PTP Instance that contains the ONU port will consider Announce messages only from the OLT that the
40 ONU port is attached to when invoking the BMCA BTCA. The alternatePriority1 value of 244 ensures that the OLT will
41 be considered better than the ONU in the sense of the BMCA BTCA, which will cause the OLT port state to be set to
42 MasterPortTimeTransmitterPort and the ONU port state to be set to SlavePortTimeReceiverPort. All other PTP Ports of
43 this PTP Instance that are not disabled and for which asCapable is TRUE will have PTP Port states of either
44 MasterPortTimeTransmitterPort or PassivePort. If all PTP Instances downstream from the ONU have priority1 greater
45 than 244, then the PTP Port at the other end of each link attached to each non-ONU port that is not disabled and for
46 which asCapable is TRUE will have PTP Port states of either SlavePortTimeReceiverPort or PassivePort; in this case,
47 the downstream network portions will get their timing through the EPON. However, if a downstream PTP Instance has
48 priority1 less than 244, or priority1 equal to 244 and is better than the Grandmaster PTP Instance information contained
49 in the Announce message received by the ONU based on other attributes, then the portion of the network that is
50 downstream of the ONU and includes that better PTP Instance will get its timing from that better downstream PTP

1 Instance. In this case, the endpoints of the link of that network portion attached to the PTP Instance that contains the
 2 ONU will both have PTP Port states of **MasterPortTimeTransmitterPort**, and the PTP Ports at each end of the link will
 3 send Announce messages. However, the Announce messages sent by the downstream PTP Instance will be ignored by
 4 the PTP Instance that contains the ONU because the sourcePortIdentity of those Announce messages will not be
 5 contained in the acceptable **MasterTimeTransmitterTable**. The Announce messages sent by the PTP Instance that
 6 contains the ONU will be used in the invocation of the **BMCABTCA** at the downstream PTP Instance; however, those
 7 Announce messages will not reflect the best **masterTimeTransmitter** because one of the downstream PTP Instances is
 8 better.

9 *Change 13.1.4 as follows:*

10 **13.1.4 Time synchronization in EPON**

11 Transmission in the EPON downstream direction (from OLT to ONUs) utilizes time division multiplexing
 12 (TDM). In the upstream direction (from ONUs to OLT), time division multiple access (TDMA) is employed.
 13 Due to the frame queuing in TDMA, the downstream delay is different from the upstream delay.
 14 Asymmetric delay also occurs in the EPON physical layer due to upstream and downstream transmission
 15 using different wavelengths. The index of refraction is frequency dependent, which results in the upstream
 16 and downstream delays being asymmetric. The accurate time synchronization across the EPON links is
 17 operated as follows. It is assumed that the clock **masterTimeTransmitter** (the OLT) has an accurate
 18 synchronized time. The clock **masterTimeTransmitter** informs the clock **slaveTimeReceiver** (the ONU) what
 19 the accurate synchronized time will be when the counter of the clock **slaveTimeReceiver** reaches a certain
 20 value. The information transfer can be accomplished using the organization-specific slow protocol (OSSP)
 21 message (see Clause 57 of IEEE Std 802.3-2018).

22 *Replace Figure 13-1 with the following figure:*

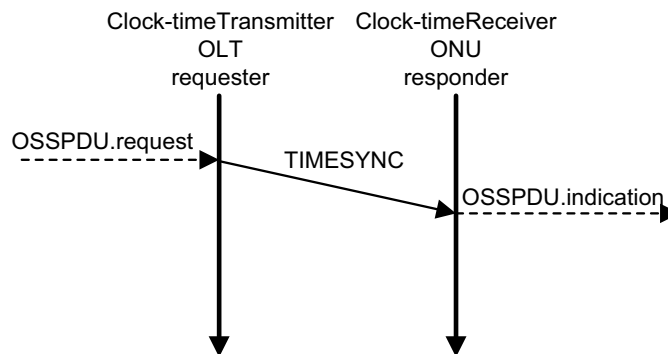


Figure 13-1—IEEE 802.3 EPON time-synchronization interfaces

23 The following reference process, illustrated schematically in Figure 13-1, will result in the clock
 24 **slaveTimeReceiver** of an ONU being synchronized to the clock **masterTimeTransmitter** of the OLT:

- 25 a) The clock **masterTimeTransmitter** selects a value X of the local MPCP counter that is used as the
 26 timing reference. Any value can be chosen, provided it is relative to the current epoch of the MPCP
 27 counter.
- 28 b) The clock **masterTimeTransmitter** calculates the $ToD_{X,i}$ based on $ToD_{X,o}$ using Equation (10-1).

$$29 \quad ToD_{X,i} = ToD_{X,o} + RTT_i \times \frac{\text{ndown}}{(\text{nup} + \text{ndown})} \times \text{rateRatio} \quad (10-1)$$

1 where $ToD_{X,i}$ is the synchronized time when the MPCP counter at the clock slaveTimeReceiver i
2 reaches a value equal to the timestamp X minus the $onuLatencyFactor$; $ToD_{X,o}$ is the synchronized
3 time when the MPCP counter at the clock masterTimeTransmitter reaches a value equal to the
4 timestamp X plus the $oltLatencyFactor$; RTT_i is the round-trip time measured by the clock
5 masterTimeTransmitter for clock slaveTimeReceiver i , i.e., ONU i ; nup is the effective refraction
6 index of the light propagating in the upstream channel; $ndown$ is the effective refraction index of the
7 light propagating in the downstream channel; and $rateRatio$ is the $rateRatio$ member of the most
8 recently received $MDSyncSend$ structure. The $onuLatencyFactor$ and $oltLatencyFactor$ are given in
9 Equation (10-2) and Equation (10-3), respectively. The impact of the worst-case variation in the
10 transmission wavelength for the clock masterTimeTransmitter and clock slaveTimeReceiver
11 transmitters is examined in appendix VII of ITU-T G.984.3, Amendment 2 (11/2009).

$$12 \quad \begin{aligned} onuLatencyFactor &= onuIngressLatency - \\ & (onuIngressLatency + onuEgressLatency) \times \frac{ndown}{(nup + ndown)} \times rateRatio \end{aligned} \quad (10-2)$$

$$13 \quad \begin{aligned} oltLatencyFactor &= oltEgressLatency - \\ & (oltIngressLatency + oltEgressLatency) \times \frac{ndown}{(nup + ndown)} \times rateRatio \end{aligned} \quad (10-3)$$

14 c) The clock masterTimeTransmitter sends the pair of values $(X, ToD_{X,i})$ to clock slaveTimeReceiver i
15 via the downstream TIMESYNC message.

16 NOTE—After the clock slaveTimeReceiver receives the downstream TIMESYNC message, it can compute the
17 synchronized time, ToD , when the value of the local MPCP counter is equal to S ; ToD is given by the following equation:

$$18 \quad ToD = ToD_{X,i} + [(S - X) \bmod (2^{32})](16 \text{ ns})(rateRatio)$$

19 where $(A) \bmod (B)$ is A modulo B .

20 The OSSP message is a general message (see 3.10), analogous to Follow_Up. Note that the preceding
21 synchronized time values correspond to timestamps that are referenced to the MAC control sublayer. Both
22 the clock masterTimeTransmitter and clock slaveTimeReceiver are responsible for compensating their
23 processing delays (e.g., the ingressLatency and egressLatency, as described in 8.4.3). RTT_i is measured
24 using MPCPDU timestamps, inserted into the frame structure as specified by 64.2.1.1 and 77.2.1.1 of IEEE
25 Std 802.3-2018.

26 13.3 Message format

27 13.3.1 TIMESYNC message

28 13.3.1.2 TIMESYNC message field specifications

29 13.3.1.2.8 $ToD_{X,i}$ (Timestamp)

30 **Change the first paragraph in 13.3.1.2.8 as follows:**

31 $ToD_{X,i}$ is the synchronized time when the MPCP counter at the clock slaveTimeReceiver i reaches a value
32 equal to X minus the $onuLatencyFactor$ (see 13.1.4). X is carried in the respective TIMESYNC message.
33 Synchronization of the MPCP clock is described in detail in 64.2.1.1 and 77.2.1.1 in IEEE Std 802.3-2018,
34 for 1G-EPON and 10G-EPON, respectively.

1 13.5 Layering for IEEE 802.3 EPON links

2 *Replace Figure 13-2 with the following figure:*

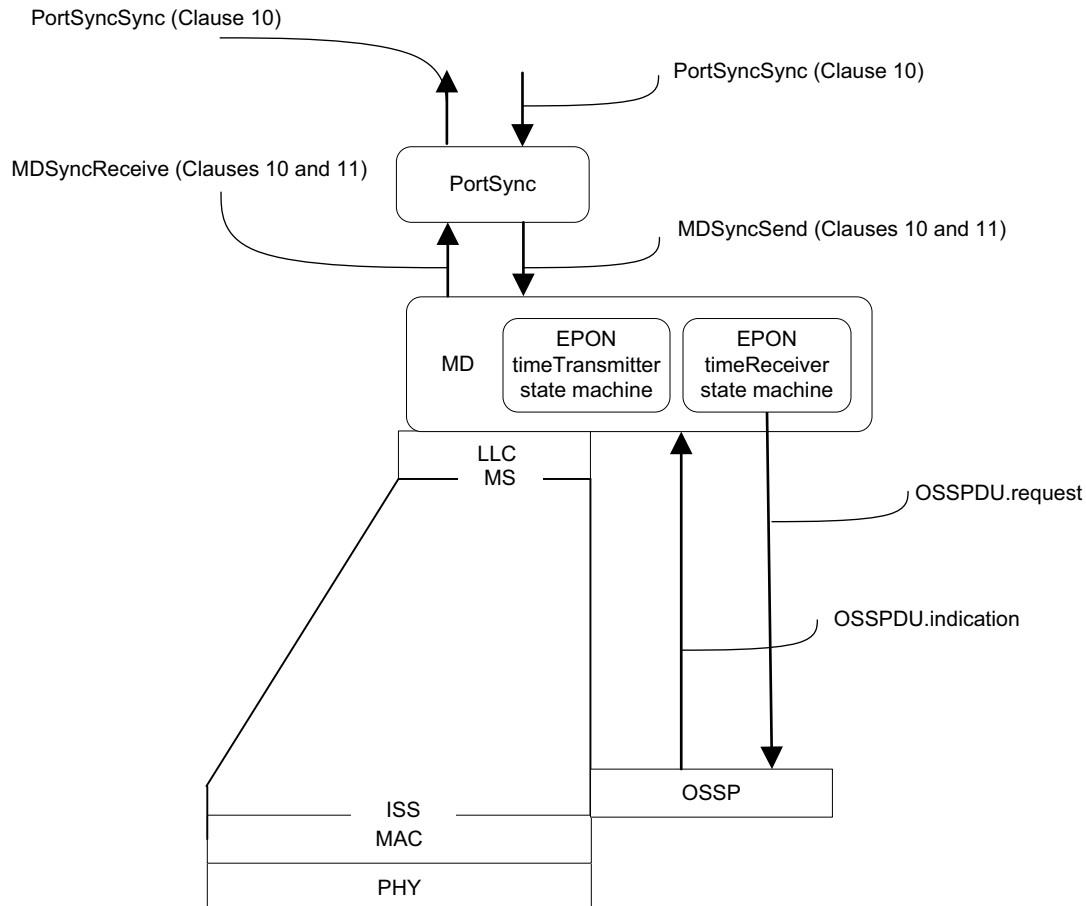


Figure 13-2—IEEE 802.3 EPON interface model

3 13.6 Service interface definitions

4 13.6.1 OSSPDU.request

5 *Change 13.6.1.1 as follows:*

6 13.6.1.1 General

7 This service interface primitive is generated periodically by the MD entity of the clock
8 ~~master~~timeTransmitter every sync interval (see 10.7.2.1). It triggers transmission of a TIMESYNC message
9 from the clock ~~master~~timeTransmitter to the clock ~~slave~~timeReceiver. The values of the parameters of the
10 primitive are sent to the clock ~~slave~~timeReceiver via the TIMESYNC message.

11 13.6.1.2 OSSPDU.request parameters

12 *Change 13.6.1.2.3 as follows:*

1 13.6.1.2.3 $ToD_{X,i}$ (Timestamp)

2 $ToD_{X,i}$ is the synchronized time when the MPCP counter at the clock ~~slave~~timeReceiver i reaches a value
3 equal to X minus the *onuLatencyFactor* (see 13.1.4). X is carried in the respective TIMESYNC message.
4 Synchronization of the MPCP clock is described in detail in 64.2.1.1 and 77.2.1.1 in IEEE Std 802.3-2018,
5 for 1G-EPON and 10G-EPON, respectively.

6 Change 13.6.1.3 as follows:

7 13.6.1.3 When generated

8 This primitive is generated by the clock ~~master~~timeTransmitter every $2^{\text{currentLogSyncInterval}}$ seconds when it
9 is in the ~~MASTER~~TIME_TRANSMITTER state, as the first phase of synchronized time information
10 transfer.

11 13.6.2 OSSPDU.indication

12 Change 13.6.2.1 as follows:

13 13.6.2.1 General

14 This service interface primitive is generated on receipt of a TIMESYNC message by the responder, and
15 provides the values contained in the corresponding OSSPDU.request primitive to the clock
16 ~~slave~~timeReceiver.

17 13.7 MD entity global variables

18 Change 13.7.1 as follows:

19 **13.7.1 RTT_i :** Is used only by the OLT MD entity. RTT_i is the RTT between the clock ~~master~~timeTransmitter
20 and clock ~~slave~~timeReceiver. The data type for RTT_i is UInteger32.

21 NOTE—RTT is measured and updated by the MPCP using the mechanism specified in IEEE Std 802.3-2018 and stored
22 in RTT_i when measured and updated. RTT_i is not used by the ONU and is set to zero in an ONU MD entity.

23 13.8 State machines

24 13.8.1 Requester state machine

25 13.8.1.2 State machine variables

26 Change 13.8.1.2.6 as follows:

27 **13.8.1.2.6 $ToD_{X,i}$:** The synchronized time when the MPCP counter at the clock ~~slave~~timeReceiver i reaches
28 a value equal to X (see 13.8.1.2.8) minus the *onuLatencyFactor* (see 13.1.4). The data type for $ToD_{X,i}$ is
29 Timestamp.

30 Change 13.8.1.2.7 as follows:

1 **13.8.1.2.7 $ToD_{X,o}$:** The synchronized time when the MPCP counter at the clock ~~master~~timeTransmitter
2 reaches a value equal to X (see 13.8.1.2.8) plus the *oltLatencyFactor* (see 13.1.4). The data type for $ToD_{X,o}$ is
3 Timestamp.

4

1 14. Timing and synchronization management

2 14.1 General

3 14.1.1 Data set hierarchy

4 *Change the list of managed data set in 14.1.1 as follows:*

5 The following hierarchy summarizes the managed data sets within a gPTP Node:

- 6 a) instanceList[]
 - 7 1) defaultDS
 - 8 2) currentDS
 - 9 3) parentDS
 - 10 4) timePropertiesDS
 - 11 5) pathTraceDS
 - 12 6) acceptable~~Master~~TimeTransmitterTableDS
 - 13 7) portList[]
 - 14 i) portDS
 - 15 ii) descriptionPortDS
 - 16 iii) portStatisticsDS
 - 17 iv) acceptable~~Master~~TimeTransmitterPortDS
 - 18 v) externalPortConfigurationPortDS
 - 19 vi) asymmetryMeasurementModeDS
 - 20 vii) commonServicesPortDS
- 21 b) commonServices
 - 22 1) commonMeanLinkDelayService
 - 23 i) cmlDsDefaultDS
 - 24 ii) cmlDsLinkPortList[]
 - 25 — cmlDsLinkPortDS
 - 26 — cmlDsLinkPortStatisticsDS
 - 27 — cmlDsAsymmetryMeasurementModeDS
 - 28 2) Future common services can follow.

30 14.1.2 Data set descriptions

31 *Change 14.1.2 f) and j) as follows:*

- 32 f) The Acceptable ~~Master~~TimeTransmitter Table Parameter Data Set
 33 (acceptable~~Master~~TimeTransmitterTableDS in 14.1.1; see Table 14-6), which represents the
 34 acceptable ~~master~~timeTransmitter table used when an EPON port is used by a PTP Instance of a
 35 time-aware system.
- 36 j) The Acceptable ~~Master~~TimeTransmitter Port Parameter Data Set
 37 (acceptable~~Master~~TimeTransmitterPortDS in 14.1.1; see Table 14-13), which represents the
 38 capability to enable/disable the acceptable ~~master~~timeTransmitter table feature on a PTP Port.

39 *Change NOTE in 14.1.2 as follows:*

1 NOTE—portDS, descriptionPortDS, portStatisticsDS, and acceptable~~Master~~TimeTransmitterPortDS correspond to a
2 logical PTP Port of a PTP Instance; a PTP Relay Instance or PTP End Instance physical port can contain one or more
3 logical ports (see 8.5.1). For example, a PTP Relay Instance physical port can be connected to a full-duplex point-to-
4 point link that contains one logical port. As another example, a PTP Relay Instance physical port can be connected to a
5 CSN link that contains more than one logical port.

6 14.2 Default Parameter Data Set (defaultDS)

7 14.2.8 currentUtcOffset

8 *Change the first paragraph in 14.2.8 as follows:*

9 The value is the offset between TAI and UTC, relative to the ~~ClockMaster~~ClockTimeTransmitter entity of
10 this PTP Instance. It is equal to the global variable sysCurrentUtcOffset (see 10.3.9.18). The value is in units
11 of seconds.

12 14.2.9 currentUtcOffsetValid

13 *Change the first paragraph in 14.2.9 as follows:*

14 The value is TRUE if the currentUtcOffset, relative to the ~~ClockMaster~~ClockTimeTransmitter entity of this
15 PTP Instance, is known to be correct. It is equal to the global variable sysCurrentUtcOffsetValid (see
16 10.3.9.14).

17 14.2.10 leap59

18 *Change the first paragraph in 14.2.10 as follows:*

19 A TRUE value indicates that the last minute of the current UTC day, relative to the
20 ~~ClockMaster~~ClockTimeTransmitter entity of this PTP Instance, will contain 59 s. It is equal to the global
21 variable sysLeap59 (see 10.3.9.13).

22 14.2.11 leap61

23 *Change the first paragraph in 14.2.11 as follows:*

24 A TRUE value indicates that the last minute of the current UTC day, relative to the
25 ~~ClockMaster~~ClockTimeTransmitter entity of this PTP Instance, will contain 61 s. It is equal to the global
26 variable sysLeap61 (see 10.3.9.12).

27 14.2.12 timeTraceable

28 *Change the first paragraph in 14.2.12 as follows:*

29 The value is set to TRUE if the timescale and the value of currentUtcOffset, relative to the
30 ~~ClockMaster~~ClockTimeTransmitter entity of this PTP Instance, are traceable to a primary reference
31 standard; otherwise the value is set to FALSE. It is equal to the global variable sysTimeTraceable (see
32 10.3.9.16).

1 14.2.13 frequencyTraceable

2 *Change the first paragraph in 14.2.13 as follows:*

3 The value is set to TRUE if the frequency determining the timescale of the
4 ~~ClockMaster~~ClockTimeTransmitter Entity of this PTP Instance is traceable to a primary standard; otherwise
5 the value is set to FALSE. It is equal to the global variable sysFrequencyTraceable (see 10.3.9.17).

6 *Change 14.2.14 as follows:*

7 14.2.14 ptpTimescale

8 The value is set to TRUE if the clock timescale of the ~~ClockMaster~~ClockTimeTransmitter Entity of this PTP
9 Instance is PTP (see 8.2) and FALSE otherwise.

10 14.3 Current Parameter Data Set (currentDS)

11 *Change 14.3.3 as follows:*

12 14.3.3 offsetFrom~~Master~~TimeTransmitter

13 The value is an implementation-specific representation of the current value of the time difference between a
14 ~~slave~~timeReceiver and the Grandmaster Clock, as computed by the ~~slave~~timeReceiver, and as specified in
15 10.2.10. The data type shall be TimeInterval. The default value is implementation specific.

16 *Change 14.3.7 as follows:*

17 14.3.7 gmChangeCount

18 This statistics counter tracks the number of times the Grandmaster PTP Instance has changed in a gPTP
19 domain. This counter increments when the PortAnnounceInformation state machine enters the
20 SUPERIOR_~~MASTER~~TIME_TRANSMITTER_PORT state or the
21 INFERIOR_~~MASTER~~TIME_TRANSMITTER_OR_OTHER_PORT state (see 10.3.12 and Figure 10-14).

22 *Change 14.3.8 as follows:*

23 14.3.8 timeOfLastGmChangeEvent

24 This timestamp takes the value of sysUpTime (see IETF RFC 3418) when the most recent Grandmaster PTP
25 Instance change occurred in a gPTP domain. This timestamp is updated when the PortAnnounceInformation
26 state machine enters the SUPERIOR_~~MASTER~~TIME_TRANSMITTER_PORT state or the
27 INFERIOR_~~MASTER~~TIME_TRANSMITTER_OR_OTHER_PORT state (see 10.3.12 and Figure 10-14).

28 *Change 14.3.9 as follows:*

29 14.3.9 timeOfLastGmPhaseChangeEvent

30 This timestamp takes the value of sysUpTime (see IETF RFC 3418) when the most recent change in
31 Grandmaster Clock phase occurred due to a change of either the Grandmaster PTP Instance or the
32 Grandmaster Clock time base. This timestamp is updated when one of the following occurs:

- 1 a) The PortAnnounceInformation state machine enters the
 2 SUPERIOR_ ~~MASTER~~ TIME_TRANSMITTER _PORT state or the
 3 INFERIOR_ ~~MASTER~~ TIME_TRANSMITTER _OR_OTHER_PORT state (see 10.3.12 and
 4 Figure 10-14), or
 5 b) The gmTimebaseIndicator managed object (see 14.3.6) changes and the lastGmPhaseChange field
 6 of the most recently received Follow_Up information TLV is nonzero.

7 Change 14.3.10 as follows:

8 14.3.10 timeOfLastGmFreqChangeEvent

9 This timestamp takes the value of sysUpTime (see IETF RFC 3418) when the most recent change in
 10 Grandmaster Clock frequency occurred due to a change of either the Grandmaster PTP Instance or the
 11 Grandmaster Clock time base. This timestamp is updated when one of the following occurs:

- 12 a) The PortAnnounceInformation state machine enters the
 13 SUPERIOR_ ~~MASTER~~ TIME_TRANSMITTER _PORT state or the
 14 INFERIOR_ ~~MASTER~~ TIME_TRANSMITTER _OR_OTHER_PORT state (see 10.3.12 and
 15 Figure 10-14), or
 16 b) The gmTimebaseIndicator managed object (see 14.3.6) changes, and the lastGmFreqChange field of
 17 the most recently received Follow_Up information TLV is nonzero.

18 Change 14.3.11 as follows:

19 14.3.11 currentDS table

20 There is one currentDS table per PTP Instance of a time-aware system, as detailed in Table 14-2.

Table 14-2—currentDS table

Name	Data type	Operations supported ^a	References
stepsRemoved	UInteger16	R	14.3.2
offsetFrom Master <u>TimeTransmitter</u>	TimeInterval	R	14.3.3
lastGmPhaseChange	ScaledNs	R	14.3.4
lastGmFreqChange	Float64	R	14.3.5
gmTimebaseIndicator	UInteger16	R	14.3.6
gmChangeCount	UInteger32	R	14.3.7
timeOfLastGmChangeEvent	UInteger32 (sysUp Time, IETF RFC 3418)	R	14.3.8
timeOfLastGmPhaseChangeEvent	UInteger32 (sysUp Time, IETF RFC 3418)	R	14.3.9
timeOfLastGmFreqChangeEvent	UInteger32 (sysUp Time, IETF RFC 3418)	R	14.3.10

^a R = Read only access; RW = Read/write access.

1 14.4 Parent Parameter Data Set (parentDS)

2 14.4.2 parentPortIdentity

3 *Change the second paragraph in 14.4.2 as follows:*

4 If this PTP Instance is not the Grandmaster PTP Instance, the value is the portIdentity of the
5 ~~MasterTimeTransmitter~~Port (see Table 10-7) of the gPTP communication path attached to the single
6 ~~slaveTimeReceiver~~ port of this PTP Instance.

7 *Change title of 14.7 as follows:*

8 14.7 Acceptable ~~MasterTimeTransmitter~~ Table Parameter Data Set 9 (acceptable~~MasterTimeTransmitter~~TableDS)

10 *Change 14.7.1 as follows:*

11 14.7.1 General

12 The acceptable~~MasterTimeTransmitter~~TableDS represents the acceptable ~~masterTimeTransmitter~~ table used
13 when an EPON port is used by a PTP Instance of a time-aware system.

14 *Change 14.7.2 as follows:*

15 14.7.2 maxTableSize

16 The value is the maximum size of the Acceptable~~MasterTimeTransmitter~~Table. It is equal to the
17 maxTableSize member of the Acceptable~~MasterTimeTransmitter~~Table structure (see 13.1.3.2).

18 *Change 14.7.3 as follows:*

19 14.7.3 actualTableSize

20 The value is the actual size of the Acceptable~~MasterTimeTransmitter~~Table. It is equal to the actualTableSize
21 member of the Acceptable~~MasterTimeTransmitter~~Table structure (see 13.1.3.2 and 13.1.3.5), i.e., the current
22 number of elements in the acceptable ~~masterTimeTransmitter~~ array. The actual table size is less than or equal
23 to the maxTableSize.

24 *Change 14.7.4 as follows:*

25 14.7.4 acceptable~~MasterTimeTransmitter~~Array

26 Each element of this array is an Acceptable~~MasterTimeTransmitter~~ structure (see 13.1.3.3 and 13.1.3.5).

27 *Change 14.7.5 as follows:*

28 14.7.5 acceptable~~MasterTimeTransmitter~~TableDS table

29 There is one acceptable~~MasterTimeTransmitter~~TableDS table per PTP Instance of a time-aware system, as
30 detailed in Table 14-6.

Table 14-6—acceptable~~Master~~TimeTransmitterTableDS table

Name	Data type	Operations supported ^a	References
maxTableSize	UInteger16	R	14.7.2
actualTableSize	UInteger16	RW	14.7.3
acceptable Master <u>TimeTransmitter</u> Array	Acceptable Master <u>TimeTra</u> <u>nsmmitter</u> [actualTableSize] (see 13.1.3.3)	RW	14.7.4

^a R = Read only access; RW = Read/write access.

1

2

3 14.8 Port Parameter Data Set (portDS)

4 14.8.3 portState

5 *Change Table 14-7 in 14.8.3 as follows:*

Table 14-7—portState enumeration

State	Value
DisabledPort	3
MasterPort <u>TimeTransmitterPort</u>	6
PassivePort	7
SlavePort <u>TimeReceiverPort</u>	9
All other values reserved	
NOTE—The enumeration values are consistent with Table 20 in IEEE Std 1588-2019.	

6 14.8.8 meanLinkDelay

7 *Change the first paragraph in 14.8.8 as follows:*

8 The value is equal to the value of the per-PTP Port global variable meanLinkDelay (see 10.2.5.8). It is an
9 estimate of the current one-way propagation time on the link attached to this PTP Port, measured as
10 specified for the respective medium (see 11.2.17, 12.5.2, and 16.4). The value is zero for PTP Ports attached
11 to IEEE 802.3 EPON links and for the ~~master~~timeTransmitter port of an IEEE 802.11 link, because one-way
12 propagation delay is not measured on the latter and not directly measured on the former. The data type shall
13 be TimeInterval. The default value is zero.

14 *Change 14.8.16 as follows:*

1 14.8.16 announceReceiptTimeout

2 The value is the number of Announce message transmission intervals that a ~~slave~~timeReceiver port waits
3 without receiving an Announce message before assuming that the ~~master~~timeTransmitter is no longer
4 transmitting Announce messages and the ~~BMCA~~BTCA needs to be run, if appropriate (see 10.7.3.2).

5 *Change 14.8.21 as follows:*

6 14.8.21 syncReceiptTimeout

7 The value is the number of time-synchronization transmission intervals that a ~~slave~~timeReceiver port waits
8 without receiving synchronization information before assuming that the ~~master~~timeTransmitter is no longer
9 transmitting synchronization information and that the ~~BMCA~~BTCA needs to be run, if appropriate (see
10 10.7.3.1).

11 14.10 Port Parameter Statistics Data Set (portStatisticsDS)

12 *Change 14.10.13 as follows:*

13 14.10.13 txSyncCount

14 This counter increments every time synchronization information is transmitted, denoted by one of the
15 following events:

- 16 — A transition to TRUE from FALSE of the rcvdMDSyncMDSS variable of the MDSyncSendSM
17 state machine (see 11.2.15.1.1 and Figure 11-7) when in the INITIALIZING, SEND_FOLLOW_UP,
18 or SET_CORRECTION_FIELD states; or
- 19 — The INITIATE_REQUEST_WAIT_CONFIRM_OR_SAVE_INFO state is entered in Figure 12-5
20 and TM is being used [i.e., (tmFtmSupport == 0x01 || (tmFtmSupport & 0x01 == 0x01))&&
21 ftmReqGrantedMasterTimeTransmitter) in ~~master~~timeTransmitter state machine A of Figure 12-5];
22 or
- 23 — The INITIATE_REQUEST_WAIT_CONFIRM state is entered in Figure 12-6 (in this case FTM is
24 being used).

25 *Change title of 14.11 as follows:*

26 14.11 Acceptable ~~Master~~TimeTransmitter Port Parameter Data Set 27 (acceptableMasterTimeTransmitterPortDS)

28 *Change 14.11.1 as follows:*

29 14.11.1 General

30 The acceptableMasterTimeTransmitterPortDS represents the capability to enable/disable the acceptable
31 ~~master~~timeTransmitter table feature on a PTP Port. For the single PTP Port of a PTP End Instance and for
32 each PTP Port of a PTP Relay Instance, this data set contains the single member
33 acceptableMasterTimeTransmitterTableEnabled, which is used to enable/disable the Acceptable
34 MasterTimeTransmitter Table Feature. The number of such data sets is the same as the value of
35 defaultDS.numberPorts.

36 *Change 14.11.2 as follows:*

1 14.11.2 acceptable~~Master~~TimeTransmitterTableEnabled

2 The value is equal to the value of the Boolean acceptable~~Master~~TimeTransmitterTableEnabled (see 13.1.3.2
3 and 13.1.3.5).

4 *Change 14.11.3 as follows:*

5 14.11.3 acceptable~~Master~~TimeTransmitterPortDS table

6 There is one acceptable~~Master~~TimeTransmitterPortDS table per PTP Port, per PTP Instance of a time-aware
7 system as detailed in Table 14-13.

Table 14-13—acceptable~~Master~~TimeTransmitterPortDS table

Name	Data type	Operations supported ^a	References
acceptable Master <u>TimeTransmitter</u> TableEnabled	Boolean	RW	14.11.2

^a R = Read only access; RW = Read/write access.

8 14.16 Common Mean Link Delay Service Link Port Parameter Data Set 9 (cmldsLinkPortDS)

10 14.16.6 meanLinkDelay

11 *Change the first paragraph of 14.16.6 as follows:*

12 The value is equal to the value of the per-port global variable meanLinkDelay (see 10.2.5.8). It is an estimate
13 of the current one-way propagation time on the link attached to this Link Port, measured as specified for the
14 respective medium (see 11.2.17, 12.5.2, and 16.4). The value is zero for Link Ports attached to IEEE 802.3
15 EPON links and for the ~~master~~timeTransmitter port of an IEEE 802.11 link because one-way propagation
16 delay is not measured on the latter and not directly measured on the former. The data type shall be
17 TimeInterval. The default value is zero.

18

1 15. Managed object definitions

2 *Change 15.2 as follows:*

3 15.2 Structure of the MIB

4 The IEEE 802.1AS MIB provides objects to configure and manage the IEEE 802.1AS timing and
5 synchronization for time-sensitive applications.

6 The MIB contains a set of textual conventions and is additionally subdivided into the following subtrees,
7 each of which is organized as a set of related objects:

- 8 a) The Default Parameter Data Set (defaultDS) represents the native capabilities of a PTP Instance.
- 9 b) The Current Parameter Data Set (currentDS) represents topological position of a local PTP Instance
10 relative to the Grandmaster PTP Instance.
- 11 c) The Parent Parameter Data Set (parentDS) represents capabilities of the upstream PTP Instance
12 toward the Grandmaster PTP Instance, as measured at a local PTP Instance.
- 13 d) The Time Properties Parameter Data Set (timePropertiesDS) represents capabilities of the
14 Grandmaster PTP Instance, as measured at a local PTP Instance.
- 15 e) The Path Trace Parameter Data Set (pathTraceDS) represents the current path trace information
16 (see 10.3.9.23) available at the PTP Instance.
- 17 f) The Acceptable ~~Master~~TimeTransmitter Table Parameter Data Set
18 (acceptable~~Master~~TimeTransmitterTableDS) represents the acceptable ~~master~~timeTransmitter table
19 used when the media-dependent PTP Port type of EPON is present in a PTP Instance.
- 20 g) The Port Parameter Data Set (portDS) represents time-aware capabilities at a given PTP Port, as a
21 set of augmentation to the interface table entry (ifEntry).
- 22 h) The Description Port Parameter Data Set (descriptionPortDS) contains the profileIdentifier for this
23 PTP profile as specified in F.2.
- 24 i) The Port Parameter Statistics Data Set (portStatisticsDS) represents statistics and counters
25 associated with time-aware capabilities at a given PTP Relay Instance or PTP End Instance port.
- 26 j) The Acceptable ~~Master~~TimeTransmitter Port Parameter Data Set
27 (acceptable~~Master~~TimeTransmitterPortDS) represents the capability to enable/disable the
28 acceptable ~~master~~timeTransmitter table feature on a PTP Port.
- 29 k) The External Port Configuration Port Parameter Data Set (externalPortConfigurationPortDS) is used
30 with the external port configuration option to indicate the desired state of a PTP Port.
- 31 l) The Asymmetry Measurement Mode Parameter Data Set (asymmetryMeasurementModeDS)
32 represents the capability to enable/disable the Asymmetry Compensation Measurement Procedure
33 on a port (see Annex G) and is used instead of the cmlDsAsymmetryMeasurementModeDS when
34 CMLDS is not used and there is a single gPTP domain.
- 35 m) The Common Services Port Parameter Data Set (commonServicesPortDS) enables a PTP Port of a
36 PTP Instance to determine which port of the respective common service corresponds to that
37 PTP Port.
- 38 n) The Common Mean Link Delay Service Default Parameter Data Set (cmlDsDefaultDS) describes
39 the per-time-aware-system attributes of the Common Mean Link Delay Service.
- 40 o) The Common Mean Link Delay Service Link Port Parameter Data Set (cmlDsLinkPortDS)
41 represents time-aware Link Port capabilities for the Common Mean Link Delay Service of a time-
42 aware system.

- 1 p) The Common Mean Link Delay Service Link Port Parameter Statistics Data Set
2 (cmldsLinkPortStatisticsDS) represents statistics and counters associated with Link Port capabilities
3 at a given time-aware system.
- 4 q) The Common Mean Link Delay Service Asymmetry Measurement Mode Parameter Data Set
5 (cmldsAsymmetryMeasurementModeDS) represents the capability to enable/disable the
6 Asymmetry Compensation Measurement Procedure on a Link Port (see Annex G).

7 Table 15-1 shows the structure of the MIB and the relationship of the MIB objects to the above data sets.

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference

MIB table	MIB object	Reference
ieee8021As-V2V3DefaultDS		defaultDS table (Table 14-1)
	ieee8021As-V2V3DefaultDSClockIdentity	14.2.2
	ieee8021As-V2V3DefaultDSNumberPorts	14.2.3
	ieee8021As-V2V3DefaultDSClockQualityClockClass	14.2.4.2
	ieee8021As-V2V3DefaultDSClockQualityClockAccuracy	14.2.4.3
	ieee8021As-V2V3DefaultDSClockQualityOffsetScaledLogVariance	14.2.4.4
	ieee8021As-V2V3DefaultDSPriority1	14.2.5
	ieee8021As-V2V3DefaultDSPriority2	14.2.6
	ieee8021As-V2V3DefaultDSGmCapable	14.2.7
	ieee8021As-V2V3DefaultDSCurrentUtcOffset	14.2.8
	ieee8021As-V2V3DefaultDSCurrentUtcOffsetValid	14.2.9
	ieee8021As-V2V3DefaultDSLLeap59	14.2.10
	ieee8021As-V2V3DefaultDSLLeap61	14.2.11
	ieee8021As-V2V3DefaultDSTimeTraceable	14.2.12
	ieee8021As-V2V3DefaultDSFrequencyTraceable	14.2.13
	ieee8021As-V2V3DefaultDSPtpTimescale	14.2.14
	ieee8021As-V2V3DefaultDSTimeSource	14.2.15
	ieee8021As-V2V3DefaultDSDomainNumber	14.2.16
	ieee8021As-V2V3DefaultDSSdoId	14.2.17
	ieee8021As-V2V3DefaultDSExternalPortConfigurationEnabled	14.2.18
	ieee8021As-V2V3DefaultDSInstanceEnable	14.2.19
ieee8021As-V2V3CurrentDS		currentDS table (Table 14-2)
	ieee8021As-V2V3CurrentDSStepsRemoved	14.3.2
	ieee8021As-V2V3CurrentDSOffsetFromMasterTimeTransmitter	14.3.3
	ieee8021As-V2V3CurrentDSLlastGmPhaseChange	14.3.4
	ieee8021As-V2V3CurrentDSLlastGmFreqChange	14.3.5

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference (continued)

MIB table	MIB object	Reference
	ieee8021AsV2V3CurrentDSGmTimebaseIndicator	14.3.6
	ieee8021AsV2V3CurrentDSGmChangeCount	14.3.7
	ieee8021AsV2V3CurrentDSTimeOfLastGmChangeEvent	14.3.8
	ieee8021AsV2V3CurrentDSTimeOfLastGmPhaseChangeEvent	14.3.9
	ieee8021AsV2V3CurrentDSTimeOfLastGmFreqChangeEvent	14.3.10
ieee8021AsV2V3ParentDS		parentDS table (Table 14-3)
	ieee8021AsV2V3ParentDSParentClockIdentity	14.4.2
	ieee8021AsV2V3ParentDSParentPortNumber	14.4.2
	ieee8021AsV2V3ParentDSCumulativeRateRatio	14.4.3
	ieee8021AsV2V3ParentDSGrandmasterIdentity	14.4.4
	ieee8021AsV2V3ParentDSGrandmasterClockQualityclockClass	14.4.5.2
	ieee8021AsV2V3ParentDSGrandmasterClockQualityclockAccuracy	14.4.5.3
	ieee8021AsV2V3ParentDSGrandmasterClockQualityoffsetScaledLogVar	14.4.5.4
	ieee8021AsV2V3ParentDSGrandmasterPriority1	14.4.6
	ieee8021AsV2V3ParentDSGrandmasterPriority2	14.4.7
ieee8021AsV2V3TimePropertiesDS		timePropertiesDS table (Table 14-4)
	ieee8021AsV2V3TimePropertiesDSCurrentUtcOffset	14.5.2
	ieee8021AsV2V3TimePropertiesDSCurrentUtcOffsetValid	14.5.3
	ieee8021AsV2V3TimePropertiesDSLeap59	14.5.4
	ieee8021AsV2V3TimePropertiesDSLeap61	14.5.5
	ieee8021AsV2V3TimePropertiesDSTimeTraceable	14.5.6
	ieee8021AsV2V3TimePropertiesDSFrequencyTraceable	14.5.7
	ieee8021AsV2V3TimePropertiesDSPtpTimescale	14.5.8
	ieee8021AsV2V3TimePropertiesDSTimeSource	14.5.9
ieee8021AsV2V3PathTraceDS		pathTraceDS table (Table 14-5)
	ieee8021AsV2V3PathTraceDSEnable	14.6.3
ieee8021AsV2V3PathTraceDSArray		pathTraceDS table (Table 14-5)
	ieee8021AsV2V3PathTraceDSArrayList	14.6.2
ieee8021AsV2V3AcceptableMasterTimeTransmitterTableDS		acceptableMasterTimeTransmitterTableDS table (Table 14-6)
	ieee8021AsV2V3AcceptableMasterTimeTransmitterTableDSMaxTableSize	14.7.2

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference (continued)

MIB table	MIB object	Reference
	ieee8021AsV2V3AcceptableMasterTimeTransmitterTableDSActualTableSize	14.7.3
	ieee8021AsV2V3AcceptableMasterTimeTransmitterTableDSArray	acceptableMasterTimeTransmitterTableDS table (Table 14-6)
	ieee8021AsV2V3AcceptableMasterTimeTransmitterTableDSArrayPortIdentity	14.7.4
	ieee8021AsV2V3AcceptableMasterTTTableDSArrayAlternatePriority1	14.7.4
	ieee8021AsV2V3PortDS	portDS table (Table 14-10)
	ieee8021AsV2V3PortDSClockIdentity	14.8.2
	ieee8021AsV2V3PortDSPortNumber	14.8.2
	ieee8021AsV2V3PortDSPortState	14.8.3
	ieee8021AsV2V3PortDSPtpPortEnabled	14.8.4
	ieee8021AsV2V3PortDSdelayMechanism	14.8.5
	ieee8021AsV2V3PortDSIsMeasuringDelay	14.8.6
	ieee8021AsV2V3PortDSAsCapable	14.8.7
	ieee8021AsV2V3PortDSMeanLinkDelay	14.8.8
	ieee8021AsV2V3PortDSMeanLinkDelayThresh	14.8.9
	ieee8021AsV2V3PortDSDelayAsym	14.8.10
	ieee8021AsV2V3PortDSNbrRateRatio	14.8.11
	ieee8021AsV2V3PortDSInitialLogAnnounceInterval	14.8.12
	ieee8021AsV2V3PortDSCurrentLogAnnounceInterval	14.8.13
	ieee8021AsV2V3PortDSUseMgtSettableLogAnnounceInterval	14.8.14
	ieee8021AsV2V3PortDSMgtSettableLogAnnounceInterval	14.8.15
	ieee8021AsV2V3PortDSAnnounceReceiptTimeout	14.8.16
	ieee8021AsV2V3PortDSInitialLogSyncInterval	14.8.17
	ieee8021AsV2V3PortDSCurrentLogSyncInterval	14.8.18
	ieee8021AsV2V3PortDSUseMgtSettableLogSyncInterval	14.8.19
	ieee8021AsV2V3PortDSMgtSettableLogSyncInterval	14.8.20
	ieee8021AsV2V3PortDSSyncReceiptTimeout	14.8.21
	ieee8021AsV2V3PortDSSyncReceiptTimeoutTimeInterval	14.8.22
	ieee8021AsV2V3PortDSInitialLogPdelayReqInterval	14.8.23
	ieee8021AsV2V3PortDSCurrentLogPdelayReqInterval	14.8.24
	ieee8021AsV2V3PortDSUseMgtSettableLogPdelayReqInterval	14.8.25
	ieee8021AsV2V3PortDSMgtSettableLogPdelayReqInterval	14.8.26

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference (continued)

MIB table	MIB object	Reference
	ieee8021AsV2V3PortDSInitialLogGtpCapableMessageInterval	14.8.27
	ieee8021AsV2V3PortDSCurrentLogGtpCapableMessageInterval	14.8.28
	ieee8021AsV2V3PortDSUseMgtSettableLogGtpCapableMessageInterval	14.8.29
	ieee8021AsV2V3PortDSMgtSettableLogGtpCapableMessageInterval	14.8.30
	ieee8021AsV2V3PortDSInitialComputeNbrRateRatio	14.8.31
	ieee8021AsV2V3PortDSCurrentComputeNbrRateRatio	14.8.32
	ieee8021AsV2V3PortDSUseMgtSettableComputeNbrRateRatio	14.8.33
	ieee8021AsV2V3PortDSMgtSettableComputeNbrRateRatio	14.8.34
	ieee8021AsV2V3PortDSInitialComputeMeanLinkDelay	14.8.35
	ieee8021AsV2V3PortDSCurrentComputeMeanLinkDelay	14.8.36
	ieee8021AsV2V3PortDSUseMgtSettableComputeMeanLinkDelay	14.8.37
	ieee8021AsV2V3PortDSMgtSettableComputeMeanLinkDelay	14.8.38
	ieee8021AsV2V3PortDSAllowedLostRsp	14.8.39
	ieee8021AsV2V3PortDSAllowedFaults	14.8.40
	ieee8021AsV2V3PortDSGtpCapableReceiptTimeout	14.8.41
	ieee8021AsV2V3PortDSVersionNumber	14.8.42
	ieee8021AsV2V3PortDSNup	14.8.43
	ieee8021AsV2V3PortDSNdown	14.8.44
	ieee8021AsV2V3PortDSOneStepTxOper	14.8.45
	ieee8021AsV2V3PortDSOneStepReceive	14.8.46
	ieee8021AsV2V3PortDSOneStepTransmit	14.8.47
	ieee8021AsV2V3PortDSInitialOneStepTxOper	14.8.48
	ieee8021AsV2V3PortDSCurrentOneStepTxOper	14.8.49
	ieee8021AsV2V3PortDSUseMgtSettableOneStepTxOper	14.8.50
	ieee8021AsV2V3PortDSMgtSettableOneStepTxOper	14.8.51
	ieee8021AsV2V3PortDSSyncLocked	14.8.52
	ieee8021AsV2V3PortDSPdelayTruncTST1	14.8.53
	ieee8021AsV2V3PortDSPdelayTruncTST2	14.8.53
	ieee8021AsV2V3PortDSPdelayTruncTST3	14.8.53
	ieee8021AsV2V3PortDSPdelayTruncTST4	14.8.53
	ieee8021AsV2V3PortDSMinorVersionNumber	14.8.54

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference (continued)

MIB table	MIB object	Reference
ieee8021AsV2V3DescriptionPortDS		descriptionPortDS table (Table 14-11)
	ieee8021AsV2V3DescriptionPortDSProfileIdentifier	14.9.2
ieee8021AsV2V3PortStatDS		portStatisticsDS table (Table 14-12)
	ieee8021AsV2V3PortStatRxSyncCount	14.10.2
	ieee8021AsV2V3PortStatRxOneStepSyncCount	14.10.3
	ieee8021AsV2V3PortStatRxFollowUpCount	14.10.4
	ieee8021AsV2V3PortStatRxPdelayRequestCount	14.10.5
	ieee8021AsV2V3PortStatRxPdelayRspCount	14.10.6
	ieee8021AsV2V3PortStatRxPdelayRspFollowUpCount	14.10.7
	ieee8021AsV2V3PortStatRxAnnounceCount	14.10.8
	ieee8021AsV2V3PortStatRxPtpPacketDiscardCount	14.10.9
	ieee8021AsV2V3PortStatSyncReceiptTimeoutCount	14.10.10
	ieee8021AsV2V3PortStatAnnounceReceiptTimeoutCount	14.10.11
	ieee8021AsV2V3PortStatPdelayAllowedLostRspExceededCount	14.10.12
	ieee8021AsV2V3PortStatTxSyncCount	14.10.13
	ieee8021AsV2V3PortStatTxOneStepSyncCount	14.10.14
	ieee8021AsV2V3PortStatTxFollowUpCount	14.10.15
	ieee8021AsV2V3PortStatTxPdelayRequestCount	14.10.16
	ieee8021AsV2V3PortStatTxPdelayRspCount	14.10.17
	ieee8021AsV2V3PortStatTxPdelayRspFollowUpCount	14.10.18
	ieee8021AsV2V3PortStatTxAnnounceCount	14.10.19
ieee8021AsV2V3AcceptableMasterTimeTransmitterPortDS		acceptableMasterTimeTransmitterTableDS table (Table 14-13)
	ieee8021AsV2V3AcceptableMasterTTPortDSAcceptableMasterTTTableEnabled	14.11.2
ieee8021AsV2V3ExternalPortConfigurationPortDS		externalPortConfigurationPortDS table (Table 14-14)
	ieee8021AsV2V3ExternalPortConfigurationPortDSDesiredState	14.12.2
ieee8021AsV2V3AsymMeasurementModeDS		asymmetryMeasurementModeDS table (Table 14-15)
	ieee8021AsV2V3AsymMeasurementModeDSAsymMeasurementMode	14.13.2
ieee8021AsV2V3CommonServicesPortDS		commonServicesPortDS table (Table 14-16)

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference (continued)

MIB table	MIB object	Reference
	ieee8021AsV2V3CommonServicesPortDSCmlDsLinkPortPortNumber	14.14.2
	ieee8021AsV2V3CommonMeanLinkDelayServiceDefaultDS	cmldsDefaultDS table (Table 14-17)
	ieee8021AsV2V3CmlDsDefaultDSClockIdentity	14.15.2
	ieee8021AsV2V3CmlDsDefaultDSNumberLinkPorts	14.15.3
	ieee8021AsV2V3CommonMeanLinkDelayServiceLinkPortDS	cmldsLinkPortDS table (Table 14-18)
	ieee8021AsV2V3CmlDsLinkPortDSClockIdentity	14.16.16
	ieee8021AsV2V3CmlDsLinkPortDSPortNumber	14.16.16
	ieee8021AsV2V3CmlDsLinkPortDSCmlDsLinkPortEnabled	14.16.17
	ieee8021AsV2V3CmlDsLinkPortDSIsMeasuringDelay	14.16.18
	ieee8021AsV2V3CmlDsLinkPortDSAsCapableAcrossDomains	14.16.19
	ieee8021AsV2V3CmlDsLinkPortDSMeanLinkDelay	14.16.6
	ieee8021AsV2V3CmlDsLinkPortDSMeanLinkDelayThresh	14.16.7
	ieee8021AsV2V3CmlDsLinkPortDSDelayAsym	14.16.8
	ieee8021AsV2V3CmlDsLinkPortDSNbrRateRatio	14.16.9
	ieee8021AsV2V3CmlDsLinkPortDSInitialLogPdelayReqInterval	14.16.10
	ieee8021AsV2V3CmlDsLinkPortDSCurrentLogPdelayReqInterval	14.16.11
	ieee8021AsV2V3CmlDsLinkPortDSUseMgtSettableLogPdelayReqInterval	14.16.12
	ieee8021AsV2V3CmlDsLinkPortDSMgtSettableLogPdelayReqInterval	14.16.13
	ieee8021AsV2V3CmlDsLinkPortDSInitialComputeNbrRateRatio	14.16.14
	ieee8021AsV2V3CmlDsLinkPortDSCurrentComputeNbrRateRatio	14.16.15
	ieee8021AsV2V3CmlDsLinkPortDSUseMgtSettableComputeNbrRateRatio	14.16.16
	ieee8021AsV2V3CmlDsLinkPortDSMgtSettableComputeNbrRateRatio	14.16.17
	ieee8021AsV2V3CmlDsLinkPortDSInitialComputeMeanLinkDelay	14.16.18
	ieee8021AsV2V3CmlDsLinkPortDSCurrentComputeMeanLinkDelay	14.16.19
	ieee8021AsV2V3CmlDsLinkPortDSUseMgtSettableComputeMeanLinkDelay	14.16.20
	ieee8021AsV2V3CmlDsLinkPortDSMgtSettableComputeMeanLinkDelay	14.16.21
	ieee8021AsV2V3CmlDsLinkPortDSAllowedLostRsp	14.16.22
	ieee8021AsV2V3CmlDsLinkPortDSAllowedFaults	14.16.23

Table 15-1—IEEE8021-AS-V2V3 MIB structure and object cross reference (continued)

MIB table	MIB object	Reference
	ieee8021AsV2V3CmldsLinkPortDSVersionNumber	14.16.24
	ieee8021AsV2V3CmldsLinkPortDSPdelayTruncTST1	14.16.25
	ieee8021AsV2V3CmldsLinkPortDSPdelayTruncTST2	14.16.25
	ieee8021AsV2V3CmldsLinkPortDSPdelayTruncTST3	14.16.25
	ieee8021AsV2V3CmldsLinkPortDSPdelayTruncTST4	14.16.25
	ieee8021AsV2V3CmldsLinkPortDSMinorVersionNumber	14.16.26
ieee8021AsV2V3CommonMeanLinkDelayServiceLinkPortStatDS		cmldsLinkPortStatisticsDS table (Table 14-19)
	ieee8021AsV2V3CmldsLinkPortStatDSRxDelayRequestCount	14.17.2
	ieee8021AsV2V3CmldsLinkPortStatDSRxDelayRspCount	14.17.3
	ieee8021AsV2V3CmldsLinkPortStatDSRxDelayRspFollowUpCount	14.17.4
	ieee8021AsV2V3CmldsLinkPortStatDSRxDelayRspPacketDiscardCount	14.17.5
	ieee8021AsV2V3CmldsLinkPortStatDSPdelayAllowedLostRspExceededCount	14.17.6
	ieee8021AsV2V3CmldsLinkPortStatDSTxDelayRequestCount	14.17.7
	ieee8021AsV2V3CmldsLinkPortStatDSTxDelayRspCount	14.17.8
	ieee8021AsV2V3CmldsLinkPortStatDSTxDelayRspFollowUpCount	14.17.9
ieee8021AsV2V3CommonMeanLinkDelayServiceAsymMeasurementModeDS		cmldsAsymmetryMeasurementModeDS table (Table 14-20)
	ieee8021AsV2V3CmldsAsymMeasurementModeDSAsymMeasurementMode	14.18.2

1 *Change 15.3 as follows:*

2 15.3 Relationship to MIB in IEEE Std 802.1AS-2011

3 The version 1 MIB module (IEEE8021-AS MIB) that was published in IEEE Std 802.1AS-2011 has been
4 superseded by the version 2 MIB module (IEEE8021-AS-V2 MIB) specified in 15.6 of IEEE Std 802.1AS-
5 2020. Version 3 MIB module (IEEE8021-AS-V3 MIB) specified in the current standard remains unchanged
6 from IEEE8021-AS-V2 MIB except updating terminology. IEEE Std 802.1AS-2019. Support of the version
7 32 module is a requirement for conformance to the required or optional capabilities (Clause 5) in the current
8 standard. ~~The version 2 MIB module reflects changes in indexation of the MIB objects for optional support~~
9 ~~of multiple PTP Instances (i.e., multiple domains), as discussed in 14.1.~~

10 For an implementation that supports a single PTP Instance, version 1, ~~and~~ version 2, ~~and~~ Version 3
11 implementations can successfully co-exist and interoperate.

1 15.4 Security considerations

2 *Change fourth paragraph of 15.4 as follows:*

3 A number of management objects defined in the IEEE8021-AS-V~~2~~³ MIB module have a MAX-ACCESS
4 clause of read-write and/or read-create. Such objects might be considered sensitive or vulnerable in some
5 network environments. The support for SET operations in a non-secure environment without proper
6 protection can have a negative effect on network operations.

7 *Change of the following writable objects in 15.4 as follows:*

- 8 ieee8021AsV2DefaultDSPriority1
- 9 ieee8021AsV2DefaultDSPriority2
- 10 ieee8021AsV2PortDSPTpPortEnabled
- 11 ieee8021AsV2PortDSDelayAsymmetry

12 *Change last paragraph of 15.4 as follows:*

13 Unintended access to any of the readable tables or variables in the IEEE8021-AS-V~~2~~³ MIB alerts the reader
14 that timing synchronization in gPTP domain is configured, and on which values timing parameters are
15 configured, and which system is current Grandmaster PTP Instance. This information can suggest to an
16 attacker what applications are being run, and thus suggest application-specific attacks, or can enable the
17 attacker to detect whether their attacks are being successful. It is thus important to control even GET access
18 to these objects and possibly to even encrypt the values of these objects when sending them over the network
19 via SNMP.

20 *Change 15.5 as follows:*

21 15.5 Textual conventions defined in this MIB

22 The following textual conventions are defined in this MIB:

- 23 a) Ieee8021AsV~~2~~³ClockIdentity. IEEE 802 MAC address represented in “canonical” order defined
24 by IEEE Std 802-2014, 64-bit Network Unique Identifier (NUI-64) as described in IEEE Std 802c-
25 2017.
- 26 b) Ieee8021AsV~~2~~³GPTpProfileIdentifier. Profile identifier (see 14.9.2).
- 27 c) Ieee8021AsV~~2~~³ClockClassValue. Clock class value (see 8.6.2.2).
- 28 d) Ieee8021AsV~~2~~³ClockAccuracyValue. Clock accuracy value (see 8.6.2.3).
- 29 e) Ieee8021AsV~~2~~³TimeSourceValue. Source of time used by Grandmaster PTP Instance (see
30 8.6.2.7).
- 31 f) Ieee8021ASV~~2~~³PtpTimeInterval. Time intervals in units of 2^{-16} ns (see 6.4.3.3).
- 32 g) Ieee8021ASV~~2~~³PtpPortIdentity. Identifies a port of a PTP Instance (see 6.4.3.7).
- 33 h) Ieee8021ASV~~2~~³ScaledNs. Represents signed values of time and time interval in units of 2^{-16} ns
34 (see 6.4.3.1).
- 35 i) Ieee8021ASV~~2~~³UScaledNs. Represents unsigned values of time and time interval in units of 2^{-16}
36 ns (see 6.4.3.2).
- 37 j) Ieee8021ASV~~2~~³PTPInstanceIdentifier. Entity of a single time-aware system that executes gPTP in
38 one gPTP domain (see 7.2.1 and 8.1).

- 1 k) Ieee8021AS~~V2~~V3Timestamp. Value of Ieee8021ASV2Timestamp is equal to the remainder
2 obtained upon dividing the respective timestamp, expressed in units of 2^{-16} ns, by 2^{48}) (see 14.8.53).

3 15.6 IEEE 802.1AS MIB module^{4,5}

4 In the following MIB modules definitions, if any discrepancy between the DESCRIPTION text and the
5 corresponding definition in any other part of this standard occurs, the definitions outside this subclause take
6 precedence.

7 ***Replace version 2 MIB module (IEEE8021-AS-V2 MIB) with version 3 MIB module***
8 ***(IEEE8021-AS-V3 MIB) as follows:***

⁴ Copyright release for MIBs: Users of this standard may freely reproduce the MIBs contained in this subclause so that they can be used for their intended purpose.

⁵ An ASCII version of this MIB module can be obtained from the IEEE 802.1 website at <https://www.ieee802.org/1/pages/MIBS.html>.

```

1 IEEE8021-AS-V3-MIB DEFINITIONS ::= BEGIN
2 -- =====
3 -- MIB for support of 802.1AS Timing and Synchronization in
4 -- IEEE 802.1Q Bridged Local Area Networks
5 -- =====
6
7 IMPORTS
8   MODULE-IDENTITY, OBJECT-TYPE, Unsigned32, Integer32, Counter32
9     FROM SNMPv2-SMI          -- [RFC2578]
10  TEXTUAL-CONVENTION, TruthValue, RowStatus, TimeStamp
11     FROM SNMPv2-TC          -- [RFC2579]
12  MODULE-COMPLIANCE, OBJECT-GROUP -- [RFC2580]
13     FROM SNMPv2-CONF
14     SnmpAdminString
15     FROM SNMP-FRAMEWORK-MIB -- [RFC3411]
16  InterfaceIndexOrZero
17     FROM IF-MIB              -- [RFC2863]
18  Float64TC
19     FROM FLOAT-TC-MIB        -- [RFC6340]
20  IEEE8021BridgePortNumber
21     FROM IEEE8021-TC-MIB
22  ;
23
24 ieee8021AsV3TimeSyncMib MODULE-IDENTITY
25   LAST-UPDATED "202301180000Z" -- January 18, 2023
26   ORGANIZATION "IEEE 802.1 Working Group"
27   CONTACT-INFO
28       "WG-URL: http://ieee802.org/1/
29       WG-EMail: stds-802-1-l@ieee.org
30
31   Contact: IEEE 802.1 Working Group Chair
32   Postal: C/O IEEE 802.1 Working Group
33           IEEE Standards Association
34           445 Hoes Lane
35           Piscataway, NJ 08854
36           USA
37
38   E-mail: stds-802-1-chairs@ieee.org"
39
40   DESCRIPTION
41       "The Management Information Base module for
42       IEEE 802.1AS time-synchronization protocol."
43
44   REVISION      "202301180000Z" -- January 18, 2023
45   DESCRIPTION
46       "This MIB module remains unchanged from
47       IEEE8021-AS-V2-MIB except updating the terminology.
48
49       Published as part of IEEE Std 802.1ASdr-2023
50       Copyright (C) IEEE (2023).
51       This version of this MIB module is part of IEEE Std
52       802.1ASdr-2023; see the standard itself for full legal
53       notices."
54
55 ::= { iso(1) org(3) ieee(111)
56       standards-association-numbers-series-standards (2)

```

```

1      lan-man-stds (802) ieee802dot1 (1) ieee802dot1mibs (1) 40 }
2
3 ieee8021AsV3MIBObjects      OBJECT IDENTIFIER ::= {ieee8021AsV3TimeSyncMib 1}
4 ieee8021AsV3Conformance    OBJECT IDENTIFIER ::= {ieee8021AsV3TimeSyncMib 2}
5
6 -- =====
7 -- Textual Conventions
8 -- =====
9
10 Ieee8021AsV3ClockIdentity ::= TEXTUAL-CONVENTION
11     DISPLAY-HINT
12         "1x:"
13     STATUS current
14     DESCRIPTION
15         "The Ieee8021AsV3ClockIdentity type identifies a PTP Instance.
16         The clockIdentity attribute shall be as specified in
17         IEEE Std 1588-2019."
18     REFERENCE      "6.4.3.6, 8.5.2.2 and IEEE Std 1588-2019 7.5.2.2"
19     SYNTAX OCTET STRING (SIZE (8))
20
21 Ieee8021AsV3GPtpProfileIdentifier ::= TEXTUAL-CONVENTION
22     DISPLAY-HINT
23         "1x:"
24     STATUS current
25     DESCRIPTION
26         "The Ieee8021AsV3GPtpProfileIdentifier attribute is the
27         profileIdentifier for this PTP profile."
28     REFERENCE      "14.9.2, F.1 "
29     SYNTAX OCTET STRING (SIZE (6))
30
31 Ieee8021AsV3ClockClassValue ::= TEXTUAL-CONVENTION
32     STATUS      current
33     DESCRIPTION
34         "The Ieee8021AsV3ClockClassValue attribute denotes the traceability
35         of the synchronized time distributed by a ClockTimeTransmitter when
36 it is
37         the Grandmaster PTP Instance.
38         A more detailed description of clockClass can be found in
39         IEEE Std 1588-2019."
40     REFERENCE      "8.6.2.2 and IEEE Std 1588-2019 7.6.2.5"
41     SYNTAX      INTEGER {
42         primarySync(6),
43         primarySyncLost(7),
44         applicationSpecificSync(13),
45         applicationSpecificSyncLost(14),
46         primarySyncAlternativeA(52),
47         applicationSpecificAlternativeA(58),
48         primarySyncAlternativeB(187),
49         applicationSpecificAlternativeB(193),
50         defaultClock(248),
51         timeReceiverOnlyClock(255)
52     }
53
54 Ieee8021AsV3ClockAccuracyValue ::= TEXTUAL-CONVENTION
55     STATUS      current
56     DESCRIPTION

```

```

1      "The Ieee8021AsV3ClockAccuracyValue attribute indicates the
2      expected time accuracy of a ClockTimeTransmitter.
3      A more detailed description of clockAccuracy can be found in
4      IEEE Std 1588-2019."
5  REFERENCE      "8.6.2.3 and IEEE Std 1588-2019 7.6.2.6"
6  SYNTAX      INTEGER {
7      timeAccurateTo25ns(32),
8      timeAccurateTo100ns(33),
9      timeAccurateTo250ns(34),
10     timeAccurateTo1us(35),
11     timeAccurateTo2dot5us(36),
12     timeAccurateTo10us(37),
13     timeAccurateTo25us(38),
14     timeAccurateTo100us(39),
15     timeAccurateTo250us(40),
16     timeAccurateTo1ms(41),
17     timeAccurateTo2dot5ms(42),
18     timeAccurateTo10ms(43),
19     timeAccurateTo25ms(44),
20     timeAccurateTo100ms(45),
21     timeAccurateTo250ms(46),
22     timeAccurateTo1s(47),
23     timeAccurateTo10s(48),
24     timeAccurateToGT10s(49),
25     timeAccurateToUnknown(254)
26     }
27
28 Ieee8021AsV3TimeSourceValue ::= TEXTUAL-CONVENTION
29     STATUS      current
30     DESCRIPTION
31     "The Ieee8021AsV3TimeSourceValue is an information only
32     attribute indicating the type of source of time used by a
33     ClockTimeTransmitter. The value is not used in the selection of the
34     Grandmaster PTP Instance. The values of TimeSource are
35     given below and are specified in Table 8-2. These represent
36     categories. For example, the GPS entry includes not only the
37     GPS system of the U.S. Department of Defense but the European
38     Galileo system and other present and future GNSSs.
39
40     In the absence of a default value set by a user of this standard,
41     the default value of timeSource shall be INTERNAL_OSCILLATOR.
42
43     A more detailed description of timeSource can be found in
44     IEEE Std 1588-2019.
45
46     The following interpretation is placed on the value:
47         0x10: Atomic Clock,
48         0x20: GPS,
49         0x30: Terrestrial Radio,
50         0x40: PTP,
51         0x50: NTP,
52         0x60: Hand Set,
53         0x90: Other,
54         0xA0: Internal Oscillator "
55  REFERENCE      "8.6.2.7, 8-2 and IEEE Std 1588-2019 7.6.2.8"
56  SYNTAX      INTEGER {

```

```
1         atomicClock(16),
2         gps(32),
3         terrestrialRadio(48),
4         ptp(64),
5         ntp(80),
6         handSet(96),
7         other(144),
8         internalOscillator(160)
9     }
10
11 Ieee8021ASV3PtpTimeInterval ::= TEXTUAL-CONVENTION
12     STATUS current
13     DESCRIPTION
14         "The Ieee8021ASV3PtpTimeInterval type represents time intervals
15         in units of 2-16 ns. Positive or negative time
16         intervals outside the maximum range of this data type shall
17         be encoded as the largest positive and negative values of
18         the data type respectively.
19         For example: 2.5 ns is expressed as:
20         (hex) 0x0000 0000 0002 8000"
21     REFERENCE "6.4.3.3"
22 SYNTAX OCTET STRING (SIZE (8))
23
24 Ieee8021ASV3PtpPortIdentity ::= TEXTUAL-CONVENTION
25 STATUS current
26 DESCRIPTION
27     "The Ieee8021ASV3PtpPortIdentity type identifies a port of a
28     PTP Instance.
29     The first 8 octets within this value specifies the
30     ClockIdentity.
31     The last 2 octets within this value specifies the port number."
32     REFERENCE "6.4.3.7"
33 SYNTAX OCTET STRING (SIZE (10))
34
35 Ieee8021ASV3ScaledNs ::= TEXTUAL-CONVENTION
36 STATUS current
37 DESCRIPTION
38     "The Ieee8021ASV3ScaledNs type represents signed values of
39     time and time interval in units of 2-16 ns.
40     Positive or negative values of time or time interval outside the
41     maximum range of this data type are encoded as the largest
42     positive or negative value of the data type, respectively.
43     For example: -2.5 ns is expressed as:
44     (hex) 0xFFFF FFFF FFFF FFFF FFFD 8000"
45     REFERENCE "6.4.3.1"
46 SYNTAX OCTET STRING (SIZE (12))
47
48 Ieee8021ASV3UScaledNs ::= TEXTUAL-CONVENTION
49 STATUS current
50 DESCRIPTION
51     "The Ieee8021ASV3UScaledNs type represents unsigned values of
52     time and time interval in units of 2-16 ns.
53     Positive or negative values of time or time interval outside
54     the maximum range of this data type are encoded as the largest
55     positive or negative value of the data type, respectively.
56     For example: 2.5 ns is expressed as:
```



```

1      (hex) 0x0000 0000 0000 0000 0002 8000"
2      REFERENCE    "6.4.3.2"
3 SYNTAX OCTET STRING (SIZE (12))
4
5 Ieee8021ASV3PTPInstanceIdentifier ::= TEXTUAL-CONVENTION
6 DISPLAY-HINT "d"
7 STATUS current
8 DESCRIPTION
9      "The entity of a single time-aware system that executes gPTP in
10     one gPTP domain is called a PTP Instance. A time-aware system
11     can contain multiple PTP Instances, which are each associated
12     with a different gPTP domain. There are two types of
13     PTP Instances, a PTP End Instance and a PTP Relay Instance."
14     REFERENCE    "7.2.1"
15 SYNTAX Unsigned32
16
17 Ieee8021ASV3Timestamp ::= TEXTUAL-CONVENTION
18 STATUS current
19 DESCRIPTION
20     "The value of Ieee8021ASV3Timestamp is equal to the remainder
21     obtained upon dividing the respective timestamp, expressed
22     in units of 2-16 ns, by 248)."
23     REFERENCE    "14.8.53, 14.16.25 and Table 14-9"
24 SYNTAX OCTET STRING (SIZE (6))
25
26 -- =====
27 -- subtrees in the IEEE8021-AS-MIB
28 --
29 -- System Time-Aware Parameters/Capabilities for each instance of
30 -- gPTP domain. ieee8021AsV3InstanceListIndex that is of
31 -- ieee8021AsV3DomainIdentificationNumber object-type is used as Index.
32 --
33 -- =====
34
35 -- =====
36 -- The PTP Instance set is used to allow for dynamic creation and
37 -- deletion of PTP Instances and logical ports implementations that
38 -- support dynamic create/delete of devices.
39 -- =====
40
41 ieee8021AsV3PtpInstanceTable OBJECT-TYPE
42     SYNTAX      SEQUENCE OF Ieee8021AsV3PtpInstanceEntry
43     MAX-ACCESS  not-accessible
44     STATUS      current
45     DESCRIPTION
46         "This table is used to allow for dynamic creation and deletion
47         of PTP Instances and logical ports implementations that support
48         dynamic create/delete of devices."
49     REFERENCE    "14.1"
50     ::= { ieee8021AsV3MIBObjects 1 }
51
52 ieee8021AsV3PtpInstanceEntry OBJECT-TYPE
53     SYNTAX      Ieee8021AsV3PtpInstanceEntry
54     MAX-ACCESS  not-accessible
55     STATUS      current
56     DESCRIPTION

```

```

1      "An entry that specifies a PTP Instance."
2      INDEX { ieee8021AsV3PtpInstance }
3      ::= { ieee8021AsV3PtpInstanceTable 1 }
4
5      Ieee8021AsV3PtpInstanceEntry ::=
6      SEQUENCE {
7          ieee8021AsV3PtpInstance          Ieee8021ASV3PTPInstanceIdentifier,
8          ieee8021AsV3PtpInstanceName      SnmpAdminString,
9          ieee8021AsV3PtpInstanceRowStatus RowStatus
10     }
11
12     ieee8021AsV3PtpInstance OBJECT-TYPE
13     SYNTAX Ieee8021ASV3PTPInstanceIdentifier
14     MAX-ACCESS not-accessible
15     STATUS current
16     DESCRIPTION
17         "The entity of a single time-aware system that executes gPTP in
18         one gPTP domain is called a PTP Instance. A time-aware system can
19         contain multiple PTP Instances, which are each associated with
20         a different gPTP domain. There are two types of PTP Instances,
21         a PTP End Instance and a PTP Relay Instance."
22     REFERENCE "7.2.1"
23     ::= { ieee8021AsV3PtpInstanceEntry 1 }
24
25     ieee8021AsV3PtpInstanceName OBJECT-TYPE
26     SYNTAX SnmpAdminString
27     MAX-ACCESS read-create
28     STATUS current
29     DESCRIPTION
30         "Name for identification of a PTP Instance."
31     DEFVAL { "" }
32     ::= { ieee8021AsV3PtpInstanceEntry 2 }
33
34     ieee8021AsV3PtpInstanceRowStatus OBJECT-TYPE
35     SYNTAX RowStatus
36     MAX-ACCESS read-create
37     STATUS current
38     DESCRIPTION
39         "This attribute is used to create and delete PTP Instances."
40     REFERENCE "14.1"
41     ::= { ieee8021AsV3PtpInstanceEntry 3 }
42
43 -- =====
44 -- The Default data set represents native time capability of a time-
45 -- aware system and is consistent with respective IEEE 1588 data set.
46 -- =====
47
48     ieee8021AsV3DefaultDSTable OBJECT-TYPE
49     SYNTAX SEQUENCE OF Ieee8021AsV3DefaultDSEntry
50     MAX-ACCESS not-accessible
51     STATUS current
52     DESCRIPTION
53         "The Default Parameter Data Set represents the native capabilities
54         of a PTP Instance, i.e., a PTP Relay Instance or a
55         PTP End Instance."
56     REFERENCE "14.2"

```

```

1      ::= { ieee8021AsV3MIBObjects 2 }
2
3 ieee8021AsV3DefaultDSEntry OBJECT-TYPE
4     SYNTAX      Ieee8021AsV3DefaultDSEntry
5     MAX-ACCESS  not-accessible
6     STATUS      current
7     DESCRIPTION
8         "Default Data Set contains the profile Identifier for
9         this instance of gPTP domain."
10    INDEX { ieee8021AsV3PtpInstance }
11    ::= { ieee8021AsV3DefaultDSTable 1 }
12
13 Ieee8021AsV3DefaultDSEntry ::=
14     SEQUENCE {
15         ieee8021AsV3DefaultDSClockIdentity      Ieee8021AsV3ClockIdentity,
16         ieee8021AsV3DefaultDSNumberPorts        Unsigned32,
17         ieee8021AsV3DefaultDSClockQualityClockClass Ieee8021AsV3ClockClassValue,
18         ieee8021AsV3DefaultDSClockQualityClockAccuracy
19         Ieee8021AsV3ClockAccuracyValue,
20         ieee8021AsV3DefaultDSClockQualityOffsetScaledLogVariance Unsigned32,
21         ieee8021AsV3DefaultDSPriority1          Unsigned32,
22         ieee8021AsV3DefaultDSPriority2          Unsigned32,
23         ieee8021AsV3DefaultDSGmCapable          TruthValue,
24         ieee8021AsV3DefaultDSCurrentUtcOffset   Integer32,
25         ieee8021AsV3DefaultDSCurrentUtcOffsetValid TruthValue,
26         ieee8021AsV3DefaultDSLeap59            TruthValue,
27         ieee8021AsV3DefaultDSLeap61            TruthValue,
28         ieee8021AsV3DefaultDSTimeTraceable      TruthValue,
29         ieee8021AsV3DefaultDSFrequencyTraceable TruthValue,
30         ieee8021AsV3DefaultDSPtpTimescale      TruthValue,
31         ieee8021AsV3DefaultDSTimeSource         Ieee8021AsV3TimeSourceValue,
32         ieee8021AsV3DefaultDSDomainNumber      Unsigned32,
33         ieee8021AsV3DefaultDSSdoId             Unsigned32,
34         ieee8021AsV3DefaultDSExternalPortConfigurationEnabled TruthValue,
35         ieee8021AsV3DefaultDSInstanceEnable    TruthValue
36     }
37
38 ieee8021AsV3DefaultDSClockIdentity OBJECT-TYPE
39     SYNTAX      Ieee8021AsV3ClockIdentity
40     MAX-ACCESS  read-only
41     STATUS      current
42     DESCRIPTION
43         "The value is the clockIdentity of the PTP Instance.
44         The clockIdentity attribute shall be as specified in
45         IEEE Std 1588-2019."
46     REFERENCE  "14.2.2 and IEEE Std 1588-2019 7.5.2.2"
47     ::= { ieee8021AsV3DefaultDSEntry 1 }
48
49
50 ieee8021AsV3DefaultDSNumberPorts OBJECT-TYPE
51     SYNTAX      Unsigned32(1..65535)
52     MAX-ACCESS  read-only
53     STATUS      current
54     DESCRIPTION
55         "The number of ports of the PTP Instance. For an end
56         station the value is 1."

```

```

1  REFERENCE    "14.2.3"
2  ::= { ieee8021AsV3DefaultDSEntry 2 }
3
4
5  ieee8021AsV3DefaultDSClockQualityClockClass OBJECT-TYPE
6  SYNTAX      Ieee8021AsV3ClockClassValue
7  MAX-ACCESS  read-only
8  STATUS      current
9  DESCRIPTION
10     "The value is the clockClass of the PTP Instance, which
11     implements the clockClass specifications of 8.6.2.2."
12  REFERENCE   "14.2.4.2"
13  ::= { ieee8021AsV3DefaultDSEntry 3 }
14
15
16  ieee8021AsV3DefaultDSClockQualityClockAccuracy OBJECT-TYPE
17  SYNTAX      Ieee8021AsV3ClockAccuracyValue
18  MAX-ACCESS  read-only
19  STATUS      current
20  DESCRIPTION
21     "The value is the clockAccuracy of the PTP Instance, which
22     implements the clockAccuracy specifications of 8.6.2.3."
23  REFERENCE   "14.2.4.3"
24  ::= { ieee8021AsV3DefaultDSEntry 4 }
25
26
27  ieee8021AsV3DefaultDSClockQualityOffsetScaledLogVariance OBJECT-TYPE
28  SYNTAX      Unsigned32(0..65535)
29  MAX-ACCESS  read-only
30  STATUS      current
31  DESCRIPTION
32     "The value is the offsetScaledLogVariance of the PTP Instance,
33     which implements the offsetScaledLogVariance specifications
34     of 8.6.2.4."
35  REFERENCE   "14.2.4.4"
36  ::= { ieee8021AsV3DefaultDSEntry 5 }
37
38  ieee8021AsV3DefaultDSPriority1 OBJECT-TYPE
39  SYNTAX      Unsigned32(0..255)
40  MAX-ACCESS  read-write
41  STATUS      current
42  DESCRIPTION
43     "The value is the priority1 attribute of the PTP Instance."
44  REFERENCE   "14.2.5"
45  ::= { ieee8021AsV3DefaultDSEntry 6 }
46
47
48  ieee8021AsV3DefaultDSPriority2 OBJECT-TYPE
49  SYNTAX      Unsigned32(0..255)
50  MAX-ACCESS  read-write
51  STATUS      current
52  DESCRIPTION
53     "The value is the priority2 attribute of the PTP Instance."
54  REFERENCE   "14.2.5"
55  DEFVAL { 248 }
56  ::= { ieee8021AsV3DefaultDSEntry 7 }

```

```

1
2
3 ieee8021AsV3DefaultDSGmCapable OBJECT-TYPE
4     SYNTAX      TruthValue
5     MAX-ACCESS  read-only
6     STATUS      current
7     DESCRIPTION
8         "The value is TRUE (1) if the PTP Instance is capable of being a
9         Grandmaster PTP Instance, and FALSE (2) if the PTP Instance is
10        not capable of being a Grandmaster PTP Instance."
11     REFERENCE   "14.2.7"
12     ::= { ieee8021AsV3DefaultDSEntry 8 }
13
14
15 ieee8021AsV3DefaultDSCurrentUtcOffset OBJECT-TYPE
16     SYNTAX      Integer32(-32768..32767)
17     UNITS       "seconds"
18     MAX-ACCESS  read-only
19     STATUS      current
20     DESCRIPTION
21         "The value is the offset between TAI and UTC, relative to
22         the ClockTimeTransmitter entity of this PTP Instance. It is equal
23         to the global variable sysCurrentUtcOffset.
24         The value is in units of seconds.
25
26         The default value is selected as follows:
27             a)The value is the value obtained from a primary
28             reference if the value is known at the time of
29             initialization, else
30             b)The value is the current IERS defined value of
31             TAI - UTC (see IERS Bulletin C) when the PTP Instance
32             is designed.currentUtcOffsetValid"
33     REFERENCE   "14.2.8"
34     ::= { ieee8021AsV3DefaultDSEntry 9 }
35
36
37 ieee8021AsV3DefaultDSCurrentUtcOffsetValid OBJECT-TYPE
38     SYNTAX      TruthValue
39     MAX-ACCESS  read-only
40     STATUS      current
41     DESCRIPTION
42         "The default value is TRUE (1) if the value of
43         ieee8021AsV3DefaultDSCurrentUtcOffset is known to be
44         correct, otherwise it is set to FALSE (2)."

```

```
1      global variable sysLeap59.
2
3      The value is selected as follows:
4          a)The value is obtained from a primary reference if
5              known at the time of initialization, else
6          b)The value is set to FALSE (2)."
```

REFERENCE "14.2.10"

::= { ieee8021AsV3DefaultDSEntry 11 }

10

11 ieee8021AsV3DefaultDSLeap61 OBJECT-TYPE

12 SYNTAX TruthValue

13 MAX-ACCESS read-only

14 STATUS current

15 DESCRIPTION

16 "A TRUE (1) value indicates that the last minute of the

17 current UTC day, relative to the ClockTimeTransmitter entity of

18 this PTP Instance, will contain 61 s. It is equal to the global

19 variable sysLeap61.

20

21 The value is selected as follows:

22 a)The value is obtained from a primary reference if

23 known at the time of initialization, else

24 b)The value is set to FALSE (2)."

25 REFERENCE "14.2.11"

26 ::= { ieee8021AsV3DefaultDSEntry 12 }

27

28

29 ieee8021AsV3DefaultDSTimeTraceable OBJECT-TYPE

30 SYNTAX TruthValue

31 MAX-ACCESS read-only

32 STATUS current

33 DESCRIPTION

34 "The value is set to TRUE (1) if the timescale and the value

35 of currentUtcOffset, relative to the ClockTimeTransmitter entity of

36 this PTP Instance, are traceable to a primary reference

37 standard; otherwise the value is set to FALSE (2).

38 It is equal to the global variable sysTimeTraceable.

39

40 The value is selected as follows:

41 a)If the time and the value of currentUtcOffset are

42 traceable to a primary reference standard at the time of

43 initialization, the value is set to TRUE (1), else

44 b)The value is set to FALSE (2)."

45 REFERENCE "14.2.12"

46 ::= { ieee8021AsV3DefaultDSEntry 13 }

47

48

49 ieee8021AsV3DefaultDSFrequencyTraceable OBJECT-TYPE

50 SYNTAX TruthValue

51 MAX-ACCESS read-only

52 STATUS current

53 DESCRIPTION

54 "The value is set to TRUE (1) if the frequency determining the

55 timescale of the ClockTimeTransmitter Entity of this PTP Instance is

56 traceable to a primary standard; otherwise the value is set

```
1         to FALSE (2). It is equal to the global variable
2         sysFrequencyTraceable.
3
4         The value is selected as follows:
5             a) If the frequency is traceable to a primary reference
6                standard at the time of initialization the value is set
7                to TRUE (1), else
8             b) The value is set to FALSE (2)."
```

9 REFERENCE "14.2.13"

10 ::= { ieee8021AsV3DefaultDSEntry 14 }

11

12 ieee8021AsV3DefaultDSPTPTimescale OBJECT-TYPE

13 SYNTAX TruthValue

14 MAX-ACCESS read-only

15 STATUS current

16 DESCRIPTION

17 "The value is set to TRUE (1) if the clock timescale of the

18 ClockTimeTransmitter Entity of this PTP Instance is PTP and

19 FALSE (2) otherwise."

20 REFERENCE "14.2.14"

21 ::= { ieee8021AsV3DefaultDSEntry 15 }

22

23 ieee8021AsV3DefaultDSTimeSource OBJECT-TYPE

24 SYNTAX Ieee8021AsV3TimeSourceValue

25 MAX-ACCESS read-only

26 STATUS current

27 DESCRIPTION

28 "The value is the source of time used by the

29 Grandmaster PTP Instance clock."

30 REFERENCE "14.2.15"

31 ::= { ieee8021AsV3DefaultDSEntry 16 }

32

33 ieee8021AsV3DefaultDSDomainNumber OBJECT-TYPE

34 SYNTAX Unsigned32(0..127)

35 MAX-ACCESS read-write

36 STATUS current

37 DESCRIPTION

38 "The value is the domain number of the gPTP domain for this

39 instance of gPTP supported by the time-aware system."

40 REFERENCE "14.2.16"

41 ::= { ieee8021AsV3DefaultDSEntry 17 }

42

43 ieee8021AsV3DefaultDSSdoId OBJECT-TYPE

44 SYNTAX Unsigned32(0..4095)

45 MAX-ACCESS read-only

46 STATUS current

47 DESCRIPTION

48 "The value is the sdoId of the gPTP domain for this instance

49 of gPTP supported by the time-aware system.

50 For compatibility with IEEE Std 1588, the range of the

51 managed object is limited to 12 bits; in addition, only the

52 single value 0x100 is specified in this standard for the

53 gPTP domain of a PTP Instance."

54 REFERENCE "14.2.17"

55 ::= { ieee8021AsV3DefaultDSEntry 18 }

56

```

1 ieee8021AsV3DefaultDSEExternalPortConfigurationEnabled OBJECT-TYPE
2     SYNTAX      TruthValue
3     MAX-ACCESS  read-write
4     STATUS      current
5     DESCRIPTION
6         "The value is the externalPortConfigurationEnabled attribute
7         of the PTP Instance."
8     REFERENCE   "14.2.18"
9     ::= { ieee8021AsV3DefaultDSEntry 19 }
10
11 ieee8021AsV3DefaultDSInstanceEnable OBJECT-TYPE
12     SYNTAX      TruthValue
13     MAX-ACCESS  read-write
14     STATUS      current
15     DESCRIPTION
16         "The value is the instanceEnable attribute of the PTP Instance."
17     REFERENCE   "14.2.19"
18     ::= { ieee8021AsV3DefaultDSEntry 20 }
19
20 -- =====
21 -- The Current data set represents this system's topological location
22 -- relative to the known Grandmaster PTP Instance.
23 -- This data set is consistent with respective IEEE 1588 data set.
24 -- =====
25
26 ieee8021AsV3CurrentDSTable      OBJECT-TYPE
27     SYNTAX      SEQUENCE OF Ieee8021AsV3CurrentDSEntry
28     MAX-ACCESS  not-accessible
29     STATUS      current
30     DESCRIPTION
31         "The Current Parameter Data Set represents the position of a local
32         system and other information, relative to the
33         Grandmaster PTP Instance."
34     REFERENCE   "14.3"
35     ::= { ieee8021AsV3MIBObjects 3 }
36
37 ieee8021AsV3CurrentDSEntry      OBJECT-TYPE
38     SYNTAX      Ieee8021AsV3CurrentDSEntry
39     MAX-ACCESS  not-accessible
40     STATUS      current
41     DESCRIPTION
42         "Current Data Set for a specific PTP Instance."
43     INDEX { ieee8021AsV3PtpInstance }
44     ::= { ieee8021AsV3CurrentDSTable 1 }
45
46 Ieee8021AsV3CurrentDSEntry ::=
47     SEQUENCE {
48         ieee8021AsV3CurrentDSStepsRemoved          Unsigned32,
49         ieee8021AsV3CurrentDSOffsetFromTimeTransmitter
50 Ieee8021AsV3PtpTimeInterval,
51         ieee8021AsV3CurrentDSLstGmPhaseChange      Ieee8021AsV3ScaledNs,
52         ieee8021AsV3CurrentDSLstGmFreqChange       Float64TC,
53         ieee8021AsV3CurrentDSGmTimebaseIndicator   Unsigned32,
54         ieee8021AsV3CurrentDSGmChangeCount         Counter32,
55         ieee8021AsV3CurrentDSTimeOfLastGmChangeEvent TimeStamp,
56         ieee8021AsV3CurrentDSTimeOfLastGmPhaseChangeEvent TimeStamp,

```



```

1      ieee8021AsV3CurrentDSTimeOfLastGmFreqChangeEvent      TimeStamp
2      }
3
4 ieee8021AsV3CurrentDSStepsRemoved OBJECT-TYPE
5     SYNTAX          Unsigned32(0..65535)
6     MAX-ACCESS      read-only
7     STATUS          current
8     DESCRIPTION
9         "The value is the number of gPTP communication paths
10         traversed between this PTP Instance and the
11         Grandmaster PTP Instance, as specified in 10.3.3."
12     REFERENCE       "14.3.2"
13     ::= { ieee8021AsV3CurrentDSEntry 1 }
14
15
16 ieee8021AsV3CurrentDSOffsetFromTimeTransmitter OBJECT-TYPE
17     SYNTAX          Ieee8021ASV3PtpTimeInterval
18     MAX-ACCESS      read-only
19     STATUS          current
20     DESCRIPTION
21         "The value is an implementation-specific representation of
22         the current value of the time difference between a timeReceiver
23         and the Grandmaster Clock, as computed by the timeReceiver, and
24         as specified in 10.2.10."
25     REFERENCE       "14.3.3"
26     ::= { ieee8021AsV3CurrentDSEntry 2 }
27
28 ieee8021AsV3CurrentDSLlastGmPhaseChange OBJECT-TYPE
29     SYNTAX          Ieee8021ASV3ScaledNs
30     MAX-ACCESS      read-only
31     STATUS          current
32     DESCRIPTION
33         "The value is the phase change that occurred on the most
34         recent change in either Grandmaster PTP Instance or
35         gmTimeBaseIndicator."
36     REFERENCE       "14.3.4"
37     ::= { ieee8021AsV3CurrentDSEntry 3 }
38
39 ieee8021AsV3CurrentDSLlastGmFreqChange OBJECT-TYPE
40     SYNTAX          Float64TC
41     MAX-ACCESS      read-only
42     STATUS          current
43     DESCRIPTION
44         "The value is the frequency change that occurred on the most
45         recent change in either Grandmaster PTP Instance or
46         gmTimeBaseIndicator."
47     REFERENCE       "14.3.5"
48     ::= { ieee8021AsV3CurrentDSEntry 4 }
49
50 ieee8021AsV3CurrentDSGmTimebaseIndicator OBJECT-TYPE
51     SYNTAX          Unsigned32(0..65535)
52     MAX-ACCESS      read-only
53     STATUS          current
54     DESCRIPTION
55         "The value is the value of timeBaseIndicator of the
56         current Grandmaster PTP Instance."

```

```

1  REFERENCE    "14.3.6"
2  ::= { ieee8021AsV3CurrentDSEntry 5 }
3
4  ieee8021AsV3CurrentDSGmChangeCount OBJECT-TYPE
5      SYNTAX      Counter32
6      MAX-ACCESS  read-only
7      STATUS      current
8      DESCRIPTION
9          "This statistics counter tracks the number of times the
10         Grandmaster PTP Instance has changed in a gPTP domain.
11         This counter increments when the PortAnnounceInformation
12         state machine enters the SUPERIOR_MASTER_PORT state or
13         the INFERIOR_MASTER_OR_OTHER_PORT state."
14  REFERENCE    "14.3.7"
15  ::= { ieee8021AsV3CurrentDSEntry 6 }
16
17  ieee8021AsV3CurrentDSTimeOfLastGmChangeEvent OBJECT-TYPE
18      SYNTAX      TimeStamp
19      UNITS        "0.01 seconds"
20      MAX-ACCESS  read-only
21      STATUS      current
22      DESCRIPTION
23          "This timestamp takes the value of sysUpTime (see RFC3418) when
24         the most recent Grandmaster PTP Instance change occurred in
25         a gPTP domain.
26         This timestamp is updated when the PortAnnounceInformation
27         state machine enters the SUPERIOR_MASTER_PORT state or the
28         INFERIOR_MASTER_OR_OTHER_PORT state."
29  REFERENCE    "14.3.8"
30  ::= { ieee8021AsV3CurrentDSEntry 7 }
31
32
33  ieee8021AsV3CurrentDSTimeOfLastGmPhaseChangeEvent OBJECT-TYPE
34      SYNTAX      TimeStamp
35      UNITS        "0.01 seconds"
36      MAX-ACCESS  read-only
37      STATUS      current
38      DESCRIPTION
39          "This timestamp takes the value of sysUpTime (see RFC3418)
40         when the most recent change in Grandmaster Clock phase
41         occurred, due to a change of either the
42         Grandmaster PTP Instance or the Grandmaster Clock
43         time base. This timestamp is updated when one of the
44         following occurs:
45             a)The PortAnnounceInformation state machine enters the
46                SUPERIOR_MASTER_PORT state or the
47                INFERIOR_MASTER_OR_OTHER_PORT state, or
48             b)The gmTimebaseIndicator managed object changes and the
49                lastGmPhaseChange field of the most recently received
50                Follow_Up information TLV is nonzero."
51  REFERENCE    "14.3.9"
52  ::= { ieee8021AsV3CurrentDSEntry 8 }
53
54  ieee8021AsV3CurrentDSTimeOfLastGmFreqChangeEvent OBJECT-TYPE
55      SYNTAX      TimeStamp
56      UNITS        "0.01 seconds"

```

```

1    MAX-ACCESS    read-only
2    STATUS        current
3    DESCRIPTION
4        "This timestamp takes the value of sysUpTime (see RFC3418)
5        when the most recent change in Grandmaster Clock frequency
6        occurred, due to a change of either the Grandmaster PTP
7        Instance or the Grandmaster Clock time base. This timestamp
8        is updated when one of the following occurs:
9            a)The PortAnnounceInformation state machine enters the
10           SUPERIOR_MASTER_PORT state or the
11           INFERIOR_MASTER_OR_OTHER_PORT state, or
12           b)The gmTimebaseIndicator managed object changes and the
13           lastGmFreqChange field of the most recently received
14           Follow_Up information TLV is nonzero."
15    REFERENCE      "14.3.10"
16    ::= { ieee8021AsV3CurrentDSEntry 9 }
17
18 -- =====
19 -- The Parent data set represents the upstream (toward
20 -- Grandmaster PTP Instance) system's timing parameters as measured
21 -- at this system.
22 -- This data set is consistent with the respective IEEE 1588 data set.
23 -- =====
24 ieee8021AsV3ParentDSTable      OBJECT-TYPE
25     SYNTAX          SEQUENCE OF Ieee8021AsV3ParentDSEntry
26     MAX-ACCESS      not-accessible
27     STATUS          current
28     DESCRIPTION
29         "The Parent Parameter Data Set represents capabilities of the
30         upstream system, toward the Grandmaster PTP Instance, as
31         measured at a local system."
32     REFERENCE      "14.4"
33     ::= { ieee8021AsV3MIBObjects 4 }
34
35 ieee8021AsV3ParentDSEntry      OBJECT-TYPE
36     SYNTAX          Ieee8021AsV3ParentDSEntry
37     MAX-ACCESS      not-accessible
38     STATUS          current
39     DESCRIPTION
40         "Parent Data Set for a specific PTP Instance."
41     INDEX { ieee8021AsV3PtpInstance }
42     ::= { ieee8021AsV3ParentDSTable 1 }
43
44 Ieee8021AsV3ParentDSEntry ::=
45     SEQUENCE {
46         ieee8021AsV3ParentDSParentClockIdentity      Ieee8021AsV3ClockIdentity,
47         ieee8021AsV3ParentDSParentPortNumber          Unsigned32,
48         ieee8021AsV3ParentDSCumulativeRateRatio      Integer32,
49         ieee8021AsV3ParentDSGrandmasterIdentity      Ieee8021AsV3ClockIdentity,
50         ieee8021AsV3ParentDSGrandmasterClockQualityclockClass
51                                                     Ieee8021AsV3ClockClassValue,
52         ieee8021AsV3ParentDSGrandmasterClockQualityclockAccuracy
53                                                     Ieee8021AsV3ClockAccuracyValue,
54         ieee8021AsV3ParentDSGrandmasterClockQualityoffsetScaledLogVar
55                                                     Unsigned32,
56         ieee8021AsV3ParentDSGrandmasterPriority1      Unsigned32,

```

```

1      ieee8021AsV3ParentDSGrandmasterPriority2      Unsigned32
2      }
3
4 ieee8021AsV3ParentDSParentClockIdentity OBJECT-TYPE
5     SYNTAX      Ieee8021AsV3ClockIdentity
6     MAX-ACCESS  read-only
7     STATUS      current
8     DESCRIPTION
9         "The value is the first of the parentPortIdentity attribute
10        for this instance of gPTP domain, which is a set made of
11        Ieee8021AsV3ClockIdentity and portNumber."
12     REFERENCE   "14.4.2"
13     ::= { ieee8021AsV3ParentDSEntry 1 }
14
15 ieee8021AsV3ParentDSParentPortNumber OBJECT-TYPE
16     SYNTAX      Unsigned32(0..65535)
17     MAX-ACCESS  read-only
18     STATUS      current
19     DESCRIPTION
20         "The value is the second of the parentPortIdentity attribute
21        for this instance of gPTP domain, which is a set made of
22        Ieee8021AsV3ClockIdentity and portNumber."
23     REFERENCE   "14.4.2"
24     ::= { ieee8021AsV3ParentDSEntry 2 }
25
26 ieee8021AsV3ParentDSCumulativeRateRatio OBJECT-TYPE
27     SYNTAX      Integer32
28     MAX-ACCESS  read-only
29     STATUS      current
30     DESCRIPTION
31         "The value is an estimate of the ratio of the frequency of
32        the Grandmaster Clock to the frequency of the LocalClock
33        entity of this PTP Instance.
34        CumulativeRateRatio is expressed as the fractional
35        frequency offset multiplied by 2^41, i.e., the quantity
36        (rateRatio - 1.0)(2^41), where rateRatio is computed by
37        the PortSyncSyncReceive state machine."
38     REFERENCE   "14.4.3"
39     ::= { ieee8021AsV3ParentDSEntry 3 }
40
41 ieee8021AsV3ParentDSGrandmasterIdentity OBJECT-TYPE
42     SYNTAX      Ieee8021AsV3ClockIdentity
43     MAX-ACCESS  read-only
44     STATUS      current
45     DESCRIPTION
46         "The value is the clockIdentity attribute of the
47        Grandmaster PTP Instance."
48     REFERENCE   "14.4.4"
49     ::= { ieee8021AsV3ParentDSEntry 4 }
50
51 ieee8021AsV3ParentDSGrandmasterClockQualityclockClass OBJECT-TYPE
52     SYNTAX      Ieee8021AsV3ClockClassValue
53     MAX-ACCESS  read-only
54     STATUS      current
55     DESCRIPTION
56         "The value is the clockClass of the Grandmaster PTP Instance."

```

```

1  REFERENCE    "14.4.5.2"
2  ::= { ieee8021AsV3ParentDSEntry 5 }
3
4  ieee8021AsV3ParentDSGrandmasterClockQualityclockAccuracy OBJECT-TYPE
5      SYNTAX      Ieee8021AsV3ClockAccuracyValue
6      MAX-ACCESS  read-only
7      STATUS      current
8      DESCRIPTION
9          "The value is the clockAccuracy of the Grandmaster PTP Instance."
10     REFERENCE   "14.4.5.3"
11     ::= { ieee8021AsV3ParentDSEntry 6 }
12
13  ieee8021AsV3ParentDSGrandmasterClockQualityoffsetScaledLogVar
14      OBJECT-TYPE
15      SYNTAX      Unsigned32(0..65535)
16      MAX-ACCESS  read-only
17      STATUS      current
18      DESCRIPTION
19          "The value is the offsetScaledLogVariance of the
20          Grandmaster PTP Instance."
21     REFERENCE   "14.4.5.4"
22     ::= { ieee8021AsV3ParentDSEntry 7 }
23
24  ieee8021AsV3ParentDSGrandmasterPriority1 OBJECT-TYPE
25      SYNTAX      Unsigned32(0..255)
26      MAX-ACCESS  read-only
27      STATUS      current
28      DESCRIPTION
29          "The value is the priority1 attribute of the
30          Grandmaster PTP Instance."
31     REFERENCE   "14.4.6"
32     ::= { ieee8021AsV3ParentDSEntry 8 }
33
34  ieee8021AsV3ParentDSGrandmasterPriority2 OBJECT-TYPE
35      SYNTAX      Unsigned32(0..255)
36      MAX-ACCESS  read-only
37      STATUS      current
38      DESCRIPTION
39          "The value is the priority2 attribute of the
40          Grandmaster PTP Instance."
41     REFERENCE   "14.4.7"
42     ::= { ieee8021AsV3ParentDSEntry 9 }
43
44 -- =====
45 -- TimePropertiesDS represents the Grandmaster PTP Instance's
46 -- parameters, as measured at this system and are derived from
47 -- IEEE 802.1AS protocol.
48 -- This data set is consistent with respective IEEE 1588 data set.
49 -- =====
50  ieee8021AsV3TimePropertiesDSTable OBJECT-TYPE
51      SYNTAX      SEQUENCE OF Ieee8021AsV3TimePropertiesDSEntry
52      MAX-ACCESS  not-accessible
53      STATUS      current
54      DESCRIPTION
55          "The Time Properties Parameter Data Set represents capabilities of
56          the Grandmaster PTP Instance, as measured at a local system"

```

```

1  REFERENCE    "14.5"
2  ::= { ieee8021AsV3MIBObjects 5 }
3
4  ieee8021AsV3TimePropertiesDSEntry OBJECT-TYPE
5  SYNTAX      Ieee8021AsV3TimePropertiesDSEntry
6  MAX-ACCESS  not-accessible
7  STATUS      current
8  DESCRIPTION
9      "Time Properties Data Set contains the profile Identifier for
10     this instance of gPTP domain."
11  INDEX { ieee8021AsV3PtpInstance }
12  ::= { ieee8021AsV3TimePropertiesDSTable 1 }
13
14  Ieee8021AsV3TimePropertiesDSEntry ::=
15  SEQUENCE {
16      ieee8021AsV3TimePropertiesDSCurrentUtcOffset      Integer32,
17      ieee8021AsV3TimePropertiesDSCurrentUtcOffsetValid TruthValue,
18      ieee8021AsV3TimePropertiesDSLeap59                 TruthValue,
19      ieee8021AsV3TimePropertiesDSLeap61                 TruthValue,
20      ieee8021AsV3TimePropertiesDSTimeTraceable          TruthValue,
21      ieee8021AsV3TimePropertiesDSFrequencyTraceable     TruthValue,
22      ieee8021AsV3TimePropertiesDSPTpTimescale           TruthValue,
23      ieee8021AsV3TimePropertiesDSTimeSource
24  Ieee8021AsV3TimeSourceValue
25  }
26
27  ieee8021AsV3TimePropertiesDSCurrentUtcOffset OBJECT-TYPE
28  SYNTAX      Integer32(-32768..32767)
29  UNITS       "seconds"
30  MAX-ACCESS  read-only
31  STATUS      current
32  DESCRIPTION
33      "The value is currentUtcOffset for the current
34      Grandmaster PTP Instance. It is equal to the value of
35      the global variable currentUtcOffset. The value is in
36      units of seconds."
37  REFERENCE   "14.5.2"
38  ::= { ieee8021AsV3TimePropertiesDSEntry 1 }
39
40  ieee8021AsV3TimePropertiesDSCurrentUtcOffsetValid OBJECT-TYPE
41  SYNTAX      TruthValue
42  MAX-ACCESS  read-only
43  STATUS      current
44  DESCRIPTION
45      "The value is currentUtcOffsetValid for the current
46      Grandmaster PTP Instance. It is equal to the global
47      variable currentUtcOffsetValid."
48  REFERENCE   "14.5.3"
49  ::= { ieee8021AsV3TimePropertiesDSEntry 2 }
50
51  ieee8021AsV3TimePropertiesDSLeap59 OBJECT-TYPE
52  SYNTAX      TruthValue
53  MAX-ACCESS  read-only
54  STATUS      current
55  DESCRIPTION
56      "The value is leap59 for the current Grandmaster PTP Instance.

```

```
1         It is equal to the global variable leap59."
2     REFERENCE    "14.5.4"
3     ::= { ieee8021AsV3TimePropertiesDSentry 3 }
4
5 ieee8021AsV3TimePropertiesDSLeap61 OBJECT-TYPE
6     SYNTAX      TruthValue
7     MAX-ACCESS  read-only
8     STATUS      current
9     DESCRIPTION
10        "The value is leap61 for the current Grandmaster PTP Instance.
11        It is equal to the global variable leap61."
12     REFERENCE    "14.5.5"
13     ::= { ieee8021AsV3TimePropertiesDSentry 4 }
14
15 ieee8021AsV3TimePropertiesDSTimeTraceable OBJECT-TYPE
16     SYNTAX      TruthValue
17     MAX-ACCESS  read-only
18     STATUS      current
19     DESCRIPTION
20        "The value is timeTraceable for the current
21        Grandmaster PTP Instance. It is equal to the global
22        variable timeTraceable."
23     REFERENCE    "14.5.6"
24     ::= { ieee8021AsV3TimePropertiesDSentry 5 }
25
26 ieee8021AsV3TimePropertiesDSFrequencyTraceable OBJECT-TYPE
27     SYNTAX      TruthValue
28     MAX-ACCESS  read-only
29     STATUS      current
30     DESCRIPTION
31        "The value is frequencyTraceable for the current
32        Grandmaster PTP Instance. It is equal to the global
33        variable frequencyTraceable."
34     REFERENCE    "14.5.7"
35     ::= { ieee8021AsV3TimePropertiesDSentry 6 }
36
37 ieee8021AsV3TimePropertiesDSPtpTimescale OBJECT-TYPE
38     SYNTAX      TruthValue
39     MAX-ACCESS  read-only
40     STATUS      current
41     DESCRIPTION
42        "The value is ptpTimescale for the current
43        Grandmaster PTP Instance."
44     REFERENCE    "14.5.8"
45     ::= { ieee8021AsV3TimePropertiesDSentry 7 }
46
47 ieee8021AsV3TimePropertiesDSTimeSource OBJECT-TYPE
48     SYNTAX      Ieee8021AsV3TimeSourceValue
49     MAX-ACCESS  read-only
50     STATUS      current
51     DESCRIPTION
52        "The value is timeSource for the current
53        Grandmaster PTP Instance. It is equal to the global
54        variable timeSource"
55     REFERENCE    "14.5.9"
56     ::= { ieee8021AsV3TimePropertiesDSentry 8 }
```

```

1
2 -- =====
3 -- The Path Trace Parameter Data set represents the current path
4 -- trace information available at the PTP Instance.
5 -- =====
6
7 ieee8021AsV3PathTraceDSTable      OBJECT-TYPE
8     SYNTAX          SEQUENCE OF Ieee8021AsV3PathTraceDSEntry
9     MAX-ACCESS      not-accessible
10    STATUS           current
11    DESCRIPTION
12        "The pathTraceDS represents the current path trace information
13         available at the PTP Instance."
14    REFERENCE        "14.6"
15    ::= { ieee8021AsV3MIBObjects 6 }
16
17 ieee8021AsV3PathTraceDSEntry      OBJECT-TYPE
18     SYNTAX          Ieee8021AsV3PathTraceDSEntry
19     MAX-ACCESS      not-accessible
20     STATUS           current
21     DESCRIPTION
22         "Path Trace Data Set for a specific PTP Instance."
23     INDEX { ieee8021AsV3PtpInstance }
24     ::= { ieee8021AsV3PathTraceDSTable 1 }
25
26 Ieee8021AsV3PathTraceDSEntry ::=
27 SEQUENCE {
28     ieee8021AsV3PathTraceDSEnable          TruthValue
29 }
30
31 ieee8021AsV3PathTraceDSEnable OBJECT-TYPE
32     SYNTAX          TruthValue
33     MAX-ACCESS      read-only
34     STATUS           current
35     DESCRIPTION
36         "The value is TRUE.
37         NOTE: This member is included for compatibility with
38         IEEE Std 1588. In IEEE Std 1588, the path trace mechanism
39         is optional, and the pathTraceDS.enable member is
40         configurable (its value in IEEE Std 1588 is TRUE (1) or
41         FALSE (2), depending on whether the path trace mechanism is
42         operational or not operational, respectively. However, the
43         pathTrace mechanism is mandatory in this standard, and the
44         value of enable is always TRUE (1)."

```



```

1      REFERENCE      "14.6.2"
2      ::= { ieee8021AsV3MIBObjects 7 }
3
4 ieee8021AsV3PathTraceDSArrayEntry  OBJECT-TYPE
5     SYNTAX          Ieee8021AsV3PathTraceDSArrayEntry
6     MAX-ACCESS      not-accessible
7     STATUS          current
8     DESCRIPTION
9         "Path Trace Data Set Table Array for a specific PTP Instance."
10    INDEX { ieee8021AsV3PtpInstance, ieee8021AsV3PathTraceDSArrayIndex }
11    ::= { ieee8021AsV3PathTraceDSArrayTable 1 }
12
13 Ieee8021AsV3PathTraceDSArrayEntry ::=
14     SEQUENCE {
15         ieee8021AsV3PathTraceDSArrayIndex  Unsigned32,
16         ieee8021AsV3PathTraceDSArrayList    Ieee8021AsV3ClockIdentity
17     }
18
19 ieee8021AsV3PathTraceDSArrayIndex OBJECT-TYPE
20     SYNTAX          Unsigned32 (1..179)
21     MAX-ACCESS      not-accessible
22     STATUS          current
23     DESCRIPTION
24         "Index of the Path Trace Data Set Array."
25     REFERENCE      "10.3.9.23"
26     ::= { ieee8021AsV3PathTraceDSArrayEntry 1 }
27
28 ieee8021AsV3PathTraceDSArrayList OBJECT-TYPE
29     SYNTAX          Ieee8021AsV3ClockIdentity
30     MAX-ACCESS      read-only
31     STATUS          current
32     DESCRIPTION
33         "The value is the array of ClockIdentity values contained
34         in the pathTrace array, which represents the current
35         path trace information, and which is carried in the path
36         trace TLV."
37     REFERENCE      "14.6.2"
38     ::= { ieee8021AsV3PathTraceDSArrayEntry 2 }
39
40
41 -- *****
42 -- The Acceptable TimeTransmitter Table Parameter Data Set represents the
43 -- acceptable timeTransmitter table used when an EPON port is used by a PTP
44 -- Instance of a time-aware system.
45 -- *****
46
47 ieee8021AsV3AcceptableTimeTransmitterTableDSTable  OBJECT-TYPE
48     SYNTAX          SEQUENCE OF Ieee8021AsV3AcceptableTimeTransmitterTableDSEntry
49     MAX-ACCESS      not-accessible
50     STATUS          current
51     DESCRIPTION
52         "The acceptableTimeTransmitterTableDS represents the acceptable
53 timeTransmitter
54         table used when an EPON port is used by a PTP Instance of a
55         time-aware system."
56     REFERENCE      "14.7"

```

```

1 ::= { ieee8021AsV3MIBObjects 8 }
2
3 ieee8021AsV3AcceptableTimeTransmitterTableDSEntry OBJECT-TYPE
4     SYNTAX      Ieee8021AsV3AcceptableTimeTransmitterTableDSEntry
5     MAX-ACCESS  not-accessible
6     STATUS      current
7     DESCRIPTION
8         "Acceptable TimeTransmitter Table Data Set represents the acceptable
9 timeTransmitter
10         table used when an EPON port is used by a PTP Instance of a
11         time-aware system."
12     INDEX { ieee8021AsV3PtpInstance }
13     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSTable 1 }
14
15 Ieee8021AsV3AcceptableTimeTransmitterTableDSEntry ::=
16     SEQUENCE {
17         ieee8021AsV3AcceptableTimeTransmitterTableDSMaxTableSize
18 Unsigned32,
19         ieee8021AsV3AcceptableTimeTransmitterTableDSActualTableSize
20 Unsigned32
21     }
22
23 ieee8021AsV3AcceptableTimeTransmitterTableDSMaxTableSize OBJECT-TYPE
24     SYNTAX      Unsigned32(0..65535)
25     MAX-ACCESS  read-only
26     STATUS      current
27     DESCRIPTION
28         "The value is the maximum size of the AcceptableTimeTransmitterTable.
29         It is equal to the maxTableSize member of the
30         AcceptableTimeTransmitterTable structure."
31     REFERENCE   "14.7.2"
32     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSEntry 1 }
33
34 ieee8021AsV3AcceptableTimeTransmitterTableDSActualTableSize OBJECT-TYPE
35     SYNTAX      Unsigned32(0..65535)
36     MAX-ACCESS  read-write
37     STATUS      current
38     DESCRIPTION
39         "The value is the actual size of the AcceptableTimeTransmitterTable.
40         It is equal to the actualTableSize member of the
41         AcceptableTimeTransmitterTable structure, i.e., the current number
42         of elements in the acceptable timeTransmitter array. The actual
43         table size is less than or equal to the max table size."
44     REFERENCE   "14.7.3"
45     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSEntry 2 }
46
47 ieee8021AsV3AcceptableTimeTransmitterTableDSArrayTable OBJECT-TYPE
48     SYNTAX      SEQUENCE OF
49 Ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry
50     MAX-ACCESS  not-accessible
51     STATUS      current
52     DESCRIPTION
53         "The acceptableTimeTransmitterTableDS represents the acceptable
54 timeTransmitter table
55         used when an EPON port is used by a PTP Instance of a time-aware
56         system."

```

```

1    REFERENCE    "14.7"
2 ::= { ieee8021AsV3MIBObjects 9 }
3
4 ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry  OBJECT-TYPE
5     SYNTAX      Ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry
6     MAX-ACCESS  not-accessible
7     STATUS      current
8     DESCRIPTION
9         "Each element of this array is an AcceptableTimeTransmitter structure
10 per
11         PTP Instance."
12     INDEX { ieee8021AsV3PtpInstance,
13 ieee8021AsV3AcceptableTimeTransmitterTableDSArrayIndex }
14     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSArrayTable 1 }
15
16 Ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry ::=
17     SEQUENCE {
18         ieee8021AsV3AcceptableTimeTransmitterTableDSArrayIndex
19 Unsigned32,
20         ieee8021AsV3AcceptableTimeTransmitterTableDSArrayPortIdentity
21 Ieee8021ASV3PtpPortIdentity,
22         ieee8021AsV3AcceptableTTTableDSArrayAlternatePriority1      Unsigned32
23     }
24
25 ieee8021AsV3AcceptableTimeTransmitterTableDSArrayIndex  OBJECT-TYPE
26     SYNTAX      Unsigned32(0..65535)
27     MAX-ACCESS  not-accessible
28     STATUS      current
29     DESCRIPTION
30         "Index of the Acceptable TimeTransmitter Table Data Set Array."
31     REFERENCE   "14.7.4"
32     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry 1 }
33
34 ieee8021AsV3AcceptableTimeTransmitterTableDSArrayPortIdentity  OBJECT-TYPE
35     SYNTAX      Ieee8021ASV3PtpPortIdentity
36     MAX-ACCESS  read-write
37     STATUS      current
38     DESCRIPTION
39         "The acceptablePortIdentity member is the PortIdentity of
40         an acceptable timeTransmitter port."
41     REFERENCE   "14.7.4"
42     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry 2 }
43
44 ieee8021AsV3AcceptableTTTableDSArrayAlternatePriority1  OBJECT-TYPE
45     SYNTAX      Unsigned32(0..255)
46     MAX-ACCESS  read-write
47     STATUS      current
48     DESCRIPTION
49         "The alternatePriority1 member contains an alternate value
50         for the priority1 attribute of the acceptable timeTransmitter port."
51     REFERENCE   "14.7.4"
52     ::= { ieee8021AsV3AcceptableTimeTransmitterTableDSArrayEntry 3 }
53
54 -- =====
55 -- The Port Parameter Data Set (portDS) represents PTP Port
56 -- time-aware capabilities for a PTP Instance of a time-aware

```

```

1 -- system.
2 -- =====
3 ieee8021AsV3PortDSTable OBJECT-TYPE
4     SYNTAX      SEQUENCE OF Ieee8021AsV3PortDSEntry
5     MAX-ACCESS  not-accessible
6     STATUS      current
7     DESCRIPTION
8         "For the single PTP Port of a PTP End Instance and for each
9         PTP Port of a PTP Relay Instance , the portDS is maintained
10        as the basis for making protocol decisions and providing
11        values for message fields.
12        The number of such data sets is the same as the value of
13        defaultDS.numberPorts."
14     REFERENCE   "14.8"
15     ::= { ieee8021AsV3MIBObjects 10 }
16
17 ieee8021AsV3PortDSEntry OBJECT-TYPE
18     SYNTAX      Ieee8021AsV3PortDSEntry
19     MAX-ACCESS  not-accessible
20     STATUS      current
21     DESCRIPTION
22         "A list of objects pertaining to a PTP Port of a PTP Instance."
23     INDEX { ieee8021AsV3PtpInstance,
24             ieee8021AsV3PortDSIndex }
25     ::= { ieee8021AsV3PortDSTable 1 }
26
27 Ieee8021AsV3PortDSEntry ::=
28     SEQUENCE {
29         ieee8021AsV3BridgeBasePort          IEEE8021BridgePortNumber,
30         ieee8021AsV3PortDSIndex             InterfaceIndexOrZero,
31         ieee8021AsV3PortDSClockIdentity
32 Ieee8021AsV3ClockIdentity,
33         ieee8021AsV3PortDSPortNumber         Unsigned32,
34         ieee8021AsV3PortDSPortState          INTEGER,
35         ieee8021AsV3PortDSPtpPortEnabled    TruthValue,
36         ieee8021AsV3PortDSDelayMechanism    INTEGER,
37         ieee8021AsV3PortDSIsMeasuringDelay   TruthValue,
38         ieee8021AsV3PortDSAsCapable          TruthValue,
39         ieee8021AsV3PortDSMeanLinkDelay
40 Ieee8021ASV3PtpTimeInterval,
41         ieee8021AsV3PortDSMeanLinkDelayThresh
42 Ieee8021ASV3PtpTimeInterval,
43         ieee8021AsV3PortDSDelayAsym
44 Ieee8021ASV3PtpTimeInterval,
45         ieee8021AsV3PortDSNbrRateRatio      Integer32,
46         ieee8021AsV3PortDSInitialLogAnnounceInterval Integer32,
47         ieee8021AsV3PortDSCurrentLogAnnounceInterval Integer32,
48         ieee8021AsV3PortDSUseMgtSettableLogAnnounceInterval TruthValue,
49         ieee8021AsV3PortDSMgtSettableLogAnnounceInterval Integer32,
50         ieee8021AsV3PortDSAnnounceReceiptTimeout Unsigned32,
51         ieee8021AsV3PortDSInitialLogSyncInterval Integer32,
52         ieee8021AsV3PortDSCurrentLogSyncInterval Integer32,
53         ieee8021AsV3PortDSUseMgtSettableLogSyncInterval TruthValue,
54         ieee8021AsV3PortDSMgtSettableLogSyncInterval Integer32,
55         ieee8021AsV3PortDSSyncReceiptTimeout Unsigned32,

```

```

1         ieee8021AsV3PortDSSyncReceiptTimeoutTimeInterval
2 Ieee8021ASV3UScaledNs,
3         ieee8021AsV3PortDSInitialLogPdelayReqInterval Integer32,
4         ieee8021AsV3PortDSCurrentLogPdelayReqInterval Integer32,
5         ieee8021AsV3PortDSUseMgtSettableLogPdelayReqInterval TruthValue,
6         ieee8021AsV3PortDSMgtSettableLogPdelayReqInterval Integer32,
7         ieee8021AsV3PortDSInitialLogGtpCapableMessageInterval
8 Integer32,
9         ieee8021AsV3PortDSCurrentLogGtpCapableMessageInterval
10 Integer32,
11        ieee8021AsV3PortDSUseMgtSettableLogGtpCapableMessageInterval
12 TruthValue,
13        ieee8021AsV3PortDSMgtSettableLogGtpCapableMessageInterval
14 Integer32,
15        ieee8021AsV3PortDSInitialComputeNbrRateRatio TruthValue,
16        ieee8021AsV3PortDSCurrentComputeNbrRateRatio TruthValue,
17        ieee8021AsV3PortDSUseMgtSettableComputeNbrRateRatio TruthValue,
18        ieee8021AsV3PortDSMgtSettableComputeNbrRateRatio TruthValue,
19        ieee8021AsV3PortDSInitialComputeMeanLinkDelay TruthValue,
20        ieee8021AsV3PortDSCurrentComputeMeanLinkDelay TruthValue,
21        ieee8021AsV3PortDSUseMgtSettableComputeMeanLinkDelay TruthValue,
22        ieee8021AsV3PortDSMgtSettableComputeMeanLinkDelay TruthValue,
23        ieee8021AsV3PortDSAllowedLostRsp Unsigned32,
24        ieee8021AsV3PortDSAllowedFaults Unsigned32,
25        ieee8021AsV3PortDSGPtpCapableReceiptTimeout Unsigned32,
26        ieee8021AsV3PortDSVersionNumber Unsigned32,
27        ieee8021AsV3PortDSNup Float64TC,
28        ieee8021AsV3PortDSNdown Float64TC,
29        ieee8021AsV3PortDSOneStepTxOper TruthValue,
30        ieee8021AsV3PortDSOneStepReceive TruthValue,
31        ieee8021AsV3PortDSOneStepTransmit TruthValue,
32        ieee8021AsV3PortDSInitialOneStepTxOper TruthValue,
33        ieee8021AsV3PortDSCurrentOneStepTxOper TruthValue,
34        ieee8021AsV3PortDSUseMgtSettableOneStepTxOper TruthValue,
35        ieee8021AsV3PortDSMgtSettableOneStepTxOper TruthValue,
36        ieee8021AsV3PortDSSyncLocked TruthValue,
37        ieee8021AsV3PortDSPdelayTruncTST1 Ieee8021ASV3Timestamp,
38        ieee8021AsV3PortDSPdelayTruncTST2 Ieee8021ASV3Timestamp,
39        ieee8021AsV3PortDSPdelayTruncTST3 Ieee8021ASV3Timestamp,
40        ieee8021AsV3PortDSPdelayTruncTST4 Ieee8021ASV3Timestamp,
41        ieee8021AsV3PortDSMinorVersionNumber Unsigned32
42    }
43
44 ieee8021AsV3BridgeBasePort OBJECT-TYPE
45     SYNTAX      IEEE8021BridgePortNumber
46     MAX-ACCESS  not-accessible
47     STATUS      current
48     DESCRIPTION
49         "This object identifies the bridge port number of the port for
50         which this entry contains bridge management information.
51         For end stations, this port number shall be (1)."
```

```

52 ::= { ieee8021AsV3PortDSEntry 1 }
53
54 ieee8021AsV3PortDSIndex OBJECT-TYPE
55     SYNTAX      InterfaceIndexOrZero
56     MAX-ACCESS  not-accessible

```

```

1      STATUS      current
2      DESCRIPTION
3          "This object identifies the gPTP interface group within
4          the system for which this entry contains information. It
5          is the value of the instance of the IfIndex object,
6          defined in the IF-MIB, for the gPTP interface group
7          corresponding to this port, or the value 0 if the port
8          has not been bound to an underlying frame source and
9          sink.
10
11          For a given media port of a Bridge or an end station,
12          there can be one or more PTP Port, and depends whether
13          a media port supports point to point link (e.g. IEEE
14          802.3 Ethernet) or point to multi-point (e.g. CSN, IEEE
15          802.3 EPON) links on the media port."
16      ::= { ieee8021AsV3PortDSEntry 2 }
17
18 ieee8021AsV3PortDSClockIdentity OBJECT-TYPE
19     SYNTAX      Ieee8021AsV3ClockIdentity
20     MAX-ACCESS  read-only
21     STATUS      current
22     DESCRIPTION
23         "The value is the first of the portIdentity attribute
24         of the local port, which is a set made of
25         Ieee8021AsV3ClockIdentity and portNumber."
26     REFERENCE   "14.8.2"
27     ::= { ieee8021AsV3PortDSEntry 3 }
28
29
30 ieee8021AsV3PortDSPortNumber OBJECT-TYPE
31     SYNTAX      Unsigned32(0..65535)
32     MAX-ACCESS  read-only
33     STATUS      current
34     DESCRIPTION
35         "The value is the second of the portIdentity attribute
36         of the local port, which is a set made of
37         Ieee8021AsV3ClockIdentity and portNumber."
38     REFERENCE   "14.8.2"
39     ::= { ieee8021AsV3PortDSEntry 4 }
40
41 ieee8021AsV3PortDSPortState OBJECT-TYPE
42     SYNTAX      INTEGER {
43         disabledPort(3),
44         timeTransmitterPort(6),
45         passivePort(7),
46         timeReceiverPort(9)
47     }
48     MAX-ACCESS  read-only
49     STATUS      current
50     DESCRIPTION
51         "The value is the value of the PTP Port state of this
52         PTP Port (see Table 10-2) and is taken from the enumeration
53         in Table 14-7. It is equal to the value of the global
54         variable selectedState."
55     REFERENCE   "14.8.3"
56     ::= { ieee8021AsV3PortDSEntry 5 }

```

```

1
2 ieee8021AsV3PortDSptpPortEnabled OBJECT-TYPE
3     SYNTAX      TruthValue
4     MAX-ACCESS  read-write
5     STATUS      current
6     DESCRIPTION
7         "The value is equal to the value of the Boolean ptpPortEnabled.
8         Setting this managed object causes the Boolean ptpPortEnabled
9         to have the same value."
10    REFERENCE   "14.8.4"
11    ::= { ieee8021AsV3PortDSEntry 6 }
12
13 ieee8021AsV3PortDSDelayMechanism OBJECT-TYPE
14    SYNTAX      INTEGER {
15        p2p(2),
16        commonp2p(3),
17        special(4)
18    }
19    MAX-ACCESS  read-write
20    STATUS      current
21    DESCRIPTION
22        "The value indicates the mechanism for measuring mean
23        propagation delay and neighbor rate ratio on the link
24        attached to this PTP Port, and is taken from the enumeration
25        in Table 14-8. If the domain number is not 0, portDS.delay
26        mechanism must not be P2P."
27    REFERENCE   "14.8.5"
28    ::= { ieee8021AsV3PortDSEntry 7 }
29
30 ieee8021AsV3PortDSIsMeasuringDelay OBJECT-TYPE
31    SYNTAX      TruthValue
32    MAX-ACCESS  read-only
33    STATUS      current
34    DESCRIPTION
35        "The value is equal to the value of the Boolean isMeasuringDelay."
36    REFERENCE   "14.8.6"
37    ::= { ieee8021AsV3PortDSEntry 8 }
38
39
40 ieee8021AsV3PortDSAsCapable OBJECT-TYPE
41    SYNTAX      TruthValue
42    MAX-ACCESS  read-only
43    STATUS      current
44    DESCRIPTION
45        "The value is equal to the value of the Boolean asCapable."
46    REFERENCE   "14.8.7"
47    ::= { ieee8021AsV3PortDSEntry 9 }
48
49 ieee8021AsV3PortDSMeanLinkDelay OBJECT-TYPE
50    SYNTAX      Ieee8021ASV3PtpTimeInterval
51    MAX-ACCESS  read-only
52    STATUS      current
53    DESCRIPTION
54        "The value is equal to the value of the per-PTP Port global
55        variable meanLinkDelay. It is an estimate of the current
56        one-way propagation time on the link attached to this

```

```

1      PTP Port, measured as specified for the respective medium.
2      The value is zero for PTP Port attached to IEEE 802.3
3      EPON links and for the timeTransmitter port of an IEEE 802.11 link,
4      because one-way propagation delay is not measured on the
5      latter and not directly measured on the former.
6      NOTE: The underlying per-PTP Port, global variable
7      meanLinkDelay is of type UScaledNS, which is a 96-Bit value.
8      meanLinkDelay values that are larger than the maximum value
9      that can be represented by the TimeInterval data type, i.e.,
10     0xFFFF FFFF FFFF FFFF (where the units are 2 sup -16 ns), used
11     for this managed object are set to this largest value."
12  REFERENCE    "14.8.8"
13  ::= { ieee8021AsV3PortDSEntry 10 }
14
15
16 ieee8021AsV3PortDSMeanLinkDelayThresh OBJECT-TYPE
17     SYNTAX      Ieee8021ASV3PtpTimeInterval
18     MAX-ACCESS  read-write
19     STATUS      current
20     DESCRIPTION
21         "The value is equal to the value of the per-PTP Port global
22         variable meanLinkDelayThresh. It is the propagation time
23         threshold above which a PTP Port is considered not capable of
24         participating in the IEEE 802.1AS protocol.
25         Setting this managed object causes the per PTP Port global
26         variable meanLinkDelayThresh to have the same value.
27         NOTE: The underlying per-PTP Port, global variable
28         meanLinkDelayThresh is of type UScaledNS, which is a 96-Bit
29         value. meanLinkDelayThresh values that are larger than the
30         maximum value that can be represented by the TimeInterval
31         data type, i.e., 0xFFFF FFFF FFFF FFFF (where the units are
32         2 sup -16 ns), used for this managed object are set to this
33         largest value."
34  REFERENCE    "14.8.9"
35  ::= { ieee8021AsV3PortDSEntry 11 }
36
37 ieee8021AsV3PortDSDelayAsym OBJECT-TYPE
38     SYNTAX      Ieee8021ASV3PtpTimeInterval
39     MAX-ACCESS  read-write
40     STATUS      current
41     DESCRIPTION
42         "The value is the asymmetry in the propagation delay on
43         the link attached to this PTP Port relative to the
44         Grandmaster Clock time base, as defined in 10.2.5.9 and
45         8.3. If propagation delay asymmetry is not modeled, then
46         delayAsymmetry is 0.
47         NOTE: The underlying per-port global variable delayAsymmetry
48         is of type ScaledNS, which is a 96-Bit value.
49         delayAsymmetry values that are larger than the maximum value
50         that can be represented by the TimeInterval data type, i.e.,
51         0x7FFF FFFF FFFF FFFF, (where the units are 2 sup -16 ns),
52         used for this managed object are set to this largest value.
53         delayAsymmetry values that are less than the minimum value
54         that can be represented by the TimeInterval data type, i.e.,
55         0x8000 0000 0000 0001 written in twos complement form (where
56         the units are 2 sup -16 ns), used for this managed object are
  
```



```

1      set to this smallest value."
2  REFERENCE    "14.8.10 and 8.3"
3  ::= { ieee8021AsV3PortDSEntry 12 }
4
5  ieee8021AsV3PortDSNbrRateRatio OBJECT-TYPE
6      SYNTAX      Integer32
7      MAX-ACCESS  read-only
8      STATUS      current
9      DESCRIPTION
10         "The value is an estimate of the ratio of the frequency of
11         the LocalClock entity of the PTP Instance at the other end
12         of the link attached to this PTP Port, to the frequency of
13         the LocalClock entity of this PTP Instance. neighborRateRatio
14         is expressed as the fractional frequency offset multiplied
15         by 2^41, i.e., the quantity (neighborRateRatio -1.0)(2^41)."
16  REFERENCE    "14.8.11"
17  ::= { ieee8021AsV3PortDSEntry 13 }
18
19
20  ieee8021AsV3PortDSInitialLogAnnounceInterval OBJECT-TYPE
21      SYNTAX      Integer32(-128..127)
22      MAX-ACCESS  read-write
23      STATUS      current
24      DESCRIPTION
25         "If useMgtSettableLogAnnounceInterval is FALSE (2), the
26         value is the logarithm to base 2 of the announce interval
27         used when (a) the PTP Port is initialized, or (b) a message
28         interval request TLV is received with the logAnnounceInterval
29         field set to 126."
30  REFERENCE    "14.8.12"
31  DEFVAL { 0 }
32  ::= { ieee8021AsV3PortDSEntry 14 }
33
34  ieee8021AsV3PortDSCurrentLogAnnounceInterval OBJECT-TYPE
35      SYNTAX      Integer32(-128..127)
36      MAX-ACCESS  read-only
37      STATUS      current
38      DESCRIPTION
39         "The value is the logarithm to the base 2 of the
40         current announce interval."
41  REFERENCE    "14.8.13"
42  ::= { ieee8021AsV3PortDSEntry 15 }
43
44  ieee8021AsV3PortDSUseMgtSettableLogAnnounceInterval OBJECT-TYPE
45      SYNTAX      TruthValue
46      MAX-ACCESS  read-write
47      STATUS      current
48      DESCRIPTION
49         "The managed object is a Boolean that determines the
50         source of the announce interval. If the value is TRUE (1),
51         the value of currentLogAnnounceInterval is set equal to the
52         value of mgtSettableLogAnnounceInterval. If the value is
53         FALSE (2), the value of currentLogAnnounceInterval is
54         determined by the AnnounceIntervalSetting state machine. The
55         default value of useMgtSettableLogAnnounceInterval is
56         FALSE (2) for domain 0 and TRUE (1) for domains other than

```

```

1      domain 0."
2      REFERENCE    "14.8.14"
3      ::= { ieee8021AsV3PortDSEntry 16 }
4
5 ieee8021AsV3PortDSMgtSettableLogAnnounceInterval OBJECT-TYPE
6     SYNTAX        Integer32(-128..127)
7     MAX-ACCESS    read-write
8     STATUS        current
9     DESCRIPTION
10      "The value is the logarithm to base 2 of the announce interval
11      used if useMgtSettableLogAnnounceInterval is TRUE (1).
12      The value is not used if useMgtSettableLogAnnounceInterval is
13      FALSE (2)."
```

```

14     REFERENCE    "14.8.15"
15     ::= { ieee8021AsV3PortDSEntry 17 }
16
17 ieee8021AsV3PortDSAnnounceReceiptTimeout OBJECT-TYPE
18     SYNTAX        Unsigned32(0..255)
19     MAX-ACCESS    read-write
20     STATUS        current
21     DESCRIPTION
22      "The value is the number of Announce message transmission
23      intervals that a timeReceiver port waits without receiving an
24      Announce message, before assuming that the timeTransmitter is no
25      longer transmitting Announce messages and the BTCA needs
26      to be run, if appropriate."
```

```

27     REFERENCE    "14.8.16"
28     DEFVAL { 3 }
29     ::= { ieee8021AsV3PortDSEntry 18 }
30
31
32 ieee8021AsV3PortDSInitialLogSyncInterval OBJECT-TYPE
33     SYNTAX        Integer32(-128..127)
34     MAX-ACCESS    read-write
35     STATUS        current
36     DESCRIPTION
37      "If useMgtSettableLogSyncInterval is FALSE (2), the
38      value is the logarithm to base 2 of the sync interval used
39      when (a) the PTP Port is initialized, or (b) a message
40      interval request TLV is received with the logTimeSyncInterval
41      field set to 126."
```

```

42     REFERENCE    "14.8.17"
43     ::= { ieee8021AsV3PortDSEntry 19 }
44
45 ieee8021AsV3PortDSCurrentLogSyncInterval OBJECT-TYPE
46     SYNTAX        Integer32(-128..127)
47     MAX-ACCESS    read-only
48     STATUS        current
49     DESCRIPTION
50      "The value is the logarithm to the base 2 of the current
51      time-synchronization transmission interval."
```

```

52     REFERENCE    "14.8.18"
53     ::= { ieee8021AsV3PortDSEntry 20 }
54
55 ieee8021AsV3PortDSUseMgtSettableLogSyncInterval OBJECT-TYPE
56     SYNTAX        TruthValue
```

```

1     MAX-ACCESS    read-write
2     STATUS        current
3     DESCRIPTION
4         "The managed object is a Boolean that determines the source
5         of the sync interval. If the value is TRUE (1), the value
6         of currentLogSyncInterval is set equal to the value of
7         mgtSettableLogSyncInterval. If the value of the managed
8         object is FALSE (2), the value of currentLogSyncInterval is
9         determined by the SyncIntervalSetting state machine. The
10        default value of useMgtSettableLogSyncInterval is FALSE (2)
11        for domain 0 and TRUE (1) for domains other than domain 0."
12    REFERENCE      "14.8.19"
13    ::= { ieee8021AsV3PortDSEntry 21 }
14
15 ieee8021AsV3PortDSMgtSettableLogSyncInterval OBJECT-TYPE
16     SYNTAX          Integer32(-128..127)
17     MAX-ACCESS      read-write
18     STATUS          current
19     DESCRIPTION
20         "The value is the logarithm to base 2 of the sync interval
21         if useMgtSettableLogSyncInterval is TRUE (1). The value is
22         not used if useMgtSettableLogSyncInterval is FALSE (2)."

```

```

1   SYNTAX      Integer32(-128..127)
2   MAX-ACCESS  read-write
3   STATUS      current
4   DESCRIPTION
5       "For full-duplex IEEE 802.3 media and for CSN media that
6       use the peer-to-peer delay mechanism to measure path delay,
7       the value is the logarithm to base 2 of the Pdelay_Req
8       message transmission interval used when (a) the PTP Port is
9       initialized, or (b) a message interval request TLV is
10      received with the logLinkDelayInterval field set to 126.
11      For all other media, the value is 127."
12  REFERENCE   "14.8.23"
13  ::= { ieee8021AsV3PortDSEntry 25 }
14
15 ieee8021AsV3PortDSCurrentLogPdelayReqInterval OBJECT-TYPE
16  SYNTAX      Integer32(-128..127)
17  MAX-ACCESS  read-only
18  STATUS      current
19  DESCRIPTION
20      "For full-duplex IEEE 802.3 media and for CSN media that
21      use the peer-to-peer delay mechanism to measure path delay,
22      the value is the logarithm to the base 2 of the current
23      Pdelay_Req message transmission interval.
24      For all other media, the value is 127."
25  REFERENCE   "14.8.24"
26  ::= { ieee8021AsV3PortDSEntry 26 }
27
28 ieee8021AsV3PortDSUseMgtSettableLogPdelayReqInterval OBJECT-TYPE
29  SYNTAX      TruthValue
30  MAX-ACCESS  read-write
31  STATUS      current
32  DESCRIPTION
33      "The managed object is a Boolean that determines the source
34      of the mean time interval between successive Pdelay_Req
35      messages. If the value is TRUE (1), the value of
36      currentLogPdelayReqInterval is set equal to the value of
37      mgtSettableLogPdelayReqInterval. If the value of the managed
38      object is FALSE (2), the value of currentLogPdelayReqInterval
39      is determined by the LinkDelayIntervalSetting state machine.
40      The default value of useMgtSettableLogPdelayReqInterval is
41      FALSE (2)."
```

```

42  REFERENCE   "14.8.25"
43  DEFVAL { false }
44  ::= { ieee8021AsV3PortDSEntry 27 }
45
46 ieee8021AsV3PortDSMgtSettableLogPdelayReqInterval OBJECT-TYPE
47  SYNTAX      Integer32 (-128..127)
48  MAX-ACCESS  read-write
49  STATUS      current
50  DESCRIPTION
51      "The value is the logarithm to base 2 of the mean time
52      interval between successive Pdelay_Req messages if
53      useMgtSettableLogPdelayReqInterval is TRUE (1). The
54      value is not used if useMgtSettableLogPdelayReqInterval
55      is FALSE (2)."
```

```

56  REFERENCE   "14.8.26"
```

```

1      ::= { ieee8021AsV3PortDSEntry 28 }
2
3 ieee8021AsV3PortDSInitialLogGtpCapableMessageInterval OBJECT-TYPE
4     SYNTAX      Integer32 (-128..127)
5     MAX-ACCESS  read-write
6     STATUS      current
7     DESCRIPTION
8         "The value is the logarithm to base 2 of the gPTP capable
9         message interval used when (a) the PTP Port is initialized,
10        or (b) a gPtpCapableMessage interval request TLV is received
11        with the logGtpCapableMessageInterval field set to 126."
12     REFERENCE   "14.8.27"
13     ::= { ieee8021AsV3PortDSEntry 29 }
14
15 ieee8021AsV3PortDSCurrentLogGtpCapableMessageInterval OBJECT-TYPE
16     SYNTAX      Integer32 (-128..127)
17     MAX-ACCESS  read-only
18     STATUS      current
19     DESCRIPTION
20         "The value is the logarithm to the base 2 of the current
21         gPTP capable message interval."
22     REFERENCE   "14.8.28"
23     ::= { ieee8021AsV3PortDSEntry 30 }
24
25 ieee8021AsV3PortDSUseMgtSettableLogGtpCapableMessageInterval OBJECT-TYPE
26     SYNTAX      TruthValue
27     MAX-ACCESS  read-write
28     STATUS      current
29     DESCRIPTION
30         "The managed object is a Boolean that determines the source
31         of the gPTP capable message interval. If the value is
32         TRUE (1), the value of currentLogGtpCapableMessageInterval
33         is set equal to the value of
34         mgtSettableLogGtpCapableMessageInterval. If the value of
35         the managed object is FALSE (2), the value of
36         currentLogGtpCapableMessageInterval is determined by the
37         GtpCapableMessageIntervalSetting state machine.
38         The default value of
39         useMgtSettableLogGtpCapableMessageInterval is FALSE (2)."

```

```
1 ieee8021AsV3PortDSInitialComputeNbrRateRatio OBJECT-TYPE
2     SYNTAX      TruthValue
3     MAX-ACCESS  read-write
4     STATUS      current
5     DESCRIPTION
6         "If useMgtSettableComputeNeighborRateRatio is FALSE (2),
7         then for full-duplex IEEE 802.3 media and for CSN media that
8         use the peer-to-peer delay mechanism to measure path delay,
9         the value is the initial value of computeNeighborRateRatio."
10    REFERENCE   "14.8.31"
11    ::= { ieee8021AsV3PortDSEntry 33 }
12
13 ieee8021AsV3PortDSCurrentComputeNbrRateRatio OBJECT-TYPE
14     SYNTAX      TruthValue
15     MAX-ACCESS  read-only
16     STATUS      current
17     DESCRIPTION
18         "For full-duplex IEEE 802.3 media and for CSN media that
19         use the peer-to-peer delay mechanism to measure path delay,
20         the value is the current value of computeNeighborRateRatio."
21    REFERENCE   "14.8.32"
22    ::= { ieee8021AsV3PortDSEntry 34 }
23
24 ieee8021AsV3PortDSUseMgtSettableComputeNbrRateRatio OBJECT-TYPE
25     SYNTAX      TruthValue
26     MAX-ACCESS  read-write
27     STATUS      current
28     DESCRIPTION
29         "The managed object is a Boolean that determines the source
30         of the value of computeNeighborRateRatio. If the value is
31         TRUE (1), the value of computeNeighborRateRatio is set equal
32         to the value of mgtSettableComputeNeighborRateRatio. If the
33         value of the managed object is FALSE (2), the value of
34         currentComputeNeighborRateRatio is determined by the
35         LinkDelayIntervalSetting state machine.
36         The default value of useMgtSettableComputeNbrRateRatio is
37         FALSE (2)."
```

```

1      STATUS      current
2      DESCRIPTION
3          "If useMgtSettableComputeMeanLinkDelay is FALSE (2) then,
4          for full-duplex IEEE 802.3 media and for CSN media that use
5          the peer-to-peer delay mechanism to measure path delay,
6          the value is the initial value of computeMeanLinkDelay."
7      REFERENCE   "14.8.35"
8      ::= { ieee8021AsV3PortDSEntry 37 }
9
10 ieee8021AsV3PortDSCurrentComputeMeanLinkDelay OBJECT-TYPE
11     SYNTAX      TruthValue
12     MAX-ACCESS  read-only
13     STATUS      current
14     DESCRIPTION
15         "For full-duplex IEEE 802.3 media and for CSN media that
16         use the peer-to-peer delay mechanism to measure path delay,
17         the value is the current value of computeMeanLinkDelay."
18     REFERENCE   "14.8.36"
19     ::= { ieee8021AsV3PortDSEntry 38 }
20
21 ieee8021AsV3PortDSUseMgtSettableComputeMeanLinkDelay OBJECT-TYPE
22     SYNTAX      TruthValue
23     MAX-ACCESS  read-write
24     STATUS      current
25     DESCRIPTION
26         "The managed object is a Boolean that determines the source
27         of the value of computeMeanLinkDelay. If the value is
28         TRUE (1), the value of computeMeanLinkDelay is set equal to
29         the value of mgtSettableComputeMeanLinkDelay. If the value
30         of the managed object is FALSE (2), the value of
31         currentComputeMeanLinkDelay is determined by the
32         LinkDelayIntervalSetting state machine.
33         The default value of useMgtSettableComputeMeanLinkDelay
34         is FALSE (2)."
```

```

35     REFERENCE   "14.8.37"
36     DEFVAL { false }
37     ::= { ieee8021AsV3PortDSEntry 39 }
38
39 ieee8021AsV3PortDSMgtSettableComputeMeanLinkDelay OBJECT-TYPE
40     SYNTAX      TruthValue
41     MAX-ACCESS  read-write
42     STATUS      current
43     DESCRIPTION
44         "ComputeMeanLinkDelay is configured to this value if
45         useMgtSettableComputeMeanLinkDelay is TRUE (1). The
46         value is not used if useMgtSettableComputeMeanLinkDelay
47         is FALSE (2)."
```

```

48     REFERENCE   "14.8.38"
49     ::= { ieee8021AsV3PortDSEntry 40 }
50
51 ieee8021AsV3PortDSAllowedLostRsp OBJECT-TYPE
52     SYNTAX      Unsigned32(1..255)
53     MAX-ACCESS  read-write
54     STATUS      current
55     DESCRIPTION
56         "The value is equal to the value of the per-PTP Port global
```

```

1      variable allowedLostResponses. It is the number of Pdelay_Req
2      messages without valid responses above which a PTP Port
3      is considered to be not exchanging peer delay messages with
4      its neighbor.
5      Setting this managed object causes the per-PTP Port global
6      variable allowedLostResponses to have the same value."
7      REFERENCE    "14.8.39 and 11.5.3"
8      DEFVAL { 9 }
9      ::= { ieee8021AsV3PortDSEntry 41 }
10
11 ieee8021AsV3PortDSAllowedFaults OBJECT-TYPE
12     SYNTAX          Unsigned32(1..255)
13     MAX-ACCESS      read-write
14     STATUS          current
15     DESCRIPTION
16         "The value is equal to the value of the per-PTP-Port global
17         variable allowedFaults. It is the number of faults above
18         which asCapable is set to FALSE (1), i.e., a PTP Port is
19         considered not capable of interoperating with its
20         neighbor via the IEEE 802.1AS protocol.
21         Setting this managed object causes the per-PTP Port global
22         variable allowedFaults to have the same value."
23     REFERENCE      "14.8.40"
24     DEFVAL { 9 }
25     ::= { ieee8021AsV3PortDSEntry 42 }
26
27 ieee8021AsV3PortDSGPTpCapableReceiptTimeout OBJECT-TYPE
28     SYNTAX          Unsigned32(1..255)
29     MAX-ACCESS      read-write
30     STATUS          current
31     DESCRIPTION
32         "The value is the number of transmission intervals that a
33         PTP Port waits without receiving the gPTP capable TLV, before
34         assuming that the neighbor PTP Port is no longer invoking
35         the gPTP protocol."
36     REFERENCE      "14.8.41"
37     DEFVAL { 9 }
38     ::= { ieee8021AsV3PortDSEntry 43 }
39
40 ieee8021AsV3PortDSVersionNumber OBJECT-TYPE
41     SYNTAX          Unsigned32(0..16)
42     MAX-ACCESS      read-only
43     STATUS          current
44     DESCRIPTION
45         "This value is set to versionPTP as specified in 10.6.2.2.4."
46     REFERENCE      "14.8.42"
47     ::= { ieee8021AsV3PortDSEntry 44 }
48
49 ieee8021AsV3PortDSNup OBJECT-TYPE
50     SYNTAX          Float64TC
51     MAX-ACCESS      read-write
52     STATUS          current
53     DESCRIPTION
54         "For an OLT port of an IEEE 802.3 EPON link, the value is
55         the effective index of refraction for the EPON upstream
56         wavelength light of the optical path. The default value is

```



```

1      1.46770 for 1 Gb/s upstream links, and 1.46773 for
2      10 Gb/s upstream links.
3      For all other PTP Ports, the value is 0."
4      REFERENCE    "14.8.43"
5      ::= { ieee8021AsV3PortDSEntry 45 }
6
7 ieee8021AsV3PortDSNdown OBJECT-TYPE
8     SYNTAX          Float64TC
9     MAX-ACCESS      read-write
10    STATUS           current
11    DESCRIPTION
12        "For an OLT port of an IEEE 802.3 EPON link, the value is
13         the effective index of refraction for the EPON downstream
14         wavelength light of the optical path. The default value is
15         1.46805 for 1 Gb/s downstream links, and 1.46851 for
16         10 Gb/s downstream links.
17         For all other PTP Ports, the value is 0."
18    REFERENCE        "14.8.44"
19    ::= { ieee8021AsV3PortDSEntry 46 }
20
21 ieee8021AsV3PortDSOneStepTxOper OBJECT-TYPE
22    SYNTAX            TruthValue
23    MAX-ACCESS        read-only
24    STATUS             current
25    DESCRIPTION
26        "The value is equal to the value of the per-PTP Port global
27         variable oneStepTxOper. Its value is TRUE (1) if the
28         PTP Port is sending one-step Sync messages, and FALSE (2)
29         if the PTP Port is sending two-step Sync and Follow-Up
30         messages."
31    REFERENCE          "14.8.45"
32    ::= { ieee8021AsV3PortDSEntry 47 }
33
34 ieee8021AsV3PortDSOneStepReceive OBJECT-TYPE
35    SYNTAX            TruthValue
36    MAX-ACCESS        read-only
37    STATUS             current
38    DESCRIPTION
39        "The value is equal to the value of the per-PTP Port global
40         variable oneStepReceive. Its value is TRUE (1) if the
41         PTP Port is capable of receiving and processing one-step
42         Sync messages."
43    REFERENCE          "14.8.46"
44    ::= { ieee8021AsV3PortDSEntry 48 }
45
46 ieee8021AsV3PortDSOneStepTransmit OBJECT-TYPE
47    SYNTAX            TruthValue
48    MAX-ACCESS        read-only
49    STATUS             current
50    DESCRIPTION
51        "The value is equal to the value of the per-PTP Port global
52         variable oneStepTransmit. Its value is TRUE (1) if the
53         PTP Port is capable of transmitting one-step Sync messages."
54    REFERENCE          "14.8.47"
55    ::= { ieee8021AsV3PortDSEntry 49 }
56

```

```

1 ieee8021AsV3PortDSInitialOneStepTxOper OBJECT-TYPE
2     SYNTAX      TruthValue
3     MAX-ACCESS  read-write
4     STATUS      current
5     DESCRIPTION
6         "If useMgtSettableOneStepTxOper is FALSE (2), the value is
7         used to initialize currentOneStepTxOper when the PTP Port is
8         initialized. If useMgtSettableOneStepTxOper is TRUE (1),
9         the value of initialOneStepTxOper is not used."
10    REFERENCE   "14.8.48"
11    DEFVAL { false }
12    ::= { ieee8021AsV3PortDSEntry 50 }
13
14 ieee8021AsV3PortDSCurrentOneStepTxOper OBJECT-TYPE
15     SYNTAX      TruthValue
16     MAX-ACCESS  read-only
17     STATUS      current
18     DESCRIPTION
19         "The value is TRUE (1) if it is desired, either via
20         management or via a received Signaling message, that the
21         PTP Port transmit one-step Sync messages. The value is
22         FALSE (2) if it is not desired, either via management or via
23         a received Signaling message, that the PTP Port transmit
24         one-step Sync messages.
25         NOTE: The PTP Port will send one-step Sync messages only if
26         currentOneStepTxOper and oneStepTransmit are both TRUE (1)."
```

```

27    REFERENCE   "14.8.49"
28    ::= { ieee8021AsV3PortDSEntry 51 }
29
30 ieee8021AsV3PortDSUseMgtSettableOneStepTxOper OBJECT-TYPE
31     SYNTAX      TruthValue
32     MAX-ACCESS  read-write
33     STATUS      current
34     DESCRIPTION
35         "The managed object is a Boolean that determines the source
36         of currentOneStepTxOper. If the value is TRUE (1), the
37         value of currentOneStepTxOper is set equal to the value of
38         mgtSettableOneStepTxOper. If the value is FALSE (2), the
39         value of currentOneStepTxOper is determined by the
40         OneStepTxOperSetting state machine.
41         The default value of useMgtSettableOneStepTxOper is TRUE (1)."
```

```

42    REFERENCE   "14.8.50"
43    DEFVAL      { true }
44    ::= { ieee8021AsV3PortDSEntry 52 }
45
46 ieee8021AsV3PortDSMgtSettableOneStepTxOper OBJECT-TYPE
47     SYNTAX      TruthValue
48     MAX-ACCESS  read-write
49     STATUS      current
50     DESCRIPTION
51         "If useMgtSettableOneStepTxOper is TRUE (1),
52         currentOneStepTxOper is set equal to the value of
53         mgtSettableOneStepTxOper. The value of mgtSettableOneStepTxOper
54         is not used if useMgtSettableOneStepTxOper is FALSE (2).
55         The default value of mgtSettableOneStepTxOper is FALSE (2)
56         for domains other than domain 0."
```

```

1  REFERENCE    "14.8.51"
2  ::= { ieee8021AsV3PortDSEntry 53 }
3
4  ieee8021AsV3PortDSSyncLocked OBJECT-TYPE
5      SYNTAX      TruthValue
6      MAX-ACCESS  read-only
7      STATUS      current
8      DESCRIPTION
9          "The value is equal to the value of the per-PTP Port global
10             variable syncLocked. Its value is TRUE (1) if the PTP Port
11             will transmit a Sync as soon as possible after the timeReceiver
12             PTP Port receives a Sync."
13  REFERENCE    "14.8.52"
14  ::= { ieee8021AsV3PortDSEntry 54 }
15
16  ieee8021AsV3PortDSPdelayTruncTST1 OBJECT-TYPE
17      SYNTAX      Ieee8021ASV3Timestamp
18      MAX-ACCESS  read-only
19      STATUS      current
20      DESCRIPTION
21          "For full-duplex IEEE 802.3 media and for CSN media that use
22             the peer-to-peer delay mechanism to measure path delay, the
23             first value, T1, of the four elements of this array is as
24             described in Table 14-9. For all other media, the values are
25             zero. This object corresponds to the timestamp t1 in
26             Figure 11-1, and expressed in units of 2-16 ns (i.e., the
27             value of this array element is equal to the remainder obtained
28             upon dividing the respective timestamp , expressed in units
29             of 2-16 ns, by 248).
30             At any given time, the timestamp values stored in the T1, T2,
31             T3, T4 PdelayTruncTS are for the same, and most recently
32             completed, peer delay message exchange."
33  REFERENCE    "14.8.53"
34  ::= { ieee8021AsV3PortDSEntry 55 }
35
36  ieee8021AsV3PortDSPdelayTruncTST2 OBJECT-TYPE
37      SYNTAX      Ieee8021ASV3Timestamp
38      MAX-ACCESS  read-only
39      STATUS      current
40      DESCRIPTION
41          "For full-duplex IEEE 802.3 media and for CSN media that use
42             the peer-to-peer delay mechanism to measure path delay, the
43             second value, T2, of the four elements of this array is as
44             described in Table 14-9. For all other media, the values are
45             zero. This object corresponds to the timestamp t2 in
46             Figure 11-1, and expressed in units of 2-16 ns (i.e., the
47             value of this array element is equal to the remainder obtained
48             upon dividing the respective timestamp , expressed in units
49             of 2-16 ns, by 248).
50             At any given time, the timestamp values stored in the T1, T2,
51             T3, T4 PdelayTruncTS are for the same, and most recently
52             completed, peer delay message exchange."
53  REFERENCE    "14.8.53"
54  ::= { ieee8021AsV3PortDSEntry 56 }
55
56  ieee8021AsV3PortDSPdelayTruncTST3 OBJECT-TYPE

```

```

1  SYNTAX      Ieee8021ASV3Timestamp
2  MAX-ACCESS  read-only
3  STATUS      current
4  DESCRIPTION
5      "For full-duplex IEEE 802.3 media and for CSN media that use
6      the peer-to-peer delay mechanism to measure path delay, the
7      third value, T3, of the four elements of this array is as
8      described in Table 14-9. For all other media, the values are
9      zero. This object corresponds to the timestamp t3 in
10     Figure 11-1, and expressed in units of 2-16 ns (i.e., the
11     value of this array element is equal to the remainder obtained
12     upon dividing the respective timestamp , expressed in units
13     of 2-16 ns, by 248)."
14     At any given time, the timestamp values stored in the T1, T2,
15     T3, T4 PdelayTruncTS are for the same, and most recently
16     completed, peer delay message exchange."
17  REFERENCE   "14.8.53"
18  ::= { ieee8021AsV3PortDSEntry 57 }
19
20 ieee8021AsV3PortDSPdelayTruncTST4 OBJECT-TYPE
21  SYNTAX      Ieee8021ASV3Timestamp
22  MAX-ACCESS  read-only
23  STATUS      current
24  DESCRIPTION
25      "For full-duplex IEEE 802.3 media and for CSN media that use
26      the peer-to-peer delay mechanism to measure path delay, the
27      fourth value, T4, of the four elements of this array is as
28      described in Table 14-9. For all other media, the values are
29      zero. This object corresponds to the timestamp t4 in
30      Figure 11-1, and expressed in units of 2-16 ns (i.e., the
31      value of this array element is equal to the remainder obtained
32      upon dividing the respective timestamp , expressed in units
33      of 2-16 ns, by 248)."
34      At any given time, the timestamp values stored in the T1, T2,
35      T3, T4 PdelayTruncTS are for the same, and most recently
36      completed, peer delay message exchange."
37  REFERENCE   "14.8.53"
38  ::= { ieee8021AsV3PortDSEntry 58 }
39
40 ieee8021AsV3PortDSMinorVersionNumber OBJECT-TYPE
41  SYNTAX      Unsigned32 (0..15)
42  MAX-ACCESS  read-only
43  STATUS      current
44  DESCRIPTION
45      "This value is set to minorVersionPTP as specified in 10.6.2.2.3."
46  REFERENCE   "14.8.54"
47  ::= { ieee8021AsV3PortDSEntry 59 }
48
49 -- =====
50 -- The Description Port Parameter Data Set contains the
51 -- profileIdentifier for this PTP profile, as specified in
52 -- Annex F.1.
53 -- =====
54
55 ieee8021AsV3DescriptionPortDSTable OBJECT-TYPE
56  SYNTAX      SEQUENCE OF Ieee8021AsV3DescriptionPortDSEntry

```

```

1    MAX-ACCESS    not-accessible
2    STATUS        current
3    DESCRIPTION
4        "The descriptionPortDS contains the profileIdentifier for
5        this PTP profile, as specified in Annex F.1."
6    REFERENCE     "14.9"
7    ::= { ieee8021AsV3MIBObjects 11 }
8
9  ieee8021AsV3DescriptionPortDSEntry  OBJECT-TYPE
10     SYNTAX          Ieee8021AsV3DescriptionPortDSEntry
11     MAX-ACCESS      not-accessible
12     STATUS          current
13     DESCRIPTION
14         "The descriptionPortDS contains the profileIdentifier for
15         this PTP profile"
16     INDEX { ieee8021AsV3PtpInstance,
17             ieee8021AsV3DescriptionPortDSAsIndex }
18     ::= { ieee8021AsV3DescriptionPortDSTable 1 }
19
20 Ieee8021AsV3DescriptionPortDSEntry ::=
21     SEQUENCE {
22         ieee8021AsV3DescriptionPortDSAsIndex
23                                     InterfaceIndexOrZero,
24         ieee8021AsV3DescriptionPortDSProfileIdentifier
25                                     Ieee8021AsV3GPtpProfileIdentifier }
26
27 ieee8021AsV3DescriptionPortDSAsIndex OBJECT-TYPE
28     SYNTAX          InterfaceIndexOrZero
29     MAX-ACCESS      not-accessible
30     STATUS          current
31     DESCRIPTION
32         "This object identifies the gPTP interface group within
33         the system for which this entry contains information. It
34         is the value of the instance of the IfIndex object,
35         defined in the IF-MIB, for the gPTP interface group
36         corresponding to this port, or the value 0 if the port
37         has not been bound to an underlying frame source and
38         sink.
39
40         For a given media port of a Bridge or an end station,
41         there can be one or more PTP Port, and depends whether
42         a media port supports point to point link (e.g. IEEE
43         802.3 Ethernet) or point to multi-point (e.g. CSN, IEEE
44         802.3 EPON) links on the media port."
45     REFERENCE     "IEEE Std 802.1AS Description Port Parameter DS Group
46                   PTP Port Index"
47     ::= { ieee8021AsV3DescriptionPortDSEntry 1 }
48
49 ieee8021AsV3DescriptionPortDSProfileIdentifier OBJECT-TYPE
50     SYNTAX          Ieee8021AsV3GPtpProfileIdentifier
51     MAX-ACCESS      read-only
52     STATUS          current
53     DESCRIPTION
54         "The value is the profileIdentifier for this PTP profile."
55     REFERENCE     "14.9.2 and F.1"
56     ::= { ieee8021AsV3DescriptionPortDSEntry 2 }

```

```

1
2 -- =====
3 -- The Port Parameter Statistics Data Set provides counters
4 -- associated with PTP Port capabilities at a given PTP Instance.
5 -- =====
6
7 ieee8021AsV3PortStatDSTable OBJECT-TYPE
8     SYNTAX      SEQUENCE OF Ieee8021AsV3PortStatDSEntry
9     MAX-ACCESS  not-accessible
10    STATUS      current
11    DESCRIPTION
12        "The portStatisticsDS provides counters associated with PTP Port
13         capabilities at a given PTP Instance."
14    REFERENCE   "14.10"
15    ::= { ieee8021AsV3MIBObjects 12 }
16
17 ieee8021AsV3PortStatDSEntry OBJECT-TYPE
18     SYNTAX      Ieee8021AsV3PortStatDSEntry
19     MAX-ACCESS  not-accessible
20     STATUS      current
21     DESCRIPTION
22         "Port Statistics Data Set provides counters associated with
23          PTP Port capabilities at a given PTP Instance."
24     INDEX { ieee8021AsV3PtpInstance,
25             ieee8021AsV3PortDSIndex }
26     ::= { ieee8021AsV3PortStatDSTable 1 }
27
28 Ieee8021AsV3PortStatDSEntry ::=
29     SEQUENCE {
30         ieee8021AsV3PortStatRxSyncCount          Counter32,
31         ieee8021AsV3PortStatRxOneStepSyncCount    Counter32,
32         ieee8021AsV3PortStatRxFollowUpCount        Counter32,
33         ieee8021AsV3PortStatRxPdelayRequestCount    Counter32,
34         ieee8021AsV3PortStatRxPdelayRspCount        Counter32,
35         ieee8021AsV3PortStatRxPdelayRspFollowUpCount Counter32,
36         ieee8021AsV3PortStatRxAnnounceCount          Counter32,
37         ieee8021AsV3PortStatRxPtpPacketDiscardCount Counter32,
38         ieee8021AsV3PortStatSyncReceiptTimeoutCount Counter32,
39         ieee8021AsV3PortStatAnnounceReceiptTimeoutCount Counter32,
40         ieee8021AsV3PortStatPdelayAllowedLostRspExceededCount Counter32,
41         ieee8021AsV3PortStatTxSyncCount              Counter32,
42         ieee8021AsV3PortStatTxOneStepSyncCount        Counter32,
43         ieee8021AsV3PortStatTxFollowUpCount            Counter32,
44         ieee8021AsV3PortStatTxPdelayRequestCount        Counter32,
45         ieee8021AsV3PortStatTxPdelayRspCount            Counter32,
46         ieee8021AsV3PortStatTxPdelayRspFollowUpCount    Counter32,
47         ieee8021AsV3PortStatTxAnnounceCount              Counter32
48     }
49
50 ieee8021AsV3PortStatRxSyncCount OBJECT-TYPE
51     SYNTAX      Counter32
52     MAX-ACCESS  read-only
53     STATUS      current
54     DESCRIPTION
55         "A counter that increments every time synchronization
56         information is received."

```

```

1    REFERENCE    "14.10.2"
2    ::= { ieee8021AsV3PortStatDSEntry 1 }
3
4    ieee8021AsV3PortStatRxOneStepSyncCount OBJECT-TYPE
5        SYNTAX      Counter32
6        MAX-ACCESS  read-only
7        STATUS      current
8        DESCRIPTION
9            "A counter that increments every time a one-step Sync
10             message is received."
11    REFERENCE    "14.10.3"
12    ::= { ieee8021AsV3PortStatDSEntry 2 }
13
14    ieee8021AsV3PortStatRxFollowUpCount OBJECT-TYPE
15        SYNTAX      Counter32
16        MAX-ACCESS  read-only
17        STATUS      current
18        DESCRIPTION
19            "A counter that increments every time a Follow_Up message
20             is received."
21    REFERENCE    "14.10.4"
22    ::= { ieee8021AsV3PortStatDSEntry 3 }
23
24    ieee8021AsV3PortStatRxPdelayRequestCount OBJECT-TYPE
25        SYNTAX      Counter32
26        MAX-ACCESS  read-only
27        STATUS      current
28        DESCRIPTION
29            "A counter that increments every time a Pdelay_Req message
30             is received."
31    REFERENCE    "14.10.5"
32    ::= { ieee8021AsV3PortStatDSEntry 4 }
33
34    ieee8021AsV3PortStatRxPdelayRspCount OBJECT-TYPE
35        SYNTAX      Counter32
36        MAX-ACCESS  read-only
37        STATUS      current
38        DESCRIPTION
39            "A counter that increments every time a Pdelay_Rsp message
40             is received."
41    REFERENCE    "14.10.6"
42    ::= { ieee8021AsV3PortStatDSEntry 5 }
43
44    ieee8021AsV3PortStatRxPdelayRspFollowUpCount OBJECT-TYPE
45        SYNTAX      Counter32
46        MAX-ACCESS  read-only
47        STATUS      current
48        DESCRIPTION
49            "A counter that increments every time a Pdelay_Rsp_Follow_Up
50             message is received."
51    REFERENCE    "14.10.7"
52    ::= { ieee8021AsV3PortStatDSEntry 6 }
53
54    ieee8021AsV3PortStatRxAnnounceCount OBJECT-TYPE
55        SYNTAX      Counter32
56        MAX-ACCESS  read-only

```

```

1     STATUS      current
2     DESCRIPTION
3         "A counter that increments every time an Announce message
4         is received."
5     REFERENCE   "14.10.8"
6     ::= { ieee8021AsV3PortStatDSEntry 7 }
7
8 ieee8021AsV3PortStatRxPtpPacketDiscardCount OBJECT-TYPE
9     SYNTAX      Counter32
10    MAX-ACCESS   read-only
11    STATUS       current
12    DESCRIPTION
13        "A counter that increments every time a PTP message of the
14        respective PTP Instance is discarded."
15    REFERENCE   "14.10.9"
16    ::= { ieee8021AsV3PortStatDSEntry 8 }
17
18 ieee8021AsV3PortStatSyncReceiptTimeoutCount OBJECT-TYPE
19     SYNTAX      Counter32
20     MAX-ACCESS   read-only
21     STATUS       current
22     DESCRIPTION
23         "A counter that increments every time sync receipt timeout
24         occurs."
25     REFERENCE   "14.10.10"
26     ::= { ieee8021AsV3PortStatDSEntry 9 }
27
28 ieee8021AsV3PortStatAnnounceReceiptTimeoutCount OBJECT-TYPE
29     SYNTAX      Counter32
30     MAX-ACCESS   read-only
31     STATUS       current
32     DESCRIPTION
33         "A counter that increments every time announce receipt timeout
34         occurs."
35     REFERENCE   "14.10.11"
36     ::= { ieee8021AsV3PortStatDSEntry 10 }
37
38 ieee8021AsV3PortStatPdelayAllowedLostRspExceededCount OBJECT-TYPE
39     SYNTAX      Counter32
40     MAX-ACCESS   read-only
41     STATUS       current
42     DESCRIPTION
43         "A counter that increments every time the value of the
44         variable lostResponses exceeds the value of the variable
45         allowedLostResponses."
46     REFERENCE   "14.10.12"
47     ::= { ieee8021AsV3PortStatDSEntry 11 }
48
49 ieee8021AsV3PortStatTxSyncCount OBJECT-TYPE
50     SYNTAX      Counter32
51     MAX-ACCESS   read-only
52     STATUS       current
53     DESCRIPTION
54         "A counter that increments every time synchronization
55         information is transmitted."
56     REFERENCE   "14.10.13"

```



```
1 ::= { ieee8021AsV3PortStatDSEntry 12 }
2
3 ieee8021AsV3PortStatTxOneStepSyncCount OBJECT-TYPE
4     SYNTAX      Counter32
5     MAX-ACCESS  read-only
6     STATUS      current
7     DESCRIPTION
8         "A counter that increments every time a one-step Sync
9         message is transmitted."
10    REFERENCE   "14.10.14"
11    ::= { ieee8021AsV3PortStatDSEntry 13 }
12
13 ieee8021AsV3PortStatTxFollowUpCount OBJECT-TYPE
14     SYNTAX      Counter32
15     MAX-ACCESS  read-only
16     STATUS      current
17     DESCRIPTION
18         "A counter that increments every time a Follow_Up message
19         is transmitted."
20    REFERENCE   "14.10.15"
21    ::= { ieee8021AsV3PortStatDSEntry 14 }
22
23 ieee8021AsV3PortStatTxPdelayRequestCount OBJECT-TYPE
24     SYNTAX      Counter32
25     MAX-ACCESS  read-only
26     STATUS      current
27     DESCRIPTION
28         "A counter that increments every time a Pdelay_Req message
29         is transmitted."
30    REFERENCE   "14.10.16"
31    ::= { ieee8021AsV3PortStatDSEntry 15 }
32
33 ieee8021AsV3PortStatTxPdelayRspCount OBJECT-TYPE
34     SYNTAX      Counter32
35     MAX-ACCESS  read-only
36     STATUS      current
37     DESCRIPTION
38         "A counter that increments every time a Pdelay_Rsp message
39         is transmitted."
40    REFERENCE   "14.10.17"
41    ::= { ieee8021AsV3PortStatDSEntry 16 }
42
43 ieee8021AsV3PortStatTxPdelayRspFollowUpCount OBJECT-TYPE
44     SYNTAX      Counter32
45     MAX-ACCESS  read-only
46     STATUS      current
47     DESCRIPTION
48         "A counter that increments every time a
49         Pdelay_Rsp_Follow_Up message is transmitted."
50    REFERENCE   "14.10.18"
51    ::= { ieee8021AsV3PortStatDSEntry 17 }
52
53 ieee8021AsV3PortStatTxAnnounceCount OBJECT-TYPE
54     SYNTAX      Counter32
55     MAX-ACCESS  read-only
56     STATUS      current
```

```

1      DESCRIPTION
2          "A counter that increments every time an Announce message is
3          transmitted."
4      REFERENCE    "14.10.19"
5      ::= { ieee8021AsV3PortStatDSEntry 18 }
6
7 -- =====
8 -- The Acceptable TimeTransmitter Port Parameter Data Set represents the
9 -- capability to enable/disable the acceptable timeTransmitter table
10 -- feature on a PTP Port.
11 -- =====
12
13 ieee8021AsV3AcceptableTimeTransmitterPortDSTable    OBJECT-TYPE
14     SYNTAX      SEQUENCE OF Ieee8021AsV3AcceptableTimeTransmitterPortDSEntry
15     MAX-ACCESS  not-accessible
16     STATUS      current
17     DESCRIPTION
18         "For the single PTP Port of a PTP End Instance and for each
19         PTP Port of a PTP Relay Instance, the
20 acceptableTimeTransmitterPortDS
21         contains the single member acceptableTimeTransmitterTableEnabled,
22 which
23         is used to enable/disable the Acceptable TimeTransmitter Table
24 Feature.
25         The number of such data sets is the same as the value of
26         defaultDS.numberPorts."
27     REFERENCE    "14.11"
28     ::= { ieee8021AsV3MIBObjects 13 }
29
30 ieee8021AsV3AcceptableTimeTransmitterPortDSEntry    OBJECT-TYPE
31     SYNTAX      Ieee8021AsV3AcceptableTimeTransmitterPortDSEntry
32     MAX-ACCESS  not-accessible
33     STATUS      current
34     DESCRIPTION
35         "The Acceptable TimeTransmitter Port Data Set represents the
36 capability
37         to enable/disable the acceptable timeTransmitter table feature on a
38         PTP Port.
39         For the single PTP Port of a PTP End Instance and for each
40         PTP Port of a PTP Relay Instance, the
41 acceptableTimeTransmitterPortDS
42         contains the single member acceptableTimeTransmitterTableEnabled,
43 which
44         is used to enable/disable the Acceptable TimeTransmitter Table
45 Feature.
46         The number of such data sets is the same as the value of
47         defaultDS.numberPorts."
48     INDEX { ieee8021AsV3PtpInstance,
49             ieee8021AsV3AcceptableTimeTransmitterPortDSAsIndex }
50     ::= { ieee8021AsV3AcceptableTimeTransmitterPortDSTable 1 }
51
52 Ieee8021AsV3AcceptableTimeTransmitterPortDSEntry ::=
53     SEQUENCE {
54         ieee8021AsV3AcceptableTimeTransmitterPortDSAsIndex
55         InterfaceIndexOrZero,

```

```

1      ieee8021AsV3AcceptableTTPortDSAcceptableTTTableEnabled
2 TruthValue
3      }
4
5 ieee8021AsV3AcceptableTimeTransmitterPortDSAsIndex OBJECT-TYPE
6     SYNTAX      InterfaceIndexOrZero
7     MAX-ACCESS  not-accessible
8     STATUS      current
9     DESCRIPTION
10      "An index to identify an entry in the Acceptable TimeTransmitter
11      Port Table Data Set."
12     REFERENCE   "14.11"
13     ::= { ieee8021AsV3AcceptableTimeTransmitterPortDSEntry 1 }
14
15 ieee8021AsV3AcceptableTTPortDSAcceptableTTTableEnabled OBJECT-TYPE
16     SYNTAX      TruthValue
17     MAX-ACCESS  read-write
18     STATUS      current
19     DESCRIPTION
20      "The value is equal to the value of the Boolean
21      acceptableTimeTransmitterTableEnabled."
22     REFERENCE   "14.11.2"
23     ::= { ieee8021AsV3AcceptableTimeTransmitterPortDSEntry 2 }
24
25 -- =====
26 -- The External Port Configuration Port Data Set is used with
27 -- the external port configuration option to indicate the
28 -- desired state for the PTP Port.
29 -- =====
30 ieee8021AsV3ExternalPortConfigurationPortDSTable OBJECT-TYPE
31     SYNTAX      SEQUENCE OF Ieee8021AsV3ExternalPortConfigurationPortDSEntry
32     MAX-ACCESS  not-accessible
33     STATUS      current
34     DESCRIPTION
35      "The externalPortConfigurationPortDS contains the single member
36      desiredState, which indicates the desired state for the PTP Port.
37      The number of such data sets is the same as the value of
38      defaultDS.numberPorts."
39     REFERENCE   "14.12"
40     ::= { ieee8021AsV3MIBObjects 14 }
41
42 ieee8021AsV3ExternalPortConfigurationPortDSEntry OBJECT-TYPE
43     SYNTAX      Ieee8021AsV3ExternalPortConfigurationPortDSEntry
44     MAX-ACCESS  not-accessible
45     STATUS      current
46     DESCRIPTION
47      "The externalPortConfigurationPortDS contains the single member
48      desiredState, which indicates the desired state for the PTP Port.
49      The number of such data sets is the same as the value of
50      defaultDS.numberPorts."
51     INDEX { ieee8021AsV3PtpInstance,
52             ieee8021AsV3ExternalPortConfigurationPortDSAsIndex }
53     ::= { ieee8021AsV3ExternalPortConfigurationPortDSTable 1 }
54
55 Ieee8021AsV3ExternalPortConfigurationPortDSEntry ::=
56     SEQUENCE {

```

```

1      ieee8021AsV3ExternalPortConfigurationPortDSAsIndex
2 InterfaceIndexOrZero,
3      ieee8021AsV3ExternalPortConfigurationPortDSDesiredState      INTEGER
4      }
5
6 ieee8021AsV3ExternalPortConfigurationPortDSAsIndex OBJECT-TYPE
7     SYNTAX      InterfaceIndexOrZero
8     MAX-ACCESS  not-accessible
9     STATUS      current
10    DESCRIPTION
11        "An index to identify an entry in the External Port
12         Configuration Port Table Data Set."
13    REFERENCE   "14.12"
14    ::= { ieee8021AsV3ExternalPortConfigurationPortDSEntry 1 }
15
16 ieee8021AsV3ExternalPortConfigurationPortDSDesiredState OBJECT-TYPE
17     SYNTAX      INTEGER {
18         disabledPort(3),
19         timeTransmitterPort(6),
20         passivePort(7),
21         timeReceiverPort(9)
22     }
23     MAX-ACCESS  read-write
24     STATUS      current
25     DESCRIPTION
26         "When the value of defaultDS.externalPortConfigurationEnabled
27         is TRUE (1), the value of
28         externalPortConfigurationPortDS.desiredState is the desired
29         state of the PTP Port. This member sets the value of the
30         variable portStateInd. When a new value is written to the
31         member by management, the variable rcvdPortStateInd is set
32         to TRUE (1)."

```

```

1      STATUS      current
2      DESCRIPTION
3          "The asymmetryMeasurementModeDS represents the capability to
4          enable/disable the Asymmetry Compensation Measurement Procedure
5          on a PTP Port (see Annex G). This data set is used instead of
6          the cmldsAsymmetryMeasurementModeDS, when only domain 0 is
7          present and CMLDS is not used. "
8      INDEX { ieee8021AsV3PtpInstance,
9              ieee8021AsV3AsymMeasurementModeDSAsIndex }
10     ::= { ieee8021AsV3AsymMeasurementModeDSTable 1 }
11
12 Ieee8021AsV3AsymMeasurementModeDSEntry ::=
13     SEQUENCE {
14         ieee8021AsV3AsymMeasurementModeDSAsIndex      InterfaceIndexOrZero,
15         ieee8021AsV3AsymMeasurementModeDSAsymMeasurementMode
16 TruthValue
17     }
18
19 ieee8021AsV3AsymMeasurementModeDSAsIndex OBJECT-TYPE
20     SYNTAX      InterfaceIndexOrZero
21     MAX-ACCESS  not-accessible
22     STATUS      current
23     DESCRIPTION
24         "An index to identify an entry in the Asymmetry Measurement
25         Mode Data Set."
26     REFERENCE   "14.13"
27     ::= { ieee8021AsV3AsymMeasurementModeDSEntry 1 }
28
29 ieee8021AsV3AsymMeasurementModeDSAsymMeasurementMode OBJECT-TYPE
30     SYNTAX      TruthValue
31     MAX-ACCESS  read-write
32     STATUS      current
33     DESCRIPTION
34         "The value is equal to the value of the Boolean
35         asymmetryMeasurementMode. For full-duplex IEEE 802.3
36         media, the value is TRUE (1) if an asymmetry measurement
37         is being performed for the link attached to this PTP Port,
38         and FALSE (2) otherwise. For all other media, the value
39         shall be FALSE (2). Setting this managed object causes the
40         Boolean asymmetryMeasurementMode to have the same value.
41         NOTE: If an asymmetry measurement is being performed for a
42         link, asymmetryMeasurementMode must be TRUE (1) for the
43         PTP Ports at each end of the link."
44     REFERENCE   "14.13.2"
45     ::= { ieee8021AsV3AsymMeasurementModeDSEntry 2 }
46
47 -- =====
48 -- The Common Services Port Parameter Data Set enables a
49 -- PTP Port of a PTP Instance to determine which port of the
50 -- respective common service corresponds to that PTP Port.
51 -- =====
52 ieee8021AsV3CommonServicesPortDSTable OBJECT-TYPE
53     SYNTAX      SEQUENCE OF Ieee8021AsV3CommonServicesPortDSEntry
54     MAX-ACCESS  not-accessible
55     STATUS      current
56     DESCRIPTION

```

```

1      "At present, the only common service specified is the CMLDS, and
2      the only member of the commonServicesPortDS is the
3      cmlDsLinkPortPortNumber. This member contains the port number
4      of the CMLDS Link Port that corresponds to this PTP Port."
5  REFERENCE    "14.14"
6  ::= { ieee8021AsV3MIBObjects 16 }
7
8  ieee8021AsV3CommonServicesPortDSEntry  OBJECT-TYPE
9      SYNTAX      Ieee8021AsV3CommonServicesPortDSEntry
10     MAX-ACCESS   not-accessible
11     STATUS       current
12     DESCRIPTION
13         "At present, the only common service specified is the CMLDS, and
14         the only member of the commonServicesPortDS is the
15         cmlDsLinkPortPortNumber. This member contains the port number
16         of the CMLDS Link Port that
17         corresponds to this PTP Port."
18     INDEX { ieee8021AsV3PtpInstance,
19             ieee8021AsV3CommonServicesPortDSAsIndex }
20     ::= { ieee8021AsV3CommonServicesPortDSTable 1 }
21
22 Ieee8021AsV3CommonServicesPortDSEntry ::=
23     SEQUENCE {
24         ieee8021AsV3CommonServicesPortDSAsIndex      InterfaceIndexOrZero,
25         ieee8021AsV3CommonServicesPortDSCmlDsLinkPortPortNumber
26     Unsigned32
27     }
28
29 ieee8021AsV3CommonServicesPortDSAsIndex OBJECT-TYPE
30     SYNTAX      InterfaceIndexOrZero
31     MAX-ACCESS   not-accessible
32     STATUS       current
33     DESCRIPTION
34         "An index to identify an entry in the Common Services Port
35         Data Set."
36     REFERENCE    "14.14"
37     ::= { ieee8021AsV3CommonServicesPortDSEntry 1 }
38
39 ieee8021AsV3CommonServicesPortDSCmlDsLinkPortPortNumber OBJECT-TYPE
40     SYNTAX      Unsigned32 (0..65535)
41     MAX-ACCESS   read-only
42     STATUS       current
43     DESCRIPTION
44         "The value is the portNumber attribute of the
45         cmlDsLinkPortDS.portIdentity of the Link Port that
46         corresponds to this PTP Port."
47     REFERENCE    "14.14.2"
48     ::= { ieee8021AsV3CommonServicesPortDSEntry 2 }
49
50 -- =====
51 -- The Common Mean Link Delay Service Default Parameter Data Set
52 -- describes the per-time-aware-system attributes of the Common
53 -- Mean Link Delay Service.
54 -- =====
55
56 ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSTable  OBJECT-TYPE

```

```

1      SYNTAX      SEQUENCE OF
2 Ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry
3      MAX-ACCESS  not-accessible
4      STATUS      current
5      DESCRIPTION
6          "The cmldsDefaultDS describes the per-time-aware-system attributes
7            of the Common Mean Link Delay Service."
8      REFERENCE   "14.15"
9      ::= { ieee8021AsV3MIBObjects 17 }
10
11 ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry OBJECT-TYPE
12     SYNTAX      Ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry
13     MAX-ACCESS  not-accessible
14     STATUS      current
15     DESCRIPTION
16         "The cmldsDefaultDS describes the per-time-aware-system attributes
17           of the Common Mean Link Delay Service."
18     INDEX { ieee8021AsV3CmldsDefaultDSAsIndex }
19     ::= { ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSTable 1 }
20
21 Ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry ::=
22     SEQUENCE {
23         ieee8021AsV3CmldsDefaultDSAsIndex  InterfaceIndexOrZero,
24         ieee8021AsV3CmldsDefaultDSClockIdentity  Ieee8021AsV3ClockIdentity,
25         ieee8021AsV3CmldsDefaultDSNumberLinkPorts  Unsigned32
26     }
27
28
29 ieee8021AsV3CmldsDefaultDSAsIndex OBJECT-TYPE
30     SYNTAX      InterfaceIndexOrZero
31     MAX-ACCESS  not-accessible
32     STATUS      current
33     DESCRIPTION
34         "An index to identify an entry in the Common Mean Link
35           Delay Default Data Set."
36     REFERENCE   "14.15"
37     ::= { ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry 1 }
38
39 ieee8021AsV3CmldsDefaultDSClockIdentity OBJECT-TYPE
40     SYNTAX      Ieee8021AsV3ClockIdentity
41     MAX-ACCESS  read-only
42     STATUS      current
43     DESCRIPTION
44         "The value is the clockIdentity that will be used to
45           identify the Common Mean Link Delay Service."
46     REFERENCE   "14.15.2"
47     ::= { ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry 2 }
48
49 ieee8021AsV3CmldsDefaultDSNumberLinkPorts OBJECT-TYPE
50     SYNTAX      Unsigned32 (0..65535)
51     MAX-ACCESS  read-only
52     STATUS      current
53     DESCRIPTION
54         "The value is the number of Link Ports of the time-aware
55           system on which the Common Mean Link Delay Service is
56           implemented. For an end station the value is 1."

```

```

1  REFERENCE    "14.15.3"
2  ::= { ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSEntry 3 }
3
4 -- =====
5 -- The Common Mean Link Delay Service Link Port Parameter Data Set
6 -- represents time-aware Link Port capabilities for the Common Mean
7 -- Link Delay Service of a Link Port of a time-aware system.
8 -- =====
9
10 ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSTable  OBJECT-TYPE
11     SYNTAX          SEQUENCE OF
12     Ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry
13     MAX-ACCESS      not-accessible
14     STATUS          current
15     DESCRIPTION
16         "For every Link Port of the Common Mean Link Delay Service of a
17         time-aware system, the cmldsLinkPortDS is maintained as the
18         basis for making protocol decisions and providing values for
19         message fields. The number of such data sets is the same as
20         the value of cmldsDefaultDS.numberLinkPorts."
21     REFERENCE      "14.16"
22     ::= { ieee8021AsV3MIBObjects 18 }
23
24 ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry  OBJECT-TYPE
25     SYNTAX          Ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry
26     MAX-ACCESS      not-accessible
27     STATUS          current
28     DESCRIPTION
29         "For every Link Port of the Common Mean Link Delay Service of a
30         time-aware system, the cmldsLinkPortDS is maintained as the
31         basis for making protocol decisions and providing values for
32         message fields. The number of such data sets is the same as
33         the value of cmldsDefaultDS.numberLinkPorts."
34     INDEX { ieee8021AsV3BridgeBasePort,
35             ieee8021AsV3CmlDsLinkPortDSAsIndex }
36     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSTable 1 }
37
38 Ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry ::=
39     SEQUENCE {
40         ieee8021AsV3CmlDsLinkPortDSAsIndex      InterfaceIndexOrZero,
41         ieee8021AsV3CmlDsLinkPortDSClockIdentity
42     Ieee8021AsV3ClockIdentity,
43         ieee8021AsV3CmlDsLinkPortDSPortNumber      Unsigned32,
44         ieee8021AsV3CmlDsLinkPortDSCmlDsLinkPortEnabled  TruthValue,
45         ieee8021AsV3CmlDsLinkPortDSIsMeasuringDelay      TruthValue,
46         ieee8021AsV3CmlDsLinkPortDSAsCapableAcrossDomains TruthValue,
47         ieee8021AsV3CmlDsLinkPortDSMeanLinkDelay
48     Ieee8021ASV3PtpTimeInterval,
49         ieee8021AsV3CmlDsLinkPortDSMeanLinkDelayThresh
50     Ieee8021ASV3PtpTimeInterval,
51         ieee8021AsV3CmlDsLinkPortDSDelayAsym
52     Ieee8021ASV3PtpTimeInterval,
53         ieee8021AsV3CmlDsLinkPortDSNbrRateRatio      Integer32,
54         ieee8021AsV3CmlDsLinkPortDSInitialLogPdelayReqInterval Integer32,
55         ieee8021AsV3CmlDsLinkPortDSCurrentLogPdelayReqInterval Integer32,

```



```

1      ieee8021AsV3CmlDsLinkPortDSUseMgtSettableLogPdelayReqInterval
2 TruthValue,
3      ieee8021AsV3CmlDsLinkPortDSMgtSettableLogPdelayReqInterval
4 Integer32,
5      ieee8021AsV3CmlDsLinkPortDSInitialComputeNbrRateRatio      TruthValue,
6      ieee8021AsV3CmlDsLinkPortDSCurrentComputeNbrRateRatio      TruthValue,
7      ieee8021AsV3CmlDsLinkPortDSUseMgtSettableComputeNbrRateRatio
8 TruthValue,
9      ieee8021AsV3CmlDsLinkPortDSMgtSettableComputeNbrRateRatio
10 TruthValue,
11      ieee8021AsV3CmlDsLinkPortDSInitialComputeMeanLinkDelay      TruthValue,
12      ieee8021AsV3CmlDsLinkPortDSCurrentComputeMeanLinkDelay      TruthValue,
13      ieee8021AsV3CmlDsLinkPortDSUseMgtSettableComputeMeanLinkDelay
14 TruthValue,
15      ieee8021AsV3CmlDsLinkPortDSMgtSettableComputeMeanLinkDelay
16 TruthValue,
17      ieee8021AsV3CmlDsLinkPortDSAllowedLostRsp      Unsigned32,
18      ieee8021AsV3CmlDsLinkPortDSAllowedFaults      Unsigned32,
19      ieee8021AsV3CmlDsLinkPortDSVersionNumber      Unsigned32,
20      ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST1 Ieee8021ASV3Timestamp,
21      ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST2 Ieee8021ASV3Timestamp,
22      ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST3 Ieee8021ASV3Timestamp,
23      ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST4 Ieee8021ASV3Timestamp,
24      ieee8021AsV3CmlDsLinkPortDSMinorVersionNumber      Unsigned32
25  }
26
27 ieee8021AsV3CmlDsLinkPortDSAsIndex OBJECT-TYPE
28     SYNTAX      InterfaceIndexOrZero
29     MAX-ACCESS   not-accessible
30     STATUS      current
31     DESCRIPTION
32         "An index to identify an entry in the Comon Mean Link
33         Delay Link Port Data Set."
34     REFERENCE    "14.16"
35     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 1 }
36
37 ieee8021AsV3CmlDsLinkPortDSClockIdentity OBJECT-TYPE
38     SYNTAX      Ieee8021AsV3ClockIdentity
39     MAX-ACCESS   read-only
40     STATUS      current
41     DESCRIPTION
42         "The value is the first of the portIdentity attribute
43         of the local port, which is a set made of
44         Ieee8021AsV3ClockIdentity and portNumber."
45     REFERENCE    "14.16.2"
46     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 2 }
47
48 ieee8021AsV3CmlDsLinkPortDSPortNumber OBJECT-TYPE
49     SYNTAX      Unsigned32(0..65535)
50     MAX-ACCESS   read-only
51     STATUS      current
52     DESCRIPTION
53         "The value is the second of the portIdentity attribute
54         of the local port, which is a set made of
55         Ieee8021AsV3ClockIdentity and portNumber."
56     REFERENCE    "14.16.2"

```

```

1      ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 3 }
2
3 ieee8021AsV3CmlDsLinkPortDSCmlDsLinkPortEnabled
4 OBJECT-TYPE
5     SYNTAX      TruthValue
6     MAX-ACCESS  read-only
7     STATUS      current
8     DESCRIPTION
9         "The value is equal to the value of the Boolean
10         cmlDsLinkPortEnabled."
11     REFERENCE   "14.16.3"
12     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 4 }
13
14 ieee8021AsV3CmlDsLinkPortDSIsMeasuringDelay
15 OBJECT-TYPE
16     SYNTAX      TruthValue
17     MAX-ACCESS  read-only
18     STATUS      current
19     DESCRIPTION
20         "The value is equal to the value of the Boolean
21         isMeasuringDelay."
22     REFERENCE   "14.16.4"
23     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 5 }
24
25 ieee8021AsV3CmlDsLinkPortDSAsCapableAcrossDomains
26 OBJECT-TYPE
27     SYNTAX      TruthValue
28     MAX-ACCESS  read-only
29     STATUS      current
30     DESCRIPTION
31         "The value is equal to the value of the Boolean
32         asCapableAcrossDomains."
33     REFERENCE   "14.16.5"
34     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 6 }
35
36 ieee8021AsV3CmlDsLinkPortDSMeanLinkDelay
37 OBJECT-TYPE
38     SYNTAX      Ieee8021ASV3PtpTimeInterval
39     MAX-ACCESS  read-only
40     STATUS      current
41     DESCRIPTION
42         "The value is equal to the value of the per-port global
43         variable meanLinkDelay. It is an estimate of the current
44         one-way propagation time on the link attached to this Link
45         Port, measured as specified for the respective medium. The
46         value is zero for Link Ports attached to IEEE 802.3 EPON
47         links and for the timeTransmitter port of an IEEE 802.11 link,
48         because one-way propagation delay is not measured on the
49         latter and not directly measured on the former.
50         NOTE: The underlying per-port global variable meanLinkDelay is
51         of type UScaledNS, which is a 96-Bit value. meanLinkDelay
52         values that are larger than the maximum value that can be
53         represented by the TimeInterval data type, i.e.,
54         0xFFFF FFFF FFFF FFFF (where the units are 2sup -16 ns), used
55         for this managed object are set to this largest value."
56     REFERENCE   "14.16.6"

```

```

1      ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 7 }
2
3 ieee8021AsV3CmlDsLinkPortDSMeanLinkDelayThresh
4 OBJECT-TYPE
5     SYNTAX      Ieee8021ASV3PtpTimeInterval
6     MAX-ACCESS  read-write
7     STATUS      current
8     DESCRIPTION
9         "The value is equal to the value of the per-Link-Port global
10        variable meanLinkDelayThresh. It is the propagation time
11        threshold above which a Link Port (and therefore any PTP Ports
12        that use the CMLDS on this Link Port) is considered not
13        capable of participating in the IEEE 802.1AS protocol.
14        Setting this managed object causes the per-Link-Port global
15        variable meanLinkDelayThresh to have the same value.
16        NOTE: The underlying per-port global variable
17        meanLinkDelayThresh is of type UScaledNS, which is a 96-Bit
18        value. meanLinkDelayThresh values that are larger than the
19        maximum value that can be represented by the TimeInterval
20        data type, i.e., 0xFFFF FFFF FFFF FFFF (where the units are
21        2 sup -16 ns), used for this managed object are set to this
22        largest value."
23     REFERENCE   "14.16.7"
24     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 8 }
25
26 ieee8021AsV3CmlDsLinkPortDSDelayAsym
27 OBJECT-TYPE
28     SYNTAX      Ieee8021ASV3PtpTimeInterval
29     MAX-ACCESS  read-write
30     STATUS      current
31     DESCRIPTION
32         "The value is the asymmetry in the propagation delay on the
33         link attached to this Link Port relative to the local clock.
34         If propagation delay asymmetry is not modeled, then
35         delayAsymmetry is 0.
36         NOTE: The underlying per-port global variable delayAsymmetry
37         is of type ScaledNS, which is a 96-Bit value.
38         delayAsymmetry values that are larger than the maximum value
39         that can be represented by the TimeInterval data type, i.e.,
40         0x7FFF FFFF FFFF FFFF, (where the units are 2 sup -16 ns),
41         used for this managed object are set to this largest value.
42         delayAsymmetry values that are less than the minimum value
43         that can be represented by the TimeInterval data type, i.e.,
44         0x8000 0000 0000 0001 written in twos complement form (where
45         the units are 2 sup -16 ns), used for this managed object are
46         set to this smallest value."
47     REFERENCE   "14.16.8"
48     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 9 }
49
50 ieee8021AsV3CmlDsLinkPortDSNbrRateRatio
51 OBJECT-TYPE
52     SYNTAX      Integer32
53     MAX-ACCESS  read-only
54     STATUS      current
55     DESCRIPTION
56         "The value is an estimate of the ratio of the frequency of the

```

```

1      LocalClock entity of the time-aware system at the other end
2      of the link attached to this Link Port, to the frequency of
3      the LocalClock entity of this time-aware system.
4      neighborRateRatio is expressed as the fractional frequency
5      offset multiplied by 2^41, i.e., the quantity
6      (neighborRateRatio -1.0)(2^41).
7      REFERENCE      "14.16.9"
8      ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 10 }
9
10 ieee8021AsV3CmlDsLinkPortDSInitialLogPdelayReqInterval OBJECT-TYPE
11     SYNTAX          Integer32(-128..127)
12     MAX-ACCESS      read-write
13     STATUS          current
14     DESCRIPTION
15         "If useMgtSettableLogPdelayReqInterval is FALSE (2) then,
16         for full-duplex IEEE 802.3 media and for CSN media that use
17         the peer-to-peer delay mechanism to measure path delay, the
18         value is the logarithm to base 2 of the Pdelay_Req message
19         transmission interval used when (a) the Link Port is
20         initialized, or (b) a message interval request TLV is
21         received with the logLinkDelayInterval field set to 126.
22         For all other media, the value is 127."
23     REFERENCE      "14.16.10"
24     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 11 }
25
26 ieee8021AsV3CmlDsLinkPortDSCurrentLogPdelayReqInterval OBJECT-TYPE
27     SYNTAX          Integer32(-128..127)
28     MAX-ACCESS      read-only
29     STATUS          current
30     DESCRIPTION
31         "For full-duplex IEEE 802.3 media and for CSN media that use
32         the peer-to-peer delay mechanism to measure path delay,
33         the value is the logarithm to the base 2 of the current
34         Pdelay_Req message transmission interval.
35         For all other media, the value is 127."
36     REFERENCE      "14.16.11"
37     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 12 }
38
39 ieee8021AsV3CmlDsLinkPortDSUseMgtSettableLogPdelayReqInterval OBJECT-TYPE
40     SYNTAX          TruthValue
41     MAX-ACCESS      read-write
42     STATUS          current
43     DESCRIPTION
44         "The managed object is a Boolean that determines the source
45         of the sync interval and mean time interval between
46         successive Pdelay_Req messages. If the value is TRUE (1),
47         the value of currentLogPdelayReqInterval is set equal to
48         the value of mgtSettableLogPdelayReqInterval. If the value
49         of the managed object is FALSE (2), the value of
50         currentLogPdelayReqInterval is determined by the
51         LinkDelayIntervalSetting state machine."
52     REFERENCE      "14.16.12"
53     DEFVAL { false }
54     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 13 }
55
56 ieee8021AsV3CmlDsLinkPortDSMgtSettableLogPdelayReqInterval OBJECT-TYPE

```

```

1      SYNTAX      Integer32 (-128..127)
2      MAX-ACCESS  read-write
3      STATUS      current
4      DESCRIPTION
5          "The value is the logarithm to base 2 of the mean time
6          interval between successive Pdelay_Req messages if
7          useMgtSettableLogPdelayReqInterval is TRUE (1). The
8          value is not used if useMgtSettableLogPdelayReqInterval
9          is FALSE (2)."
```

10 REFERENCE "14.16.13"

11 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 14 }

12

13 ieee8021AsV3CmlDsLinkPortDSInitialComputeNbrRateRatio OBJECT-TYPE

```

14      SYNTAX      TruthValue
15      MAX-ACCESS  read-write
16      STATUS      current
17      DESCRIPTION
18          "If useMgtSettableComputeNeighborRateRatio is FALSE (2),
19          then for full-duplex IEEE 802.3 media and for CSN media
20          that use the peer-to-peer delay mechanism to measure path
21          delay, the value is the initial value of
22          computeNeighborRateRatio.
23          For all other media, the value is TRUE."
```

24 REFERENCE "14.16.14"

25 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 15 }

26

27 ieee8021AsV3CmlDsLinkPortDSCurrentComputeNbrRateRatio OBJECT-TYPE

```

28      SYNTAX      TruthValue
29      MAX-ACCESS  read-only
30      STATUS      current
31      DESCRIPTION
32          "For full-duplex IEEE 802.3 media and for CSN media that use
33          the peer-to-peer delay mechanism to measure path delay,
34          the value is the current value of computeNeighborRateRatio.
35          For all other media, the value is TRUE (1)."
```

36 REFERENCE "14.16.15"

37 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 16 }

38

39 ieee8021AsV3CmlDsLinkPortDSUseMgtSettableComputeNbrRateRatio OBJECT-TYPE

```

40      SYNTAX      TruthValue
41      MAX-ACCESS  read-write
42      STATUS      current
43      DESCRIPTION
44          "The managed object is a Boolean that determines the source
45          of the value of computeNeighborRateRatio. If the value is
46          TRUE (1), the value of computeNeighborRateRatio is set equal
47          to the value of mgtSettablecomputeNeighborRateRatio. If
48          the value of the managed object is FALSE (2), the
49          value of currentComputeNeighborRateRatio is determined by
50          the LinkDelayIntervalSetting state machine."
```

51 REFERENCE "14.16.16"

52 DEFVAL { false }

53 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 17 }

54

55 ieee8021AsV3CmlDsLinkPortDSMgtSettableComputeNbrRateRatio OBJECT-TYPE

```

56      SYNTAX      TruthValue
```

```

1    MAX-ACCESS    read-write
2    STATUS        current
3    DESCRIPTION
4        "computeNeighborRateRatio is configured to this value if
5        useMgtSettableComputeNeighborRateRatio is TRUE (1). The
6        value is not used if useMgtSettableComputeNeighborRateRatio
7        is FALSE (2)."
```

8 REFERENCE "14.16.17"

9 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 18 }

10

11 ieee8021AsV3CmlDsLinkPortDSInitialComputeMeanLinkDelay OBJECT-TYPE

```

12    SYNTAX        TruthValue
13    MAX-ACCESS    read-write
14    STATUS        current
15    DESCRIPTION
16        "If useMgtSettableComputeMeanLinkDelay is FALSE (2) then,
17        for full-duplex IEEE 802.3 media and for CSN media that use
18        the peer-to-peer delay mechanism to measure path delay,
19        the value is the initial value of computeMeanLinkDelay.
20        For all other media, the value is TRUE (1)."
```

21 REFERENCE "14.16.18"

22 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 19 }

23

24 ieee8021AsV3CmlDsLinkPortDSCurrentComputeMeanLinkDelay OBJECT-TYPE

```

25    SYNTAX        TruthValue
26    MAX-ACCESS    read-only
27    STATUS        current
28    DESCRIPTION
29        "For full-duplex IEEE 802.3 media and for CSN media that
30        use the peer-to-peer delay mechanism to measure path delay,
31        the value is the current value of computeMeanLinkDelay.
32        For all other media, the value is TRUE."
```

33 REFERENCE "14.16.19"

34 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 20 }

35

36 ieee8021AsV3CmlDsLinkPortDSUseMgtSettableComputeMeanLinkDelay OBJECT-TYPE

```

37    SYNTAX        TruthValue
38    MAX-ACCESS    read-write
39    STATUS        current
40    DESCRIPTION
41        "The managed object is a Boolean that determines the source
42        of the value of computeMeanLinkDelay. If the value is
43        TRUE (1), the value of computeMeanLinkDelay is set equal
44        to the value of mgtSettableComputeMeanLinkDelay. If the
45        value of the managed object is FALSE (2), the value of
46        currentComputeMeanLinkDelay is determined by the
47        LinkDelayIntervalSetting state machine."
```

48 REFERENCE "14.16.20"

49 DEFVAL { false }

50 ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 21 }

51

52 ieee8021AsV3CmlDsLinkPortDSMgtSettableComputeMeanLinkDelay OBJECT-TYPE

```

53    SYNTAX        TruthValue
54    MAX-ACCESS    read-write
55    STATUS        current
56    DESCRIPTION
```

```

1      "computeMeanLinkDelay is configured to this value if
2      useMgtSettableComputeMeanLinkDelay is TRUE (1). The value
3      is not used if useMgtSettableComputeMeanLinkDelay is
4      FALSE (2)."
```

5 REFERENCE "14.16.21"

```
6     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 22 }
7
8 ieee8021AsV3CmlDsLinkPortDSAllowedLostRsp
9 OBJECT-TYPE
10     SYNTAX         Unsigned32(1..255)
11     MAX-ACCESS     read-write
12     STATUS         current
13     DESCRIPTION
14         "The value is equal to the value of the per-Link-Port
15         global variable allowedLostResponses. It is the number
16         of Pdelay_Req messages without valid responses
17         above which a Link Port is considered to be not
18         exchanging peer delay messages with its neighbor.
19         Setting this managed object causes the per-Link-Port global
20         variable allowedLostResponses to have the same value."
21     REFERENCE     "14.16.22"
22     DEFVAL { 9 }
23     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 23 }
24
25
26 ieee8021AsV3CmlDsLinkPortDSAllowedFaults OBJECT-TYPE
27     SYNTAX         Unsigned32(1..255)
28     MAX-ACCESS     read-write
29     STATUS         current
30     DESCRIPTION
31         "The value is equal to the value of the per-Link-Port global
32         variable allowedFaults. It is the number of faults above
33         which asCapableAcrossDomains is set to FALSE (2), i.e., a
34         Link Port is considered not capable of interoperating
35         with its neighbor via the IEEE 802.1AS protocol.
36         Setting this managed object causes the per-Link-Port global
37         variable allowedFaults to have the same value."
38     REFERENCE     "14.16.23"
39     DEFVAL { 9 }
40     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 24 }
41
42 ieee8021AsV3CmlDsLinkPortDSVersionNumber OBJECT-TYPE
43     SYNTAX         Unsigned32(0..15)
44     MAX-ACCESS     read-only
45     STATUS         current
46     DESCRIPTION
47         "This value is set to versionPTP as specified in 10.6.2.2.4."
48     REFERENCE     "14.16.24"
49     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 25 }
50
51 ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST1
52 OBJECT-TYPE
53     SYNTAX         Ieee8021ASV3Timestamp
54     MAX-ACCESS     read-only
55     STATUS         current
56     DESCRIPTION
```

```

1      "For full-duplex IEEE 802.3 media and for CSN media that use
2      the peer-to-peer delay mechanism to measure path delay, the
3      first value, T1, of the four elements of this array is as
4      described in Table 14-9. For all other media, the values are
5      zero. This object corresponds to the timestamp t1 modulo 2^32
6      in Figure 11-1, and expressed in units of 2^-16 ns (i.e., the
7      value of this array element is equal to the remainder obtained
8      upon dividing the respective timestamp, expressed in units
9      of 2^-16 ns, by 2^48).
10     At any given time, the timestamp values stored in the T1, T2,
11     T3, T4 PdelayTruncTS are for the same, and most recently
12     completed, peer delay message exchange.
13     NOTE: This managed object is used with the asymmetry
14     measurement compensation procedure, which is based on
15     line-swapping."
16  REFERENCE    "14.16.25"
17  ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 26 }
18
19 ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST2
20 OBJECT-TYPE
21     SYNTAX      Ieee8021ASV3Timestamp
22     MAX-ACCESS  read-only
23     STATUS      current
24     DESCRIPTION
25         "For full-duplex IEEE 802.3 media and for CSN media that use
26         the peer-to-peer delay mechanism to measure path delay, the
27         second value, T2, of the four elements of this array is as
28         described in Table 14-9. For all other media, the values are
29         zero. This object corresponds to the timestamp t1 modulo 2^32
30         in Figure 11-1, and expressed in units of 2^-16 ns (i.e., the
31         value of this array element is equal to the remainder obtained
32         upon dividing the respective timestamp, expressed in units
33         of 2^-16 ns, by 2^48).
34         At any given time, the timestamp values stored in the T1, T2,
35         T3, T4 PdelayTruncTS are for the same, and most recently
36         completed, peer delay message exchange.
37         NOTE: This managed object is used with the asymmetry
38         measurement compensation procedure, which is based on
39         line-swapping."
40  REFERENCE    "14.16.25"
41  ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 27 }
42
43 ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST3
44 OBJECT-TYPE
45     SYNTAX      Ieee8021ASV3Timestamp
46     MAX-ACCESS  read-only
47     STATUS      current
48     DESCRIPTION
49         "For full-duplex IEEE 802.3 media and for CSN media that use
50         the peer-to-peer delay mechanism to measure path delay, the
51         third value, T3, of the four elements of this array is as
52         described in Table 14-9. For all other media, the values are
53         zero. This object corresponds to the timestamp t1 modulo 2^32
54         in Figure 11-1, and expressed in units of 2^-16 ns (i.e., the
55         value of this array element is equal to the remainder obtained
56         upon dividing the respective timestamp, expressed in units

```



```

1      of 2-16 ns, by 248).
2      At any given time, the timestamp values stored in the T1, T2,
3      T3, T4 PdelayTruncTS are for the same, and most recently
4      completed, peer delay message exchange.
5      NOTE: This managed object is used with the asymmetry
6      measurement compensation procedure, which is based on
7      line-swapping."
8      REFERENCE    "14.16.25"
9      ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 28 }
10
11 ieee8021AsV3CmldsLinkPortDSPdelayTruncTST4
12 OBJECT-TYPE
13     SYNTAX          Ieee8021ASV3Timestamp
14     MAX-ACCESS      read-only
15     STATUS          current
16     DESCRIPTION
17         "For full-duplex IEEE 802.3 media and for CSN media that use
18         the peer-to-peer delay mechanism to measure path delay, the
19         fourth value, T4, of the four elements of this array is as
20         described in Table 14-9. For all other media, the values are
21         zero. This object corresponds to the timestamp t1 modulo 232
22         in Figure 11-1, and expressed in units of 2-16 ns (i.e., the
23         value of this array element is equal to the remainder obtained
24         upon dividing the respective timestamp, expressed in units
25         of 2-16 ns, by 248).
26         At any given time, the timestamp values stored in the T1, T2,
27         T3, T4 PdelayTruncTS are for the same, and most recently
28         completed, peer delay message exchange.
29         NOTE: This managed object is used with the asymmetry
30         measurement compensation procedure, which is based on
31         line-swapping."
32     REFERENCE    "14.16.25"
33     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 29 }
34
35 ieee8021AsV3CmldsLinkPortDSMinorVersionNumber OBJECT-TYPE
36     SYNTAX          Unsigned32 (0..15)
37     MAX-ACCESS      read-only
38     STATUS          current
39     DESCRIPTION
40         "This value is set to minorVersionPTP as specified in
41         10.6.2.2.3."
42     REFERENCE    "14.16.26"
43     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSEntry 30 }
44
45 -- =====
46 -- The Common Mean Link Delay Service Link Port Parameter
47 -- Statistics Data Set provides counters associated with Link
48 -- Port capabilities at a given time-aware system.
49 -- =====
50
51 ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSTable  OBJECT-TYPE
52     SYNTAX          SEQUENCE OF
53     Ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry
54     MAX-ACCESS      not-accessible
55     STATUS          current
56     DESCRIPTION

```

```

1      "For every Link Port of the Common Mean Link Delay Service of a
2      time-aware system, the following cmldsLinkPortStatisticsDS
3      provides counters. The number of such statistics sets is the
4      same as the value of cmldsDefaultDS.numberLinkPorts."
5  REFERENCE    "14.17"
6  ::= { ieee8021AsV3MIBObjects 19 }
7
8  ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry  OBJECT-TYPE
9      SYNTAX      Ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry
10     MAX-ACCESS   not-accessible
11     STATUS      current
12     DESCRIPTION
13         "For every Link Port of the Common Mean Link Delay Service of a
14         time-aware system, the following cmldsLinkPortStatisticsDS
15         provides counters. The number of such statistics sets is the
16         same as the value of cmldsDefaultDS.numberLinkPorts."
17     INDEX { ieee8021AsV3BridgeBasePort,
18             ieee8021AsV3CmldsLinkPortStatDSIndex }
19     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSTable 1 }
20
21 Ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry ::=
22     SEQUENCE {
23         ieee8021AsV3CmldsLinkPortStatDSIndex          InterfaceIndexOrZero,
24         ieee8021AsV3CmldsLinkPortStatDSRxpDelayRequestCount      Counter32,
25         ieee8021AsV3CmldsLinkPortStatDSRxpDelayRspCount          Counter32,
26         ieee8021AsV3CmldsLinkPortStatDSRxpDelayRspFollowUpCount  Counter32,
27         ieee8021AsV3CmldsLinkPortStatDSRxpPtpPacketDiscardCount Counter32,
28         ieee8021AsV3CmldsLinkPortStatDSPdelayAllowedLostRspExceededCount
29         Counter32,
30         ieee8021AsV3CmldsLinkPortStatDSTxpDelayRequestCount      Counter32,
31         ieee8021AsV3CmldsLinkPortStatDSTxpDelayRspCount          Counter32,
32         ieee8021AsV3CmldsLinkPortStatDSTxpDelayRspFollowUpCount Counter32
33     }
34
35 ieee8021AsV3CmldsLinkPortStatDSIndex OBJECT-TYPE
36     SYNTAX      InterfaceIndexOrZero
37     MAX-ACCESS   not-accessible
38     STATUS      current
39     DESCRIPTION
40         "An index to identify an entry in the Common Mean Link
41         Port Statistics Data Set."
42     REFERENCE    "14.17"
43     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 1 }
44
45 ieee8021AsV3CmldsLinkPortStatDSRxpDelayRequestCount OBJECT-TYPE
46     SYNTAX      Counter32
47     MAX-ACCESS   read-only
48     STATUS      current
49     DESCRIPTION
50         "A counter that increments every time a Pdelay_Req message is
51         received."
52     REFERENCE    "14.17.2"
53     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 2 }
54
55 ieee8021AsV3CmldsLinkPortStatDSRxpDelayRspCount OBJECT-TYPE
56     SYNTAX      Counter32

```

```

1    MAX-ACCESS    read-only
2    STATUS        current
3    DESCRIPTION
4        "A counter that increments every time a Pdelay_Resp message is
5        received."
6    REFERENCE     "14.17.3"
7    ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 3 }
8
9 ieee8021AsV3CmlldsLinkPortStatDSRxPdelayRspFollowUpCount OBJECT-TYPE
10   SYNTAX          Counter32
11   MAX-ACCESS      read-only
12   STATUS          current
13   DESCRIPTION
14       "A counter that increments every time a Pdelay_Resp_Follow_Up
15       message is received."
16   REFERENCE       "14.17.4"
17   ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 4 }
18
19 ieee8021AsV3CmlldsLinkPortStatDSRxPtpPacketDiscardCount
20 OBJECT-TYPE
21   SYNTAX          Counter32
22   MAX-ACCESS      read-only
23   STATUS          current
24   DESCRIPTION
25       "A counter that increments every time a PTP message of the
26       Common Mean Link Delay Service is discarded, caused by the
27       occurrence of any of the conditions given in 14.17.5."
28   REFERENCE       "14.17.5"
29   ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 5 }
30
31 ieee8021AsV3CmlldsLinkPortStatDSPdelayAllowedLostRspExceededCount
32 OBJECT-TYPE
33   SYNTAX          Counter32
34   MAX-ACCESS      read-only
35   STATUS          current
36   DESCRIPTION
37       "A counter that increments every time the value of the variable
38       lostResponses exceeds the value of the variable
39       allowedLostResponses, in the RESET state of the
40       MDPdelayReq state machine."
41   REFERENCE       "14.17.6"
42   ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 6 }
43
44 ieee8021AsV3CmlldsLinkPortStatDSTxPdelayRequestCount
45 OBJECT-TYPE
46   SYNTAX          Counter32
47   MAX-ACCESS      read-only
48   STATUS          current
49   DESCRIPTION
50       "A counter that increments every time a Pdelay_Req message is
51       transmitted."
52   REFERENCE       "14.17.7"
53   ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 7 }
54
55 ieee8021AsV3CmlldsLinkPortStatDSTxPdelayRspCount
56 OBJECT-TYPE

```

```

1      SYNTAX      Counter32
2      MAX-ACCESS  read-only
3      STATUS      current
4      DESCRIPTION
5          "A counter that increments every time a Pdelay_Resp message is
6          transmitted."
7      REFERENCE   "14.17.8"
8      ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 8 }
9
10 ieee8021AsV3CmlDsLinkPortStatDSTxPdelayRspFollowUpCount
11 OBJECT-TYPE
12     SYNTAX      Counter32
13     MAX-ACCESS  read-only
14     STATUS      current
15     DESCRIPTION
16         "A counter that increments every time a Pdelay_Resp_Follow_Up
17         message is transmitted."
18     REFERENCE   "14.17.9"
19     ::= { ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSEntry 9 }
20
21 -- =====
22 -- The Common Mean Link Delay Service Asymmetry Measurement Mode
23 -- Parameter Data Set represents the capability to enable/disable
24 -- the Asymmetry Compensation Measurement Procedure on a Link Port
25 -- (see Annex G).
26 -- =====
27
28 ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSTable    OBJECT-
29 TYPE
30     SYNTAX      SEQUENCE OF
31     Ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSEntry
32     MAX-ACCESS  not-accessible
33     STATUS      current
34     DESCRIPTION
35         "The Common Mean Link Delay Service Asymmetry Measurement Mode
36         Parameter Data Set represents the capability to enable/disable
37         the Asymmetry Compensation Measurement Procedure on a Link Port
38         (see Annex G). "
39     REFERENCE   "14.18"
40     ::= { ieee8021AsV3MIBObjects 20 }
41
42 ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSEntry    OBJECT-
43 TYPE
44     SYNTAX
45     Ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSEntry
46     MAX-ACCESS  not-accessible
47     STATUS      current
48     DESCRIPTION
49         "This table uses
50         ieee8021AsV3CmlDsAsymmetryMeasurementModeDSAsIndex,
51         and corresponds to
52
53     Ieee8021AsV3CommonMeanLinkDelayServiceAsymmetryMeasurementModeDSTable
54     entry."
55     INDEX { ieee8021AsV3BridgeBasePort,
56             ieee8021AsV3CmlDsAsymMeasurementModeDSAsIndex }

```

```

1      ::= { ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSTable 1
2  }
3
4  Ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSEntry ::=
5      SEQUENCE {
6  ieee8021AsV3CmlDsAsymMeasurementModeDSAsIndex  InterfaceIndexOrZero,
7  ieee8021AsV3CmlDsAsymMeasurementModeDSAsymMeasurementMode  TruthValue
8      }
9
10 ieee8021AsV3CmlDsAsymMeasurementModeDSAsIndex OBJECT-TYPE
11     SYNTAX      InterfaceIndexOrZero
12     MAX-ACCESS  not-accessible
13     STATUS      current
14     DESCRIPTION
15         "This object identifies the gPTP interface group within
16         the system for which this entry contains information. It
17         is the value of the instance of the IfIndex object,
18         defined in the IF-MIB, for the gPTP interface group
19         corresponding to this port, or the value 0 if the port
20         has not been bound to an underlying frame source and
21         sink.
22
23         For a given media port of a Bridge or an end station,
24         there can be one or more PTP Port, and depends whether
25         a media port supports point to point link (e.g. IEEE
26         802.3 Ethernet) or point to multi-point (e.g. CSN, IEEE
27         802.3 EPON) links on the media port."
28     REFERENCE   "IEEE Std 802.1AS
29 CommonMeanLinkDelaySvcAsymMeasurementModeParamDS Group PTP Port Index"
30     ::= { ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSEntry 1 }
31
32 ieee8021AsV3CmlDsAsymMeasurementModeDSAsymMeasurementMode
33     OBJECT-TYPE
34     SYNTAX      TruthValue
35     MAX-ACCESS  read-write
36     STATUS      current
37     DESCRIPTION
38         "The value is equal to the value of the Boolean
39         asymmetryMeasurementMode(see G.3). For full-duplex
40         IEEE 802.3 media, the value is TRUE (1) if an asymmetry
41         measurement is being performed for the link attached to
42         this Link Port, and FALSE (2) otherwise. For all other
43         media, the value shall be FALSE (2) (see 10.2.4.2).
44         Setting this managed object causes the Boolean
45         allowedFaults to have the same value.
46         NOTE: If an asymmetry measurement is being performed
47         for a link, asymmetryMeasurementMode must be TRUE (1)
48         for the Link Ports at each end of the link.
49         There is one Common Mean Link Delay Service Asymmetry
50         Measurement Mode Parameter Data Set Table for all PTP
51         Instances, per Link Port."
52     REFERENCE   "14.18.2"
53     ::= { ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSEntry 2 }
54
55 -- *****
56 -- IEEE 802.1ASV3 MIB - Conformance Information

```

```

1 -- *****
2 ieee8021AsV3Groups          OBJECT IDENTIFIER ::= { ieee8021AsV3Conformance
3 1 }
4 ieee8021AsV3Compliances     OBJECT IDENTIFIER ::= { ieee8021AsV3Conformance
5 2 }
6
7 -- =====
8 -- units of conformance
9 -- =====
10
11 ieee8021AsV3PtpInstanceGroup OBJECT-GROUP
12   OBJECTS {
13     ieee8021AsV3PtpInstanceName,
14     ieee8021AsV3PtpInstanceRowStatus
15   }
16   STATUS      current
17   DESCRIPTION
18     "A collection of objects providing information for dynamic
19     creation and deletion of PTP Instances and logical ports."
20   ::= { ieee8021AsV3Groups 1 }
21
22 ieee8021AsV3DefaultDSGroup OBJECT-GROUP
23   OBJECTS {
24     ieee8021AsV3DefaultDSClockIdentity,
25     ieee8021AsV3DefaultDSNumberPorts,
26     ieee8021AsV3DefaultDSClockQualityClockClass,
27     ieee8021AsV3DefaultDSClockQualityClockAccuracy,
28     ieee8021AsV3DefaultDSClockQualityOffsetScaledLogVariance,
29     ieee8021AsV3DefaultDSPriority1,
30     ieee8021AsV3DefaultDSPriority2,
31     ieee8021AsV3DefaultDSGmCapable,
32     ieee8021AsV3DefaultDSCurrentUtcOffset,
33     ieee8021AsV3DefaultDSCurrentUtcOffsetValid,
34     ieee8021AsV3DefaultDSLeap59,
35     ieee8021AsV3DefaultDSLeap61,
36     ieee8021AsV3DefaultDSTimeTraceable,
37     ieee8021AsV3DefaultDSFrequencyTraceable,
38     ieee8021AsV3DefaultDSPtpTimescale,
39     ieee8021AsV3DefaultDSTimeSource,
40     ieee8021AsV3DefaultDSDomainNumber,
41     ieee8021AsV3DefaultDSSdoId,
42     ieee8021AsV3DefaultDSExternalPortConfigurationEnabled,
43     ieee8021AsV3DefaultDSInstanceEnable
44   }
45   STATUS      current
46   DESCRIPTION
47     "A collection of objects providing information on the Default
48     Parameter Data Set representing the native capabilities of a
49     PTP Instance, i.e., a PTP Relay Instance or a PTP End Instance."
50   ::= { ieee8021AsV3Groups 2 }
51
52 ieee8021AsV3CurrentDSGroup OBJECT-GROUP
53   OBJECTS {
54     ieee8021AsV3CurrentDSStepsRemoved,
55     ieee8021AsV3CurrentDSOffsetFromTimeTransmitter,
56     ieee8021AsV3CurrentDSLstGmPhaseChange,

```

```

1      ieee8021AsV3CurrentDSLastGmFreqChange,
2      ieee8021AsV3CurrentDSGmTimebaseIndicator,
3      ieee8021AsV3CurrentDSGmChangeCount,
4      ieee8021AsV3CurrentDSTimeOfLastGmChangeEvent,
5      ieee8021AsV3CurrentDSTimeOfLastGmPhaseChangeEvent,
6      ieee8021AsV3CurrentDSTimeOfLastGmFreqChangeEvent
7  }
8  STATUS          current
9  DESCRIPTION
10     "A collection of objects providing information on the Current
11     Parameter Data Set representing the position of a local system
12     and other information, relative to the Grandmaster PTP Instance."
13     ::= { ieee8021AsV3Groups 3 }
14
15 ieee8021AsV3ParentDSGroup OBJECT-GROUP
16     OBJECTS {
17         ieee8021AsV3ParentDSParentClockIdentity,
18         ieee8021AsV3ParentDSParentPortNumber,
19         ieee8021AsV3ParentDSCumulativeRateRatio,
20         ieee8021AsV3ParentDSGrandmasterIdentity,
21         ieee8021AsV3ParentDSGrandmasterClockQualityclockClass,
22         ieee8021AsV3ParentDSGrandmasterClockQualityclockAccuracy,
23         ieee8021AsV3ParentDSGrandmasterClockQualityoffsetScaledLogVar,
24         ieee8021AsV3ParentDSGrandmasterPriority1,
25         ieee8021AsV3ParentDSGrandmasterPriority2
26     }
27     STATUS          current
28     DESCRIPTION
29         "A collection of objects providing information on the Parent
30         Parameter Data Set representing capabilities of the upstream
31         system, toward the Grandmaster PTP Instance, as measured at
32         a local system."
33     ::= { ieee8021AsV3Groups 4 }
34
35 ieee8021AsV3TimePropertiesDSGroup OBJECT-GROUP
36     OBJECTS {
37         ieee8021AsV3TimePropertiesDSCurrentUtcOffset,
38         ieee8021AsV3TimePropertiesDSCurrentUtcOffsetValid,
39         ieee8021AsV3TimePropertiesDSLeap59,
40         ieee8021AsV3TimePropertiesDSLeap61,
41         ieee8021AsV3TimePropertiesDSTimeTraceable,
42         ieee8021AsV3TimePropertiesDSFrequencyTraceable,
43         ieee8021AsV3TimePropertiesDSPtpTimescale,
44         ieee8021AsV3TimePropertiesDSTimeSource
45     }
46     STATUS          current
47     DESCRIPTION
48         "A collection of objects providing information on the Time
49         Properties Parameter Data Set representing capabilities of
50         the Grandmaster PTP Instance, as measured at a local system."
51     ::= { ieee8021AsV3Groups 5 }
52
53 ieee8021AsV3PathTraceDSGroup OBJECT-GROUP
54     OBJECTS {
55         ieee8021AsV3PathTraceDSEnable
56     }

```

```

1     STATUS          current
2     DESCRIPTION
3         "A collection of objects providing information on the Path Trace
4         Data Set representing the current path trace information
5         available at the PTP Instance."
6     ::= { ieee8021AsV3Groups 6 }
7
8 ieee8021AsV3PathTraceDSArrayTableGroup OBJECT-GROUP
9     OBJECTS {
10         ieee8021AsV3PathTraceDSArrayList
11     }
12     STATUS          current
13     DESCRIPTION
14         "A collection of objects providing information of an array of
15         ClockIdentity values contained in the pathTrace array,
16         representing the current path trace information, and which is
17         carried in the path trace TLV per PTP Instance."
18     ::= { ieee8021AsV3Groups 7 }
19
20 ieee8021AsV3AcceptableTimeTransmitterTableDSGroup OBJECT-GROUP
21     OBJECTS {
22         ieee8021AsV3AcceptableTimeTransmitterTableDSMaxTableSize,
23         ieee8021AsV3AcceptableTimeTransmitterTableDSActualTableSize
24     }
25     STATUS          current
26     DESCRIPTION
27         "A collection of objects providing information on the
28         Acceptable TimeTransmitter Table Data Set representing the
29 acceptable
30         timeTransmitter table used when an EPON port is used by a PTP
31 Instance
32         of a time-aware system."
33     ::= { ieee8021AsV3Groups 8 }
34
35 ieee8021AsV3AcceptableTimeTransmitterTableDSArrayGroup OBJECT-GROUP
36     OBJECTS {
37         ieee8021AsV3AcceptableTimeTransmitterTableDSArrayPortIdentity,
38         ieee8021AsV3AcceptableTTTableDSArrayAlternatePriority1
39     }
40     STATUS          current
41     DESCRIPTION
42         "A collection of objects providing information on the
43         Acceptable TimeTransmitter Table Array Data Set representing the
44         acceptable timeTransmitter table used when an EPON port is used by a
45         PTP Instance of a time-aware system."
46     ::= { ieee8021AsV3Groups 9 }
47
48 ieee8021AsV3PortDSGroup OBJECT-GROUP
49     OBJECTS {
50         ieee8021AsV3PortDSClockIdentity,
51         ieee8021AsV3PortDSPortNumber,
52         ieee8021AsV3PortDSPortState,
53         ieee8021AsV3PortDSPtpPortEnabled,
54         ieee8021AsV3PortDSDelayMechanism,
55         ieee8021AsV3PortDSIsMeasuringDelay,
56         ieee8021AsV3PortDSAsCapable,

```



```

1      ieee8021AsV3PortDSMeanLinkDelay,
2      ieee8021AsV3PortDSMeanLinkDelayThresh,
3      ieee8021AsV3PortDSDelayAsym,
4      ieee8021AsV3PortDSNbrRateRatio,
5      ieee8021AsV3PortDSInitialLogAnnounceInterval,
6      ieee8021AsV3PortDSCurrentLogAnnounceInterval,
7      ieee8021AsV3PortDSUseMgtSettableLogAnnounceInterval,
8      ieee8021AsV3PortDSMgtSettableLogAnnounceInterval,
9      ieee8021AsV3PortDSAnnounceReceiptTimeout,
10     ieee8021AsV3PortDSInitialLogSyncInterval,
11     ieee8021AsV3PortDSCurrentLogSyncInterval,
12     ieee8021AsV3PortDSUseMgtSettableLogSyncInterval,
13     ieee8021AsV3PortDSMgtSettableLogSyncInterval,
14     ieee8021AsV3PortDSSyncReceiptTimeout,
15     ieee8021AsV3PortDSSyncReceiptTimeoutTimeInterval,
16     ieee8021AsV3PortDSInitialLogPdelayReqInterval,
17     ieee8021AsV3PortDSCurrentLogPdelayReqInterval,
18     ieee8021AsV3PortDSUseMgtSettableLogPdelayReqInterval,
19     ieee8021AsV3PortDSMgtSettableLogPdelayReqInterval,
20     ieee8021AsV3PortDSInitialLogGptpCapableMessageInterval,
21     ieee8021AsV3PortDSCurrentLogGptpCapableMessageInterval,
22     ieee8021AsV3PortDSUseMgtSettableLogGptpCapableMessageInterval,
23     ieee8021AsV3PortDSMgtSettableLogGptpCapableMessageInterval,
24     ieee8021AsV3PortDSInitialComputeNbrRateRatio,
25     ieee8021AsV3PortDSCurrentComputeNbrRateRatio,
26     ieee8021AsV3PortDSUseMgtSettableComputeNbrRateRatio,
27     ieee8021AsV3PortDSMgtSettableComputeNbrRateRatio,
28     ieee8021AsV3PortDSInitialComputeMeanLinkDelay,
29     ieee8021AsV3PortDSCurrentComputeMeanLinkDelay,
30     ieee8021AsV3PortDSUseMgtSettableComputeMeanLinkDelay,
31     ieee8021AsV3PortDSMgtSettableComputeMeanLinkDelay,
32     ieee8021AsV3PortDSAllowedLostRsp,
33     ieee8021AsV3PortDSAllowedFaults,
34     ieee8021AsV3PortDSGPTpCapableReceiptTimeout,
35     ieee8021AsV3PortDSVersionNumber,
36     ieee8021AsV3PortDSNup,
37     ieee8021AsV3PortDSNdown,
38     ieee8021AsV3PortDSOneStepTxOper,
39     ieee8021AsV3PortDSOneStepReceive,
40     ieee8021AsV3PortDSOneStepTransmit,
41     ieee8021AsV3PortDSInitialOneStepTxOper,
42     ieee8021AsV3PortDSCurrentOneStepTxOper,
43     ieee8021AsV3PortDSUseMgtSettableOneStepTxOper,
44     ieee8021AsV3PortDSMgtSettableOneStepTxOper,
45     ieee8021AsV3PortDSSyncLocked,
46     ieee8021AsV3PortDSPdelayTruncTST1,
47     ieee8021AsV3PortDSPdelayTruncTST2,
48     ieee8021AsV3PortDSPdelayTruncTST3,
49     ieee8021AsV3PortDSPdelayTruncTST4,
50     ieee8021AsV3PortDSMinorVersionNumber
51   }
52   STATUS      current
53   DESCRIPTION
54     "A collection of objects providing information on PTP Port
55     related variables in a time-aware Bridge or for a time-aware
56     end station."

```

```

1      ::= { ieee8021AsV3Groups 10 }
2
3 ieee8021AsV3DescriptionPortDSGroup OBJECT-GROUP
4     OBJECTS {
5         ieee8021AsV3DescriptionPortDSProfileIdentifier
6     }
7     STATUS      current
8     DESCRIPTION
9         "A collection of objects providing information on the
10         Description Port Data Set containing the profileIdentifier for
11         this PTP profile, as specified in Annex F.1."
12     ::= { ieee8021AsV3Groups 11 }
13
14 ieee8021AsV3PortStatIfGroup OBJECT-GROUP
15     OBJECTS {
16         ieee8021AsV3PortStatRxSyncCount,
17         ieee8021AsV3PortStatRxOneStepSyncCount,
18         ieee8021AsV3PortStatRxFollowUpCount,
19         ieee8021AsV3PortStatRxPdelayRequestCount,
20         ieee8021AsV3PortStatRxPdelayRspCount,
21         ieee8021AsV3PortStatRxPdelayRspFollowUpCount,
22         ieee8021AsV3PortStatRxAnnounceCount,
23         ieee8021AsV3PortStatRxPtpPacketDiscardCount,
24         ieee8021AsV3PortStatSyncReceiptTimeoutCount,
25         ieee8021AsV3PortStatAnnounceReceiptTimeoutCount,
26         ieee8021AsV3PortStatPdelayAllowedLostRspExceededCount,
27         ieee8021AsV3PortStatTxSyncCount,
28         ieee8021AsV3PortStatTxOneStepSyncCount,
29         ieee8021AsV3PortStatTxFollowUpCount,
30         ieee8021AsV3PortStatTxPdelayRequestCount,
31         ieee8021AsV3PortStatTxPdelayRspCount,
32         ieee8021AsV3PortStatTxPdelayRspFollowUpCount,
33         ieee8021AsV3PortStatTxAnnounceCount
34     }
35     STATUS      current
36     DESCRIPTION
37         "A collection of objects providing information on the Port
38         Statistics Data Set provideing counters associated with PTP Port
39         capabilities at a given PTP Instance."
40     ::= { ieee8021AsV3Groups 12 }
41
42 ieee8021AsV3AcceptableTimeTransmitterPortDSGroup OBJECT-GROUP
43     OBJECTS {
44         ieee8021AsV3AcceptableTTPortDSAcceptableTTTableEnabled
45     }
46     STATUS      current
47     DESCRIPTION
48         "A collection of objects providing information for the single
49         PTP Port of a PTP End Instance and for each PTP Port of a
50         PTP Relay Instance."
51     ::= { ieee8021AsV3Groups 13 }
52
53 ieee8021AsV3ExternalPortConfigurationPortDSGroup OBJECT-GROUP
54     OBJECTS {
55         ieee8021AsV3ExternalPortConfigurationPortDSDesiredState
56     }

```

```

1   STATUS      current
2   DESCRIPTION
3       "A collection of objects providing information on the
4       External Port Configuration Port Data Set containing the
5       single member desiredState, which indicates the desired state
6       for the PTP Port."
7   ::= { ieee8021AsV3Groups 14 }
8
9   ieee8021AsV3AsymMeasurementModeDSGroup OBJECT-GROUP
10  OBJECTS {
11      ieee8021AsV3AsymMeasurementModeDSAsymMeasurementMode
12  }
13  STATUS      current
14  DESCRIPTION
15      "A collection of objects providing information on the
16      Asymmetry Measurement Mode Data Set representing the capability
17      to enable/disable the Asymmetry Compensation Measurement
18      Procedure on a Link Port (see Annex G)."
19  ::= { ieee8021AsV3Groups 15 }
20
21  ieee8021AsV3CommonServicesPortDSGroup OBJECT-GROUP
22  OBJECTS {
23      ieee8021AsV3CommonServicesPortDSCmlDsLinkPortPortNumber
24  }
25  STATUS      current
26  DESCRIPTION
27      "A collection of objects providing information on the
28      Common Services Port Data Set."
29  ::= { ieee8021AsV3Groups 16 }
30
31  ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSGroup OBJECT-GROUP
32  OBJECTS {
33      ieee8021AsV3CmlDsDefaultDSClockIdentity,
34      ieee8021AsV3CmlDsDefaultDSNumberLinkPorts
35  }
36  STATUS      current
37  DESCRIPTION
38      "A collection of objects providing information on the
39      CMLDs Default Data Set describing the per-time-aware-system
40      attributes of the Common Mean Link Delay Service."
41  ::= { ieee8021AsV3Groups 17 }
42
43  ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSGroup OBJECT-GROUP
44  OBJECTS {
45      ieee8021AsV3CmlDsLinkPortDSClockIdentity,
46      ieee8021AsV3CmlDsLinkPortDSPortNumber,
47      ieee8021AsV3CmlDsLinkPortDSCmlDsLinkPortEnabled,
48      ieee8021AsV3CmlDsLinkPortDSIsMeasuringDelay,
49      ieee8021AsV3CmlDsLinkPortDSAsCapableAcrossDomains,
50      ieee8021AsV3CmlDsLinkPortDSMeanLinkDelay,
51      ieee8021AsV3CmlDsLinkPortDSMeanLinkDelayThresh,
52      ieee8021AsV3CmlDsLinkPortDSDelayAsym,
53      ieee8021AsV3CmlDsLinkPortDSNbrRateRatio,
54      ieee8021AsV3CmlDsLinkPortDSInitialLogPdelayReqInterval,
55      ieee8021AsV3CmlDsLinkPortDSCurrentLogPdelayReqInterval,
56      ieee8021AsV3CmlDsLinkPortDSUseMgtSettableLogPdelayReqInterval,

```

```

1      ieee8021AsV3CmlDsLinkPortDSMgtSettableLogPdelayReqInterval,
2      ieee8021AsV3CmlDsLinkPortDSInitialComputeNbrRateRatio,
3      ieee8021AsV3CmlDsLinkPortDSCurrentComputeNbrRateRatio,
4      ieee8021AsV3CmlDsLinkPortDSUseMgtSettableComputeNbrRateRatio,
5      ieee8021AsV3CmlDsLinkPortDSMgtSettableComputeNbrRateRatio,
6      ieee8021AsV3CmlDsLinkPortDSInitialComputeMeanLinkDelay,
7      ieee8021AsV3CmlDsLinkPortDSCurrentComputeMeanLinkDelay,
8      ieee8021AsV3CmlDsLinkPortDSUseMgtSettableComputeMeanLinkDelay,
9      ieee8021AsV3CmlDsLinkPortDSMgtSettableComputeMeanLinkDelay,
10     ieee8021AsV3CmlDsLinkPortDSAllowedLostRsp,
11     ieee8021AsV3CmlDsLinkPortDSAllowedFaults,
12     ieee8021AsV3CmlDsLinkPortDSVersionNumber,
13     ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST1,
14     ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST2,
15     ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST3,
16     ieee8021AsV3CmlDsLinkPortDSPdelayTruncTST4,
17     ieee8021AsV3CmlDsLinkPortDSMinorVersionNumber
18   }
19   STATUS          current
20   DESCRIPTION
21     "A collection of objects providing information for every
22     Link Port of the Common Mean Link Delay Service of a
23     time-aware system."
24   ::= { ieee8021AsV3Groups 18 }
25
26 ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSGroup OBJECT-GROUP
27   OBJECTS {
28     ieee8021AsV3CmlDsLinkPortStatDSRxPdelayRequestCount,
29     ieee8021AsV3CmlDsLinkPortStatDSRxPdelayRspCount,
30     ieee8021AsV3CmlDsLinkPortStatDSRxPdelayRspFollowUpCount,
31     ieee8021AsV3CmlDsLinkPortStatDSRxPtpPacketDiscardCount,
32     ieee8021AsV3CmlDsLinkPortStatDSPdelayAllowedLostRspExceededCount,
33     ieee8021AsV3CmlDsLinkPortStatDSTxPdelayRequestCount,
34     ieee8021AsV3CmlDsLinkPortStatDSTxPdelayRspCount,
35     ieee8021AsV3CmlDsLinkPortStatDSTxPdelayRspFollowUpCount
36   }
37   STATUS          current
38   DESCRIPTION
39     "A collection of objects providing information for every
40     Link Port Statistics of the Common Mean Link Delay Service of a
41     time-aware system."
42   ::= { ieee8021AsV3Groups 19 }
43
44 ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSGroup OBJECT-
45 GROUP
46   OBJECTS {
47     ieee8021AsV3CmlDsAsymMeasurementModeDSAsymMeasurementMode
48   }
49   STATUS          current
50   DESCRIPTION
51     "A collection of objects providing information on the
52     Common Mean Link Delay Service Asymmetry Measurement Mode
53     Parameter Data Set representing the capability to enable/disable
54     the Asymmetry Compensation Measurement Procedure on a Link Port
55     (see Annex G)."
56   ::= { ieee8021AsV3Groups 20 }

```

```

1
2 -- =====
3 -- compliance statements
4 -- =====
5
6 ieee8021AsV3Compliance MODULE-COMPLIANCE
7     STATUS          current
8     DESCRIPTION
9         "The compliance statement for devices supporting
10         IEEE Std 802.1AS-2020."
11
12     MODULE -- this module
13
14     GROUP ieee8021AsV3PtpInstanceGroup
15     DESCRIPTION
16         "Implementation of this group is optional."
17
18     GROUP ieee8021AsV3DefaultDSGroup
19     DESCRIPTION
20         "Implementation of this group is optional."
21
22     GROUP ieee8021AsV3CurrentDSGroup
23     DESCRIPTION
24         "Implementation of this group is optional."
25
26     GROUP ieee8021AsV3ParentDSGroup
27     DESCRIPTION
28         "Implementation of this group is optional."
29
30     GROUP ieee8021AsV3TimePropertiesDSGroup
31     DESCRIPTION
32         "Implementation of this group is optional."
33
34     GROUP ieee8021AsV3PathTraceDSGroup
35     DESCRIPTION
36         "Implementation of this group is optional."
37
38     GROUP ieee8021AsV3PathTraceDSArrayTableGroup
39     DESCRIPTION
40         "Implementation of this group is optional."
41
42     GROUP ieee8021AsV3AcceptableTimeTransmitterTableDSGroup
43     DESCRIPTION
44         "Implementation of this group is optional."
45
46     GROUP ieee8021AsV3AcceptableTimeTransmitterTableDSArrayGroup
47     DESCRIPTION
48         "Implementation of this group is optional."
49
50     GROUP ieee8021AsV3PortDSGroup
51     DESCRIPTION
52         "Implementation of this group is optional."
53
54     GROUP ieee8021AsV3DescriptionPortDSGroup
55     DESCRIPTION
56         "Implementation of this group is optional."

```

```
1
2  GROUP ieee8021AsV3PortStatIfGroup
3  DESCRIPTION
4      "Implementation of this group is optional."
5
6  GROUP ieee8021AsV3AcceptableTimeTransmitterPortDSGroup
7  DESCRIPTION
8      "Implementation of this group is optional."
9
10 GROUP ieee8021AsV3ExternalPortConfigurationPortDSGroup
11 DESCRIPTION
12     "Implementation of this group is optional."
13
14 GROUP ieee8021AsV3AsymMeasurementModeDSGroup
15 DESCRIPTION
16     "Implementation of this group is optional."
17
18 GROUP ieee8021AsV3CommonServicesPortDSGroup
19 DESCRIPTION
20     "Implementation of this group is optional."
21
22 GROUP ieee8021AsV3CommonMeanLinkDelayServiceDefaultDSGroup
23 DESCRIPTION
24     "Implementation of this group is optional."
25
26 GROUP ieee8021AsV3CommonMeanLinkDelayServiceLinkPortDSGroup
27 DESCRIPTION
28     "Implementation of this group is optional."
29
30 GROUP ieee8021AsV3CommonMeanLinkDelayServiceLinkPortStatDSGroup
31 DESCRIPTION
32     "Implementation of this group is optional."
33
34 GROUP ieee8021AsV3CommonMeanLinkDelayServiceAsymMeasurementModeDSGroup
35 DESCRIPTION
36     "Implementation of this group is optional."
37
38 ::= { ieee8021AsV3Compliances 1 }
39
40 END
41
```

1 16. Media-dependent layer specification for CSN

2 16.1 Overview

3 *Change the first paragraph of 16.1 as follows:*

4 Accurate synchronized time is distributed throughout a gPTP domain through time measurements between
5 adjacent PTP Relay Instances or PTP End Instances in a packet network. Time is communicated from the
6 root of the clock spanning tree (i.e., the Grandmaster PTP Instance) toward the leaves of the tree (i.e., from
7 leaf-facing “~~master~~timeTransmitter” ports to root-facing “~~slave~~timeReceiver” ports) through measurements
8 made across the links connecting the PTP Instances. While the semantics of time transfer are consistent
9 across the time-aware packet network, the method for communicating synchronized time from a
10 ~~master~~timeTransmitter port to its immediate downstream link partner varies depending on the type of link
11 interconnecting the two PTP Instances.

12 16.5 Synchronization messages

13 16.5.3 Synchronization message propagation on a CSN with network reference clock

14 16.5.3.3 CSN egress node

15 *Change the third paragraph of 16.5.3.3 as follows:*

16 The CSN egress port also modifies the Clock~~Slave~~TimeReceiverSync state machine (see 10.2.13) to get the
17 upstreamTxTime, meanLinkDelay, neighborRateRatio, and delayAsymmetry values from the respective
18 fields of the CSN TLV in the Follow_Up message (or Sync message in the one-step case) received from the
19 CSN ingress node.

20 16.6 Specific CSN requirements

21 16.6.2 MoCA-specific behavior

22 *Change the fourth paragraph of 16.6.2 as follows:*

23 The MoCA port whose PTP Port state is ~~MasterPort~~TimeTransmitterPort propagates the Sync and
24 Follow_Up messages (or only the Sync message in the one-step case) as described in 16.5.3. The CSN TLV
25 values of the Follow_Up message sent over the MoCA network are computed using the LocalClock, i.e., the
26 MoCA CTC.

27

1 Annex A

2 (normative)

3 Protocol Implementation Conformance Statement (PICS)

4 proforma⁶

5 *Change A.5 as follows:*

A.5 Major capabilities

Item	Feature	Status	References	Support
DOM0	Does the time-aware system support a PTP Instance with domain number 0, in accordance with the requirements of 8.1?	M	item a) of 5.4, 8.1	Yes []
DOMADD	Does the time-aware system support one or more PTP Instances with domain number in the range 1 to 127?	O	item f) of 5.4.2, 8.1	Yes [] No []
MINTA	Does the PTP Instance support at least one PTP Port with minimal requirements?	M	10.2.13, item c) of 5.4, A.7	Yes []
BT MC	Does the PTP Instance implement the best master timeTransmitter clock algorithm?	M	10.2.13, item f) of 5.4, 10.3, A.9	Yes []
SIG	Does the PTP Instance transmit Signaling messages?	O	10.2.13, item e) of 5.4.2, 10.6.4, A.8	Yes [] No []
GMCAP	Is the PTP Instance capable of acting as a Grandmaster PTP Instance?	O	10.2.13, item c) of 5.4.2, 10.1.3, A.10	Yes [] No []
BRDG	Does the PTP Instance act as a PTP Relay Instance on two or more PTP Ports?	O	item d) of 5.4.2, 5.4.3	Yes [] No []
MMSTR MI TT	Does the PTP Instance support media-independent master timeTransmitter functionality on at least one PTP Port?	GMCAP or BRDG:M	item b) of 5.4.2, A.11	Yes [] N/A []
MIPERF	Does the PTP Instance support the performance requirements?	M	10.2.13, item j) of 5.4, A.12	Yes []
EXT	Does the PTP Instance support external port configuration?	O	item g) of 5.4.2, A.21	Yes [] No []
MDFDPP	Does the PTP Instance support media-dependent full-duplex point-to-point functionality on one or more PTP Ports?	O.1	5.5, Clause 11, A.6, A.13	Yes [] No []
MDDOT11	Does the PTP Instance support media-dependent IEEE 802.11 link functionality on one or more PTP Ports?	O.1	5.6, Clause 12, A.6, A.14	Yes [] No []

⁶ Copyright release for PICS proformas: Users of this standard may freely reproduce the PICS proforma in this annex so that it can be used for its intended purpose and may further publish the completed PICS.

A.5 Major capabilities *(continued)*

Item	Feature	Status	References	Support
MDEPON	Does the PTP Instance support IEEE 802.3 Passive Optical Networking (EPON)?	O.1	5.7, Clause 13, A.6, A.15	Yes [] No []
MDGHN	Does the PTP Instance support media-dependent ITU-T G.hn functionality on one or more PTP Ports?	O.1	item b) of 5.8, 16.6.3, A.18	Yes [] No []
MDMOCA	Does the PTP Instance support media-dependent MoCA functionality on one or more PTP Ports?	O.1	item b) of 5.8, 16.6.2, A.17	Yes [] No []
MDCSN	Does the PTP Instance support media-dependent CSN functionality on one or more PTP Ports?	MDGHN or MDMOCA:M	5.8, Clause 16, A.6, A.16	Yes [] No []
MGT	Is management of the PTP Instance supported?	O	item j) of 5.4.2, Clause 14	Yes [] No []
RMGT	Is a remote management protocol supported?	MGT: O	item k) of 5.4.2, A.19	Yes [] No []
APPL	Does the PTP Instance support one or more of the application interfaces?	O	item i) of 5.4.2, Clause 9, A.20	Yes [] No []

1 Change A.7 as follows:

A.7 Minimal time-aware system

Item	Feature	Status	References	Support
MINTA-1	Do all PTP Instances of the device implement the functionality specified by the SiteSyncSync state machine in Figure 10-3 in compliance with the requirements of 10.2.7?	M	item g) of 5.4, 10.2.7	Yes []
MINTA-2	Do all PTP Instances of the device implement the functionality specified by the PortSyncSyncReceive state machine in Figure 10-4 on each PTP Port in compliance with the requirements of 10.2.8?	M	item d) of 5.4	Yes []
MINTA-3	Do all PTP Instances of the device implement the functionality specified by the ClockSlaveTimeReceiverSync state machine in Figure 10-9 in compliance with the requirements of 10.2.13?	M	10.2.13, item e) of 5.4	Yes []
MINTA-4	For all PTP Instances of the device, does the PTP Port sending a Signaling message that contains a message interval request TLV adjust its syncReceiptTimeoutTimeInterval of this PTP Instance in compliance with the requirements of 10.6.4.3.7 and Table 10-16?	SIG:M	10.6.4.3.7	Yes [] N/A []

A.7 Minimal time-aware system *(continued)*

Item	Feature	Status	References	Support
MINTA-5	Is the clockIdentity constructed in compliance with the requirements of 8.5.2.2?	M	8.5.2.2	Yes []
MINTA-6	Is the domain number for all transmitted messages in the range 0 through 127, in compliance with the requirements of 8.1?	M	8.1	Yes []
MINTA-7	Is the majorSdoId 0x1 and the minorSdoId 0x0 for all transmitted gPTP domain messages?	M	8.1	Yes []
MINTA-8	Is the domain number for at least one of the gPTP domains supported by the time-aware system, in compliance with the requirements of 8.1?	M	8.1	Yes []
MINTA-9	Is the IEEE 802.1AS time of domain 0 measured relative to the PTP epoch in compliance with the requirements of 8.2.2?	M	8.2.2	Yes []
MINTA-10	If path delay asymmetry is modeled by this PTP Instance does it comply with the requirements of 8.3?	O	8.3	Yes [] No []
MINTA-11	Do all derived data types that are transmitted in IEEE 802.1AS messages and headers comply with 6.4.4?	M	6.4.4	Yes []
MINTA-12	Is the granularity of the local clock 40 ns or better in compliance with the requirements of B.1.2?	M	B.1.2	Yes []
MINTA-13	Is the frequency of the local clock relative to TAI ± 100 ppm in compliance with the requirements of B.1.1?	M	B.1.1	Yes []
MINTA-14	Does the PTP Instance ignore non-propagating TLVs of Announce and Signaling messages that it cannot parse, and attempt to parse the next TLV, in compliance with the requirements of 10.6.1?	M	10.6.1	Yes []
MINTA-15	Does the PTP Instance support the state machines related to signaling gPTP capability?	M	item h) of 5.4, 10.4	Yes []
MINTA-16	For receive of all messages and for transmit of all messages except Announce and Signaling, does the PTP Instance support the message requirements?	M	item i) of 5.4.1, 10.5, 10.6, 10.7	Yes []
MINTA-17	Does the PTP Instance support the gPTP requirements specified in Clause 8, including the PTP Instance attributes?	M	item a) of 5.4, Clause 8, 8.6.2	Yes []

A.7 Minimal time-aware system (*continued*)

Item	Feature	Status	References	Support
MINTA-18	Does the PTP Instance support the requirements for time-synchronization state machines?	M	item b) of 5.4	Yes []
MINTA-19	Does the PTP Instance implement the path trace TLV (i.e., process this TLV when received in an Announce message, and attach this TLV to a transmitted Announce message unless the TLV would cause the maximum frame size to be exceeded)?	M	10.3.11, 10.3.13, 10.3.14, 10.3.16	Yes []
MINTA-20	Does the PTP Instance forward TLVs as required?	M	10.6.1	Yes []

1

2 Change A.9 as follows:

A.9 Best ~~master~~timeTransmitter clock

Item	Feature	Status	References	Support
BT <u>MC</u> -1	Does the PTP Instance implement the functionality specified by the PortAnnounceReceive state machine in Figure 10-13 on each PTP Port in compliance with the requirements of 10.3.11?	M	10.3.11	Yes []
BT <u>MC</u> -2	Does the PTP Instance implement the functionality specified by the PortAnnounceInformation state machine in Figure 10-14 on each PTP Port in compliance with the requirements of 10.3.12?	M	10.3.12	Yes []
BT <u>MC</u> -3	Does the PTP Instance implement the functionality specified by the PortStateSelection state machine in Figure 10-15 on each PTP Port in compliance with the requirements of 10.3.13? NOTE—There is one instance of the PortStateSelection state machine for the PTP Instance, for each gPTP domain. Some of the PortStateSelection state machine computations are performed for each PTP Port, and some of the computations are performed for the PTP Instance as a whole (and all the computations are performed for each gPTP domain).	M	10.3.13	Yes []

A.9 Best ~~master~~timeTransmitter clock (continued)

Item	Feature	Status	References	Support
BT M C-4	If the value of clockA's SystemIdentity is less than that of clockB, is clockA selected as Grandmaster PTP Instance in compliance with the requirements of 10.3.2?	M	10.3.2	Yes []
BT M C-5	Does the value of priority1 comply with the requirements of 8.6.2.1?	M	8.6.2.1	Yes []
BT M C-6	Does the value of clockClass comply with the requirements of 8.6.2.2?	M	8.6.2.2	Yes []
BT M C-7	Does the value of priority2 comply with the requirements of 8.6.2.5?	M	8.6.2.5	Yes []
BT M C-8	Does the value of clockAccuracy comply with requirements of 8.6.2.3?	M	8.6.2.3	Yes []
BT M C-9	Does the value of offsetScaledVariance comply with the requirements of 8.6.2.4?	M	8.6.2.4	Yes []
BT M C-10	Does the value of timeSource comply with requirements of 8.6.2.7 and Table 8-2?	M	8.6.2.7	Yes []
BT M C-11	Is the PTP Port number equal to 1 in compliance with the requirements of 8.5.2.3?	~BRDG:M	8.5.2.3	Yes [] N/A []
BT M C-12	Are the PTP Ports numbered 1 through N for each of N PTP Ports in compliance with the requirements of 8.5.2.3?	M	8.5.2.3	Yes []
BT M C-13	Does the clockIdentity field comply with the requirements of 8.5.2.2?	M	8.5.2.2	Yes []
BT M C-14	When no grandmaster-capable PTP Instance is available does the behavior of the PTP Instance comply with the requirements of 10.2.13.2, i.e., the clock Slave <u>TimeReceiver</u> Time should be provided by the local clock?	M	10.2.13.2	Yes []
BT M C-15	Does the value of announceReceiptTimeout comply with the requirements of 10.7.3.2?	M	10.7.3.2	Yes []
BT M C-16	Does the SlavePort <u>TimeReceiverPort</u> remove the PTP Port from the BT M C selection after announceReceiptTimeout expires in compliance with the requirements of 10.7.3.2?	M	10.7.3.2	Yes []
BT M C-17	Does the value of syncReceiptTimeout comply with the requirements of 10.7.3.1?	M	10.7.3.1	Yes []
BT M C-18	Does the SlavePort <u>TimeReceiverPort</u> remove the PTP Port from the BT M C selection after syncReceiptTimeout expires in compliance with 10.7.3.1?	M	10.7.3.1	Yes []

A.9 Best ~~master~~timeTransmitter clock (continued)

Item	Feature	Status	References	Support
BTMC -19	Does the PTP Port sending a message interval request Signaling message adjust its announceReceiptTimeoutTimeInterval in compliance with the requirements of 10.6.4.3.8 and Table 10-17?	SIG:M	10.6.4.3.8	Yes []
BTMC -20	If the PTP Instance implements the ClockSourceTime interface, does the value of lastGmPhaseChange comply with the requirements of 9.2.2 and 6.4.3.3?	O	9.2.2	Yes [] No []
BTMC -21	Does the transmitted timing information comply with the requirements of 10.3.1, including specifications for externalPortConfigurationEnabled value of false?	GMCAP:M	10.3.1	Yes [] N/A []
BTMC -22	Does the PTP Instance implement BMCABTCA requirements that are not listed in the preceding BTMC rows?	M	10.3.2, 10.3.3 10.3.4, 10.3.5, 10.3.6, 10.3.8, 10.3.10	Yes []

1 :

2

3 Change A.10 as follows:

A.10 Grandmaster-capable PTP Instance

Item	Feature	Status	References	Support
	If GMCAP not supported, mark N/A.			N/A []
GMCAP-1	Does the PTP Instance implement the functionality specified by the <u>ClockTimeTransmitterSyncSend</u> state machine in compliance with the requirements of 10.2.9 and Figure 10-5?	GMCAP:M	10.2.9	Yes []
GMCAP-2	Does the PTP Instance implement the functionality specified by the <u>ClockTimeTransmitterSyncOffset</u> state machine in compliance with the requirements of 10.2.10 and Figure 10-6?	GMCAP:M	10.2.10	Yes []
GMCAP-3	Does the device implement the functionality specified by the <u>ClockTimeTransmitterSyncReceive</u> state machine in compliance with the requirements of 10.2.11 and Figure 10-7?	GMCAP:M	10.2.11	Yes []

1 *Change A.11 as follows:*

A.11 Media-independent ~~master~~timeTransmitter

Item	Feature	Status	References	Support
	If MIMSTR MITT not supported, mark N/A.			N/A []
MIMSTR MITT-1	Does the PTP Instance implement the functionality of the AnnounceIntervalSetting state machine in compliance with the requirements of 10.3.17 and Figure 10-19 on each PTP Port?	MIMSTR MITT:M	10.3.17	Yes []
MIMSTR MITT-2	Does the PTP Instance implement the functionality of the PortSyncSyncSend state machine in compliance with the requirements of 10.2.9 and Figure 10-8 on each PTP Port?	MIMSTR MITT:M	10.2.9	Yes []
MIMSTR MITT-3	Does the PTP Instance implement the functionality of the PortAnnounceTransmit state machine in compliance with the requirements of 10.3.16 and Figure 10-18 on each PTP Port?	MIMSTR MITT:M	10.3.16	Yes []
MIMSTR MITT-4	Does the destination MAC address of all Announce messages equal 01:80:C2:00:00:0E?	MIMSTR MITT:M	10.5.3	Yes []
MIMSTR MITT-5	Does the EtherType of all Announce messages equal 88-F7?	MIMSTR MITT:M	10.5.4	Yes []
MIMSTR MITT-6	Do the sequence numbers of Announce messages comply with the requirements of 10.5.7?	MIMSTR MITT:M	10.5.7	Yes []
MIMSTR MITT-7	Does the Announce message header comply with 10.6.2?	MIMSTR MITT:M	10.6.2	Yes []
MIMSTR MITT-8	Does the Announce message body comply with the requirements in 10.6.3.1 and Table 10-11?	MIMSTR MITT:M	10.6.3.1	Yes []
MIMSTR MITT-9	Are all Announce message reserved fields equal to 0?	MIMSTR MITT:M	10.6.1	Yes []
MIMSTR MITT-10	If it is not otherwise specified, is the logAnnounceInterval equal to zero or within the allowed range?	MIMSTR MITT:M	10.7.2.1	Yes []
MIMSTR MITT-11	Does the value of currentUtcOffset comply with the requirements of 8.2.3?	MIMSTR MITT:M	8.2.3	Yes []
MIMSTR MITT-12	Do the values of the leap59, leap61, and currentUtcOffsetValid flags comply with the requirements of 10.3.8?	MIMSTR MITT:M	10.3.8	Yes []

A.11 Media-independent ~~master~~timeTransmitter (continued)

Item	Feature	Status	References	Support
MIMSTR MI TT-13	Does this PTP Instance ensure that messages that traverse it or originate from it are not transmitted with VLAN tags in compliance with the requirements of 11.3.3?	MIMSTR MI TT:M	11.3.3	Yes []
MIMSTR MI TT-14	Is the computation of cumulative rateRatio in accordance with 10.2.8.3?	MIMSTR MI TT:M	10.2.8.3	Yes [] N/A []
MIMSTR MI TT-15	For transmit of the Announce message, does the PTP Instance support the message requirements?	MIMSTR MI TT:M	10.5, 10.6, 10.7	Yes []

1

2 Change A.13 as follows:

A.13 Media-dependent, full-duplex point-to-point link

Item	Feature	Status	References	Support
MDFDPP-1	Does this PTP Port implement the functionality of the MDSyncReceiveSM state machine in compliance with the requirements of 11.2.14 and Figure 11-6?	MDFDPP:M	11.2.14	Yes []
MDFDPP-2	Does this PTP Port implement the functionality of the MDSyncSendSM state machine in compliance with the requirements of 11.2.15 and Figure 11-7?	MIMSTR MIT T and MDFDPP:M	11.2.15	Yes []
MDFDPP-3	Does this port implement the functionality of the MDPdelayRequest state machine in compliance with the requirements of 11.2.19 and Figure 11-9?	MDFDPP:M	11.2.19	Yes []
MDFDPP-4	Does this port implement the functionality of the MDPdelayResponse state machine in compliance with the requirements of 11.2.20 and Figure 11-10?	MDFDPP:M	11.2.20	Yes []
MDFDPP-5	Does this PTP Port implement the functionality of the SyncIntervalSetting state machine in compliance with the requirements of 10.3.18 and Figure 10-20?	MDFDPP:M	10.3.18, item c) of 5.5, 10.3.18	Yes []
MDFDPP-6	Does this port implement the functionality of the LinkDelayIntervalSetting state machine in compliance with the requirements of 11.2.21 and Figure 11-11?	MDFDPP:M	11.2.21	Yes []
MDFDPP-7	Does this PTP Port timestamp Sync messages on ingress with respect to the LocalClock in compliance with 11.3.2.1 and 11.3.9?	MDFDPP:M	11.3.2.1	Yes []

A.13 Media-dependent, full-duplex point-to-point link *(continued)*

Item	Feature	Status	References	Support
MDFDPP-8	Does this PTP Port timestamp Sync messages on egress with respect to the LocalClock in compliance with the requirements of 11.3.2.1 and 11.3.9?	MMSTR MIT T and MDFDPP:M	11.3.2.1	Yes []
MDFDPP-9	Does this port timestamp Pdelay_Req messages on ingress and egress with respect to the LocalClock in compliance with the requirements of 11.3.2.1 and 11.3.9?	MDFDPP:M	11.3.2.1	Yes []
MDFDPP-10	Does this port timestamp Pdelay_Resp messages on ingress and egress with respect to the LocalClock in compliance with the requirements of 11.3.2.1 and 11.3.9?	MDFDPP:M	11.3.2.1	Yes []
MDFDPP-11	Are all IEEE 802.1AS messages on this port sent without a Q-tag in compliance with the requirements of 11.3.3?	MDFDPP:M	11.3.3	Yes []
MDFDPP-12	Do all media-dependent messages transmitted on this port use a destination MAC address taken from Table 11-3 in compliance with the requirements of 11.3.4 [01-80-C2-00-00-0E]?	MDFDPP:M	11.3.4	Yes []
MDFDPP-13	Do all media-dependent messages transmitted on this port use a source MAC address that is assigned to that port in compliance with the requirements of 11.3.4?	MDFDPP:M	11.3.4	Yes []
MDFDPP-14	Do all media-dependent message transmitted on this port us an EtherType specified in Table 11-4 [88-F7]?	MDFDPP:M	11.3.5	Yes []
MDFDPP-15	Does the header of all the media-dependent messages on this port comply with the requirements of 11.4.2 and Table 10-7?	MDFDPP:M	11.4.2	Yes [] N/A []
MDFDPP-16	Does the body of Sync messages sent on this PTP Port comply with the requirements of 11.4.3, Table 11-8, and Table 11-9?	MDFDPP:M	11.4.3	Yes []
MDFDPP-17	Does the body of Follow_Up messages sent on this PTP Port comply with the requirements of 11.4.4, 6.4.3.3 (lastGmPhaseChange), and Table 11-10?	MDFDPP:M	11.4.4, 6.4.3.3	Yes []
MDFDPP-18	Does the body of Pdelay_Req messages sent on this port comply with the requirements of 11.4.5 and Table 11-12?	MDFDPP:M	11.4.5	Yes []
MDFDPP-19	Does the body of Pdelay_Resp messages sent on this port comply with the requirements of 11.4.6 and Table 11-13?	MDFDPP:M	11.4.6	Yes []
MDFDPP-20	Does the body of Pdelay_Resp_Follow_Up messages sent on this port comply with the requirements of 11.4.7 and Table 11-14?	MDFDPP:M	11.4.7	Yes []

A.13 Media-dependent, full-duplex point-to-point link *(continued)*

Item	Feature	Status	References	Support
MDFDPP-21	Are all reserved fields in media-dependent messages sent on this port set to 0 in compliance with the requirements of 11.4.1?	MDFDPP:M	11.4.1	Yes []
MDFDPP-22	Do the Sync message sequence numbers comply with the requirements of 11.3.8?	MIMSTR MIT T and MDFDPP:M	11.3.8	Yes [] N/A []
MDFDPP-23	Do the Pdelay_Req message sequence numbers comply with the requirements of 11.3.8?	MDFDPP:M	11.3.8	Yes []
MDFDPP-24	Does the Pdelay mean request transmission interval comply with the requirements of 11.5.2.2?	MDFDPP:M	11.5.2.2	Yes []
MDFDPP-25	Does the Sync mean transmission interval comply with the requirements of 11.5.2.3?	MDFDPP:M	11.5.2.3	Yes []
MDFDPP-26	Does the full-duplex point-to-point media-dependent layer set the asCapable global variable in the media-independent PortSync entity in compliance with the requirements of 11.2.2?	MDFDPP:M	11.2.2	Yes []
MDFDPP-27	Does the device's use of flow control comply with the requirements of 11.2.3 and 11.2.4?	MDFDPP:M	11.2.3, 11.2.4	Yes []
MDFDPP-28	Does the PTP Instance or CMLDS consider the PTP Port or Link Port, respectively, to not be exchanging Pdelay messages when a valid response is not received in compliance with the requirements of 11.5.3?	MDFDPP:M	11.5.3	Yes []
MDFDPP-29	Does the PTP Instance ignore TLVs, of PTP messages, that it cannot parse and attempt to parse the next TLV, in compliance with the requirements of 11.4.1?	MDFDPP:M	11.4.1	Yes []
MDFDPP-30	Does the time-aware system initialize meanLinkDelayThresh as specified in 11.2.2?	MDFDPP:M	11.2.2	Yes []
MDFDPP-31	Does this port of the time-aware system support asymmetry measurement mode (see Annex G for informative description)?	MDFDPP:O	14.13, 14.18, 10.2.5, 10.2.8, 10.3.12, 10.3.13, 10.3.15, 10.3.16, 11.2.14, 11.2.15, 11.2.20	Yes [] No []
MDFDPP-32	Does this PTP Port support one-step receive?	MDFDPP:O	11.2.14	Yes [] No []
MDFDPP-33	Does this PTP Port support one-step transmit?	MDFDPP:O	11.2.15	Yes [] No []

A.13 Media-dependent, full-duplex point-to-point link *(continued)*

Item	Feature	Status	References	Support
MDFDPP-34	Does this PTP Port implement the functionality of the OneStepTxOperSetting state machine in compliance with the requirements of 11.4, 11.2.16, and Figure 11-8?	MDFDPP:O	11.4, 11.2.16	Yes [] No []
MDFDPP-35	Does this port support propagation delay averaging?	MDFDPP:O	11.2.19.3.4	Yes [] No []
MDFDPP-36	If the time-aware system implements more than one domain, does the time-aware system provide CMLDS?	MDFDPP:M	11.2.17.1	Yes []
MDFDPP-37	If the time-aware system implements only one domain, does the time-aware system provide CMLDS?	MDFDPP:O	11.2.17.2	Yes [] No []

1 *Change A.14 as follows:*

A.14 Media-dependent IEEE 802.11 link

Item	Feature	Status	References	Support
MDDOT11-1	Does the IEEE 802.11 MAC implement the master timeTransmitter port functionality in compliance with the requirements of 12.5.1?	MDDOT11 and MMSTR MITT: M	item d) of 5.6, 12.5.1	Yes []
MDDOT11-2	Does the IEEE 802.11 MAC implement the slave timeReceiver port functionality in compliance with the requirements of 12.5.2?	MDDOT11:M	item a), item b), and item d) of 5.6, 12.5.2	Yes []
MDDOT11-3	Does the IEEE 802.11 MAC determine the value of asCapable in compliance with the requirements of 12.4?	MDDOT11:M	12.4	Yes []
MDDOT11-4	Does the IEEE 802.11 MAC determine the value of mean time interval between synchronization messages in compliance with the requirements of 12.8?	MDDOT11 and MMSTR MITT: M	12.8	Yes []
MDDOT11-5	Does the IEEE 802.11 MAC support the use of the VendorSpecific information element of 12.7 to carry end-to-end link-independent timing information?	MDDOT11:M	12.7	Yes []
MDDOT11-6	Does the IEEE 802.11 MAC implement Fine Timing Measurement as a master timeTransmitter port?	MDDOT11-1:O	item c) and item e) of 5.6, 12.5.1	Yes [] No []
MDDOT11-7	Does the IEEE 802.11 MAC implement Fine Timing Measurement as a slave timeReceiver port?	MDDOT11-2:O	item c) and item e) of 5.6, 12.5.2	Yes [] No []

1 **Change A.15 as follows:**

A.15 Media-dependent IEEE 802.3 EPON link

Item	Feature	Status	References	Support
MDEPON-1	Does the TIMESYNC message format comply with the requirements of 13.3 and Table 13-1?	MDEPON:M	13.3	Yes []
MDEPON-2	Does the PTP Instance implement the functionality specified by the requester state machine in compliance with the requirements of 13.8.1 and Figure 13-3?	MDEPON and MIMSTR <u>MIT</u> T:M	13.8.1.4	Yes []
MDEPON-3	Does the PTP Instance implement the functionality specified by the responder state machine in compliance with the requirements of 13.8.2 and Figure 13-4?	MDEPON:M	13.8.2.4	Yes []
MDEPON-4	Does the TIMESYNC message transmission interval comply with the requirements of 13.9.1 and 13.9.2?	MDEPON:M	13.9.1, 13.9.2	Yes []
MDEPON-5	Does the implementation of best master <u>time</u> Transmitter selection comply with the requirements of 13.1.3?	MDEPON:M	13.1.3	Yes []
MDEPON-6	Does the determination of the value of asCapable comply with the requirements of 13.4?	MDEPON:M	13.4	Yes []

2 **Change A.16 as follows:**

A.16 Media-dependent CSN link

Item	Feature	Status	References	Support
MDCSN-1	Does the PTP Instance implement the functionality of the MDSyncSendSM state machine in compliance with 11.2.15?	MDCSN and MIMSTR <u>MIT</u> T:M	11.2.15	Yes []
MDCSN-2	Does the PTP Instance implement the functionality of the MDSyncReceiveSM state machine in compliance with 11.2.14?	MDCSN:M	11.2.14	Yes []
MDCSN-3	Does the PTP Instance calculate path delay in compliance with the requirement of 16.4?	MDCSN:M	16.4.1, 16.4.2, 16.4.3	Yes []
MDCSN-4	Does the PTP Instance propagate synchronized time in compliance with the requirements of 16.5?	MDCSN:M	16.5.2, 16.5.3	Yes []
MDCSN-5	Does the PTP Instance act as Grandmaster PTP Instance in compliance with the requirements of 16.7?	GMCAP and MDCSN:M	16.7	Yes []
MDCSN-6	Does the PTP Instance comply with the performance requirements of 16.8?	GMCAP and MDCSN:M	16.8	Yes []

1 Annex F

2 (informative)

3 PTP profile included in this standard

4 F.4 PTP options

5 *Change F.4 a), b), and k) as follows:*

- 6 a) The ~~BMCA~~BTCA of this standard is the default ~~BMCA~~BTCA according to the specifications of 9.3
7 of IEEE Std 1588-2019.
- 8 b) The following options of 17.7 of IEEE Std 1588-2019 are invoked:
- 9 1) The FAULTY state is not used.
- 10 2) The UNCALIBRATED state is not used.
- 11 3) The LISTENING state is not used
- 12 4) The PRE_ ~~MASTER~~TIME TRANSMITTER state, and
13 PRE_ ~~MASTER~~TIME TRANSMITTER qualification are not used.
- 14 5) The foreign ~~master~~timeTransmitter feature is not used.
- 15 k) The acceptable ~~master~~timeTransmitter table feature of IEEE Std 1588-2019 is used with IEEE 802.3
16 EPON links to ensure that the OLT is ~~master~~timeTransmitter and ONUs are ~~slave~~timeReceivers.

17

1 Annex G

2 (informative)

3 The asymmetry compensation measurement procedure based on 4 line-swapping

5 G.2 Pre-conditions for measurement

6 *Change G.2 a) as follows:*

- 7 a) The measurement environment, including the testing nodes (i.e., the time-aware systems at the
8 endpoint of the link whose asymmetry is being compensated) and related nodes (i.e., nodes in the
9 paths between the testing nodes and the Grandmaster PTP Instance), should enable gPTP and the
10 ~~BMCA~~BTCA so that the test can be made for each link without changing the configuration.

11 G.3 Measurement procedure

12 *Replace Figure G-1 with the following figure:*

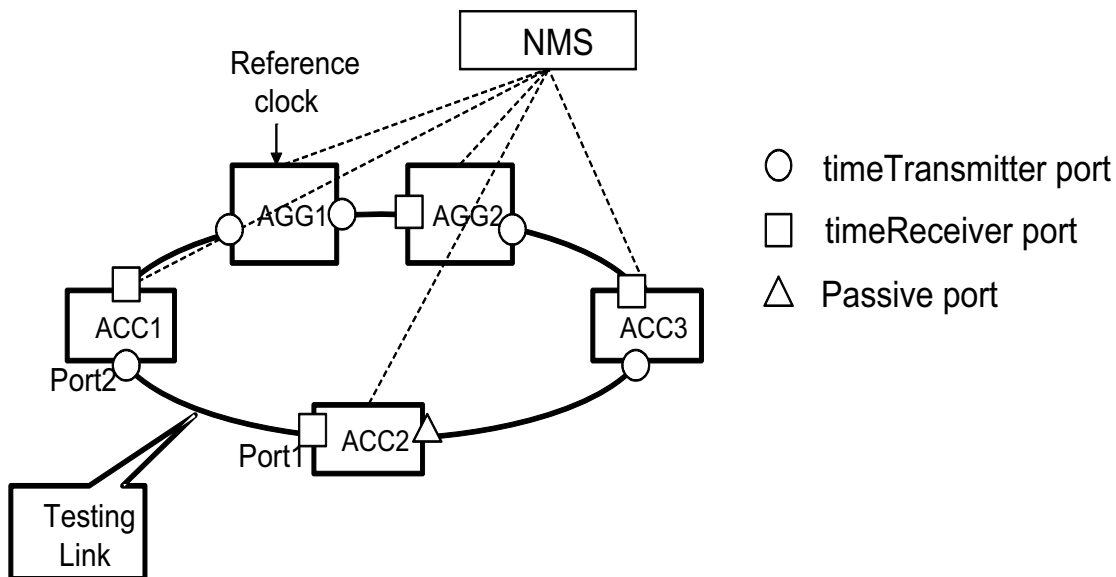


Figure G-1—Asymmetry compensation measurement procedure

13 *Change G.3 a) as follows:*

- 1 a) The NMS puts Port1 of ACC2 and Port2 of ACC1 into asymmetry measurement mode through the
2 MIB (i.e., by setting the managed object asymmetryMeasurementMode for each port to TRUE).
3 These two ports will not affect the PTP calculations of either node when the ports are in asymmetry
4 measurement mode. If synchronization flowed over the link connecting these ports prior to their
5 being put into asymmetry measurement mode, the ~~BMC~~BTCA will result in a reconfiguration of
6 the synchronization spanning tree so that both ACC1 and ACC2 remain synchronized.

7