

Table 68—SLAVE_EVENT_MONITORING management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
reserved	reserved	reserved	reserved	reserved	TLV2	TLV1	TLV0	1	0
reserved								1	1
EPRSTT								1	2
EPRSCT								1	3
EPTETT								1	4
TET								1	5

15.5.3.2.5.1 TLV0 (Boolean)

The value of TLV0 shall be the value of index 0 of slaveMonitoringPortDS.slaveEventMonitoringEnable (SLAVE_RX_SYNC_TIMING_DATA generation).

15.5.3.2.5.2 TLV1 (Boolean)

The value of TLV1 shall be the value of index 1 of slaveMonitoringPortDS.slaveEventMonitoringEnable (SLAVE_RX_SYNC_COMPUTED_DATA generation).

15.5.3.2.5.3 TLV2 (Boolean)

The value of TLV2 shall be the value of index 2 of slaveMonitoringPortDS.slaveEventMonitoringEnable (SLAVE_TX_EVENT_TIMESTAMPS generation).

15.5.3.2.5.4 EPRSTT (UInteger8)

The value of EPRSTT shall be the value of slaveMonitoringPortDS.slaveEventMonitoringEventsPerRx SyncTimingTLV.

15.5.3.2.5.5 EPRSCT (UInteger8)

The value of EPRSCT shall be the value of slaveMonitoringPortDS.slaveEventMonitoringEventsPerRx SyncComputedTLV.

15.5.3.2.5.6 EPTETT (UInteger8)

The value of EPTETT shall be the value of slaveMonitoringPortDS.slaveEventMonitoringEventsPerTx EventTimestampsTLV.

15.5.3.2.5.7 TET (UInteger8)

The value of TET shall be the value of slaveMonitoringPortDS.slaveEventMonitoringTxEventType.

15.5.3.3 TLV data fields applicable to the defaultDS data set of Ordinary Clocks and Boundary Clocks

15.5.3.3.1 DEFAULT_DATA_SET

The data field shall be as specified in Table 69.

Table 69—DEFAULT_DATA_SET management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
0	0	0	0	0	0	SO	TSC	1	0
reserved								1	1
numberPorts								2	2
priority1								1	4
clockQuality								4	5
priority2								1	9
clockIdentity								8	10
domainNumber								1	18
reserved								1	19

15.5.3.3.1.1 TSC (Boolean)

The value of TSC shall be the value of defaultDS.twoStepFlag.

15.5.3.3.1.2 SO (Boolean)

The value of SO shall be the value of defaultDS.slaveOnly.

15.5.3.3.1.3 numberPorts (UInteger16)

The value of numberPorts shall be the value of the defaultDS.numberPorts.

15.5.3.3.1.4 priority1 (UInteger8)

The value of priority1 shall be the value of defaultDS.priority1.

15.5.3.3.1.5 clockQuality (ClockQuality)

The value of clockQuality shall be the value of defaultDS.clockQuality.

15.5.3.3.1.6 priority2 (UInteger8)

The value of priority2 shall be the value of defaultDS.priority2.

15.5.3.3.1.7 clockIdentity (ClockIdentity)

The value of clockIdentity shall be the value of defaultDS.clockIdentity.

15.5.3.3.1.8 domainNumber (UInteger8)

The value of domainNumber shall be the value of defaultDS.domainNumber.

15.5.3.3.2 PRIORITY1

The data field shall be as specified in Table 70.

Table 70—PRIORITY1 management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
priority1								1	0
reserved								1	1

15.5.3.3.2.1 priority1 (UInteger8)

The value of priority1 shall be the value of defaultDS.priority1.

15.5.3.3.3 PRIORITY2

The data field shall be as specified in Table 71.

Table 71—PRIORITY2 management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
priority2								1	0
reserved								1	1

15.5.3.3.3.1 priority2 (UInteger8)

The value of priority2 shall be the value of defaultDS.priority2.

15.5.3.3.4 DOMAIN

The data field shall be as specified in Table 72.

Table 72—DOMAIN management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
domainNumber								1	0
reserved								1	1

15.5.3.3.4.1 domainNumber (UInteger8)

The value of domainNumber shall be the value of defaultDS.domainNumber.

15.5.3.3.5 SLAVE_ONLY

The data field shall be as specified in Table 73.

Table 73—SLAVE_ONLY management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
0	0	0	0	0	0	0	SO	1	0
reserved								1	1

15.5.3.3.5.1 SO (Boolean)

The value of SO shall be the value of defaultDS.slaveOnly.

15.5.3.3.6 PATH_TRACE_LIST PTP management message

This PTP management message TLV may be used to retrieve the current pathTraceDS.list member (see 16.2.2.2.1) from an Ordinary Clock or Boundary Clock. The data field shall be as specified in Table 74.

Table 74—PATH_TRACE_LIST management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
pathSequence								8N	0

15.5.3.3.6.1 pathSequence (ClockIdentity[N])

The value of pathSequence is the list of PTP Instance clockIdentity values in the pathTraceDS.list member (see 16.2.2.2.1).

15.5.3.3.7 PATH_TRACE_ENABLE PTP management message

This PTP management message may be used to enable or disable the path trace mechanism. The PATH_TRACE_ENABLE TLV data field shall be as specified in Table 75.

Table 75—PATH_TRACE_ENABLE management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
0	0	0	0	0	0	0	EN	1	0
reserved								1	1

15.5.3.3.7.1 EN (Boolean)

The value of EN provides access to the data set member pathTraceDS.enable (see 16.2.2.3.1).

15.5.3.3.8 ALTERNATE_TIME_OFFSET_ENABLE PTP management message

The ALTERNATE_TIME_OFFSET_ENABLE management TLV allows the indicated alternate timescale to be enabled or disabled in a PTP Instance.

The ALTERNATE_TIME_OFFSET_ENABLE management TLV data format shall be as specified in Table 76.

Table 76—ALTERNATE_TIME_OFFSET_ENABLE management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
keyField								1	0
0	0	0	0	0	0	0	EN	1	1

15.5.3.3.8.1 keyField (UInteger8)

The value of keyField shall indicate the alternate timescale enabled or disabled by this TLV entity (see 16.3.4.4.1.1). A value of FF₁₆ shall indicate that all alternate timescales maintained by the Grandmaster PTP Instance are to be enabled or disabled. If the value is not associated with a maintained alternate timescale, the contents shall be disregarded and a MANAGEMENT_ERROR_STATUS TLV shall be returned.

15.5.3.3.8.2 EN (Boolean)

The value of EN provides access to the data set member alternateTimescaleOffsetsDS.list[keyField].enable (see 16.3.4.4.1.2).

15.5.3.3.9 ALTERNATE_TIME_OFFSET_NAME TLV

The ALTERNATE_TIME_OFFSET_NAME management TLV allows a PTP Instance's alternate timescale displayName to be configured.

The ALTERNATE_TIME_OFFSET_NAME management TLV data format shall be as specified in Table 77.

Table 77—ALTERNATE_TIME_OFFSET_NAME management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
keyField								1	0
displayName								L	1
pad								M	1+L

15.5.3.3.9.1 keyField (UInteger8)

The value of keyField shall indicate the alternate timescale updated or queried by this TLV entity (see 16.3.4.4.1.1).

If the value is FF₁₆ or is not associated with any maintained alternate timescale, the TLV shall be ignored and a MANAGEMENT_ERROR_STATUS TLV returned.

15.5.3.3.9.2 displayName (PTPText)

The value of displayName provides access to the data set member alternateTimescaleOffsetsDS.list[keyField].displayName (see 16.3.4.4.1.6).

15.5.3.3.9.3 pad (Octet[M])

The pad field shall be an octet array of length M, where M is either 1 or 0. If M is 1, all bits in the octet shall be 0. The value of M shall be such that the requirements of 15.5.2.2 are met.

15.5.3.3.10 ALTERNATE_TIME_OFFSET_MAX_KEY management TLV

The ALTERNATE_TIME_OFFSET_MAX_KEY management TLV allows a PTP Management Node to determine the number of alternate timescales maintained.

The ALTERNATE_TIME_OFFSET_MAX_KEY management TLV data format shall be as specified in Table 78.

Table 78—ALTERNATE_TIME_OFFSET_MAX_KEY management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
maxKey								1	0
reserved								1	1

15.5.3.3.10.1 maxKey (UInteger8)

The value of maxKey provides access to the data set member alternateTimescaleOffsetsDS.maxKey (see 16.3.4.3.1).

15.5.3.3.11 ALTERNATE_TIME_OFFSET_PROPERTIES management TLV (optional)

The ALTERNATE_TIME_OFFSET_PROPERTIES management TLV allows a PTP Instance to be

configured with the timescale offset attributes for an alternate timescale.

The ALTERNATE_TIME_OFFSET_PROPERTIES management TLV data format shall be as specified in Table 79.

Table 79—ALTERNATE_TIME_OFFSET_PROPERTIES management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
keyField								1	0
currentOffset								4	1
jumpSeconds								4	5
timeOfNextJump								6	9
reserved								1	15

15.5.3.3.11.1 keyField (UInteger8)

The value of keyField shall indicate the alternate timescale updated or queried by this TLV entity (see 16.3.4.4.1.1).

If the value is FF₁₆ or is not associated with any maintained alternate timescale, the TLV shall be ignored and a MANAGEMENT_ERROR_STATUS TLV returned.

15.5.3.3.11.2 currentOffset (Integer32)

The value of currentOffset shall be the value of the alternateTimescaleOffsetsDS.list[keyField].currentOffset (see 16.3.4.4.1.3).

15.5.3.3.11.3 jumpSeconds (Integer32)

The value of jumpSeconds shall be the value of the alternateTimescaleOffsetDS.list[keyField].jumpSeconds (see 16.3.4.4.1.4).

15.5.3.3.11.4 timeOfNextJump (UInteger48)

The value of timeOfNextJump shall be the value of the alternateTimescaleOffsetsDS.list[keyField].timeOfNextJump (see 16.3.4.4.1.5).

15.5.3.3.12 Configuration of holdoverUpgradeDS

This PTP management message may be used to enable or disable the holdover upgrade mechanism (see 16.4). The HOLDOVER_UPGRADE_ENABLE TLV data field shall be as specified in Table 80.

Table 80—HOLDOVER_UPGRADE_ENABLE TLV management TLV data fields

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
0	0	0	0	0	0	0	EN	1	0
Reserved								1	1

15.5.3.3.12.1 EN (Boolean)

A value of EN of TRUE shall cause the value of holdoverUpgradeDS.enable (see 16.4.1.1) to be set to TRUE, thus, indicating that the holdover upgrade mechanism is operational. A value of EN of FALSE shall cause the value of defaultDS.holdoverUpgrade to be set to FALSE, thus, indicating that the holdover upgrade mechanism is not operational.

15.5.3.3.13 GRANDMASTER_CLUSTER_TABLE management TLV data field

This PTP message may be used for configuration of the grandmaster cluster mechanism (see 17.2). This TLV provides access to members of the grandmasterClusterDS (see 17.2.3).

The management TLV data field shall be as specified in Table 81.

Table 81—GRANDMASTER_CLUSTER_TABLE management TLV data field

Bits							Octets	TLV data offset
7	6	5	4	3	2	1		
logQueryInterval							1	0
actualTableSize							1	1
portAddress							L	2
pad							M	2+L

If the actualTableSize member of the GRANDMASTER_CLUSTER_TABLE TLV is nonzero and no port address of the receiving PTP Instance is contained in the list of portAddress of the TLV, the PTP management message shall be rejected and the grandmasterClusterDS shall not be updated. For this case, the managementErrorId shall be WRONG_VALUE.

If the portAddress array in the TLV cannot be fully stored, the grandmasterClusterDS shall not be altered and the PTP management message shall be rejected. For this case, the managementErrorId shall be WRONG_LENGTH if due to length mismatch, and GENERAL_ERROR for other failures.

Otherwise, upon receipt of a PTP management message with managementId of GRANDMASTER_CLUSTER_TABLE and action field value of SET, the PTP Instance shall replace the current portAddress members of the grandmasterClusterDS with the portAddress of the PTP management message. The member identifying the recipient PTP Instance shall not be entered into the grandmasterClusterDS. If any member fails to update, a MANAGEMENT_ERROR_STATUS TLV shall be returned with the managementErrorId GENERAL_ERROR.

15.5.3.3.13.1 logQueryInterval (Integer8)

The value of logQueryInterval shall be the value of grandmasterClusterDS.logQueryInterval.

15.5.3.3.13.2 actualTableSize (UInteger8)

The value of actualTableSize shall be the number of entries in the portAddress array.

NOTE—The maximum value of actualTableSize is not permitted to exceed the value of grandmasterClusterDS.maxTableSize (see 17.2.3.2.1).

15.5.3.3.13.3 portAddress (PortAddress[actualTableSize])

The value of portAddress shall be the value of the grandmasterClusterDS.portAddress array.

15.5.3.3.13.4 pad (Octet[M])

The pad field shall be an octet array of length M, where M is either 1 or 0. If M is 1, all bits in the octet shall be 0. The value of M shall be such that the requirements of 15.5.2.2 are met.

15.5.3.3.14 ACCEPTABLE_MASTER_TABLE management TLV data field

This PTP message may be used for configuration of the acceptable master table mechanism (see 17.5).

The ACCEPTABLE_MASTER_TABLE management TLV data field shall be as specified in Table 82.

If this TLV is received with an action value of SET, the update of actualTableSize and list shall be atomic. If either of these values fail to update, a MANAGEMENT_ERROR_STATUS TLV shall be returned.

Table 82—ACCEPTABLE_MASTER_TABLE management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
actualTableSize								2	0
list								L	2
pad								M	2+L

15.5.3.3.14.1 actualTableSize (Integer16)

The value of actualTableSize shall be the value of acceptableMasterTableDS.actualTableSize (see 17.5.3.4.1).

15.5.3.3.14.2 list(acceptableMaster[actualTableSize])

The value of list shall be the value of the acceptableMasterTableDS.list.

The data type of each list member is AcceptableMaster (see 17.5.3.2).

NOTE 1—The 2008 edition of this standard identified an acceptable master by its protocol address. The intent was that the source address carried in the transport layer PDU carrying an Announce message could be compared with the protocol address of each entry of the acceptable master table to see if the Announce message is from an acceptable PTP Port in the MASTER state. However, if the Announce message traverses a Transparent Clock (either end-to-end or peer-to-peer), the Transparent Clock will insert the protocol address of its transmitting PTP Port in the source address field when it transmits the Announce message. The reason this occurs is that PTP messages are transmitted from the PTP layer in a Transparent Clock, which is above the transport layer. When the Announce message is received by a downstream Boundary Clock or Ordinary Clock that has the acceptable master table configured and enabled, it cannot be determined if the Boundary Clock or Ordinary Clock PTP Port where the Announce information originated is a member of the acceptable master table, because the source address field of the transport layer PDU that contains the Announce message has been changed.

The 2008 edition of this standard specified that an acceptable master would be identified by protocol address. The identification of an acceptable master by protocol address is deprecated (see 4.2.8) in the current edition of this standard. New PTP Profiles that use the acceptable master table identify acceptable masters by portIdentity and use the AcceptableMaster structure as specified in 17.5.3.2.

NOTE 2—A new PTP Profile has a `profileName` (see 20.3.3) that is different from that of any existing PTP Profile of the same OUI or CID. For a new PTP Profile, the portion of the `profileIdentifier` prior to the `primaryVersion` and `revisionNumber` octets is different from that of any existing profile.

NOTE 3—If a PTP Profile specifies the use of the acceptable master table and permits the use of Transparent Clocks, then acceptable PTP Ports in the MASTER state can be identified by using the `portIdentities`. The transport protocol source address would not be adequate, as a Transparent Clock inserts the address of its transmitting PTP Port into the source address field of the transport protocol layer overhead.

NOTE 4—The only PTP message that carries the `AcceptableMaster` data type is a PTP management message that carries the `ACCEPTABLE_MASTER_TABLE` management TLV. Since the PTP Management Node can determine which `AcceptableMaster` is supported based on the `profileIdentifier`, backward compatibility can be provided for PTP management messages. The manner in which the acceptable master table is maintained in a PTP Instance is not visible externally. It is only necessary that a BC or OC for which `acceptableMasterPortDS.enabled` is `TRUE` be able to determine whether a received PTP message was sent by an acceptable PTP Port in the MASTER state. In practice, this means that an acceptable master table implementation that conforms with the 2008 edition of this standard will inter-operate with an implementation that conforms with the current edition of this standard if the network does not contain any Transparent Clocks (or if the PTP Profile does not allow Transparent Clocks). This also means that the acceptable master table feature of the current edition of this standard is backward compatible with the acceptable master table feature of the 2008 edition of this standard if the network does not contain any Transparent Clocks or the PTP Profile does not allow Transparent Clocks.

15.5.3.3.14.3 pad (Octet[M])

The `pad` field shall be an octet array of length `M`, where `M` is either 1 or 0. If `M` is 1, all bits in the octet shall be 0. The value of `M` shall be such that the requirements of 15.5.2.2 are met.

15.5.3.3.15 ACCEPTABLE_MASTER_MAX_TABLE_SIZE management TLV data field

This PTP message may be used for configuration of the acceptable master table mechanism (see 17.5).

The `ACCEPTABLE_MASTER_MAX_TABLE_SIZE` management TLV data field shall be as specified in Table 83.

Table 83—ACCEPTABLE_MASTER_MAX_TABLE_SIZE management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
maxTableSize								2	0

15.5.3.3.15.1 maxTableSize (UInteger16)

The value of `maxTableSize` shall be the value of `acceptableMasterTableDS.maxTableSize` (see 17.5.3.3.1).

15.5.3.4 TLV data fields applicable to the currentDS data set of Ordinary Clocks and Boundary Clocks

15.5.3.4.1 CURRENT_DATA_SET

The data field shall be as specified in Table 84.

Table 84—CURRENT_DATA_SET management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
stepsRemoved								2	0
offsetFromMaster								8	2
meanPathDelay								8	10

15.5.3.4.1.1 stepsRemoved (UInteger16)

The value of stepsRemoved shall be the value of currentDS.stepsRemoved.

15.5.3.4.1.2 offsetFromMaster (TimeInterval)

The value of offsetFromMaster shall be the value of currentDS.offsetFromMaster.

15.5.3.4.1.3 meanPathDelay (TimeInterval)

The value of meanPathDelay shall be the value of currentDS.meanDelay.

15.5.3.5 TLV data fields applicable to the parentDS data set of Ordinary Clocks and Boundary Clocks

15.5.3.5.1 PARENT_DATA_SET

The data field shall be as specified in Table 85.

Table 85—PARENT_DATA_SET management TLV data field

Bits								Octets	TLV data offset
7	6	5	4	3	2	1	0		
parentPortIdentity								10	0
0	0	0	0	0	0	0	PS	1	10
reserved								1	11
observedParentOffsetScaledLogVariance								2	12
observedParentClockPhaseChangeRate								4	14
grandmasterPriority1								1	18
grandmasterClockQuality								4	19
grandmasterPriority2								1	23
grandmasterIdentity								8	24

15.5.3.5.1.1 parentPortIdentity (PortIdentity)

The value of parentPortIdentity shall be the value of the parentDS.parentPortIdentity member of the data set.

15.5.3.5.1.2 PS (Boolean)

The value of PS shall be the value of the parentDS.parentStats member of the data set.