IEEE P802.1AS management object worksheet (for discussion purposes) Version 0.01, 2007-09-27

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Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
two_step_clock	Static	The value shall be TRUE if the clock is a two-step clock; otherwise the value shall be FALSE	8.2.1.2.1		N	N		AKB: Believe that this is fixed in 802.1AS, so we don't need a management object
clock_identity	Static	The value shall be the clock identity, see 7.6.2.1, of the local clock.	8.2.1.2.2		Y	?	Based on MAC address	AKB: I'd assume you would be able to allow overriding of the ID of the clock to other values not based on MAC address.
number_ports	Static (unless system can allow creation of additional PTP ports dynamically?)	The value shall be the number of PTP ports on the device. For an ordinary clock this shall be the value 1.	8.2.1.2.3		Y	N		
clock_quality: clockClass	Dynamic	The value is the clockClass member of the clock_quality member, see 5.3.7, and shall implement the clock class specifications of 7.6.2.4.	8.2.1.3.1.1		Y	N		
clock_quality: clockAccuracy	Dynamic	The value is the clockAccuracy member of the clock_quality member, see 5.3.7.	8.2.1.3.1.2					
clock_quality: offsetScaledLog Variance	Dynamic	The value is the offsetScaledLogVariance member of the clock_quality member, see 5.3.7.	8.2.1.3.1.3					
priority1	Configurable	The value is the priority1 attribute, see 7.6.2.2, of the local clock	8.2.1.4.1		Y	Y		

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
priority2	Configurable	The value is priority2 attribute, see 7.6.2.3, of the local clock	8.2.1.4.2		Y	Y		
domain_number	Configurable	The value is the domain attribute, see 7.1, of the local clock.	8.2.1.4.3		N	N		Domain number not in 802.1AS as all members are always in the same domain (i.e. multiple domains are not supported)
slave_only	Configurable	The value shall be TRUE if the clock is a slave-only clock, see 9.2.2. The value shall be FALSE if the clock is a non-slave-only clock, see 9.2.3.	8.2.1.4.4		Y	Y		

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
steps_removed	Dynamic	The value is the number of communication paths traversed between the local clock and the grandmaster clock.	8.2.2.1		?	N	N/A	Is this in 802.1AS?? Is it always 1??
offset_from_master	Dynamic	The value is an implementation specific representation of the current value of the time difference between a master and a slave as computed by the slave, see 11.2.	8.2.2.2		N	Y	N/A	
mean_path_delay	Dynamic	The value is an implementation specific representation of the current value of the mean propagation time between a master and slave clock as computed by the slave, see 11.2.	8.2.2.3		N	Y	N/A	

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
parent_port_identity	Dynamic	The value is the source port identity of the port on the master that issues the Sync messages used in synchronizing this clock	8.2.3.2		Y	N	From default data set	AKB: Believe that this is fixed in 802.1AS, so we don't need a management object
parent_stats	Dynamic	The value shall be TRUE if all of the following conditions are satisfied: □ The clock has a port in the SLAVE state. □ The clock has computed statistically valid estimates of the observed_parent_offset_scaled_log_variance and observed_parent_clock_phase_change_rate members.	8.2.3.3		N	N		AKB: Do not believe this is necessary for 802.1AS (i.e. as long as master is a better clock and running, I do not believe it is necessary to compute this by bridges and end stations). If nothing else, it certainly should not be a requirement and should be OK to always return FALSE.
observed_parent_offset_scaled_log_variance	Dynamic	The value shall be an	8.2.3.4		N	N		AKB: similar comment to above, do not believe that this should be required and has limited use in 802.1AS
observed_parent_clock_phase_change_rate	Dynamic	The value shall be an	8.2.3.5		N	N		
grandmaster_identity	Dynamic	The value shall be the clock identity, see 7.6.2.1, of the grandmaster clock.	8.2.3.6		Y	N	From default data set	

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
grandmaster_clock_ quality: clockClass	Dynamic	The value is the clockClass member of the clock_quality member of the grandmaster clock, see 5.3.7, and shall implement the clock class specifications of 7.6.2.4.	8.2.3.6		Y	N	From default data set	
grandmaster_clock_ quality: clockAccuracy	Dynamic	The value is the clockAccuracy member of the clock_quality member of the grandmaster clock, see 5.3.7.	8.2.3.6		Y	N	From default data set	
grandmaster_priority 1	Dynamic	The value is the priority1 attribute, see 7.6.2.2, of the grandmaster clock	8.2.3.7		Y	N	From default data set	
grandmaster_priority 2	Dynamic	The value is priority2 attribute, see 7.6.2.3, of the grandmaster clock	8.2.3.8		Y	N	From default data set	

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
current_utc_offset	Configurable?	In PTP systems whose epoch is the PTP epoch this value is the offset between TAI and UTC; otherwise the value has no meaning. The value shall be in units of seconds.	8.2.4.2		N	N		AKB: I don't think we need this for 802.1AS
current_utc_offset _valid	Configurable?	The value is TRUE if the current_utc_offset is known to be correct.	8.2.4.3		N	N		AKB: I'd assume you would be able to allow overriding of the ID of the clock to other values not based on MAC address.
leap_59	Dynamic	In PTP systems whose epoch is the PTP epoch, a TRUE value shall indicate that the last minute of the current UTC day will contain 59 seconds.	8.2.4.4		N	N		AKB: as we are not designing clocking systems, I'd assume 802.1AS doesn't shouldn't have to require to support this and if an 802.1AS slave sees a jump in time at Midnight UTC, it will just adjust its time accordingly
leap_61	Dynamic	In PTP systems whose epoch is the PTP epoch, a TRUE value shall indicate that the last minute of the current UTC day will contain 61 seconds.	8.2.4.5		N	N		AKB: as we are not designing clocking systems, I'd assume 802.1AS doesn't shouldn't have to require to support this and if an 802.1AS slave sees a jump in time at Midnight UTC, it will just adjust its time accordingly

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
time_traceable	Configurable or Dynamic?	The value is TRUE if the timescale and the value of current_utc_offset are traceable to a primary standard; otherwise the value shall be FALSE.	8.2.4.6		Y	?		AKB: Although absolute time of day is not needed for A/V synchronization, it would be useful by some applications to also be able to set their time of day clock (i.e. to avoid the flashing 12:00:00 VCR) so those devices don't also have to have an NTP stack or other means of getting time of day.
frequency_traceable	Configurable or Dynamic?	The value is TRUE if the frequency determining the timescale is traceable to a primary standard; otherwise the value shall be FALSE.	8.2.4.7		?	?		AKB: No opinion on this one.
ptp_timescale	Static or Configurable?	The value is TRUE if the clock timescale of the grandmaster clock, see 7.2.1, is PTP and FALSE otherwise.	8.2.4.8		N	N		AKB: Believe this is not necessary for 802.1AS as the only timescale allowed in PTP
time_source	Dynamic	The value is the source of time used by the grandmaster clock.	8.2.4.9		Y	N		

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
port_identity	Static (unless system can allow creation of additional PTP ports dynamically?)	The value shall be the PortIdentity attribute of the local port, see 7.5.2.	8.2.5.2.1		Y	N		
port_state	Dynamic	The value shall be the value of the current state of the protocol engine associated with this port, see 9.2, and shall be taken from the enumeration in Table 8.	8.2.5.3.1		Y	?		AKB: This is listed in IEEE 1588 as Dynamic instead of configurable. Wouldn't you want to make this so you could set this (or is there some other way this value is calculated based on other configurable values??)
log_min_mean_delay_req_interval	Dynamic	The value is the logarithm to the base 2 of the minimum mean Delay_Req interval, see 7.7.2.4. The initialization value is implementation specific consistent with 7.7.2.4.	8.2.5.3.2		Y	Y		

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
peer_mean_path_delay	Dynamic	If the value of the delay_mechanism member is P2P, the value shall be an estimate of the current one-way propagation delay on the link attached to this port computed using the peer delay mechanism, see 11.4. It is recommended that the data type be TimeInterval. If the value of the delay_mechanism member is E2E, this member's value shall be zero. The initialization value shall be zero.	8.2.5.3.3		Y	N		
log_mean_announce_interval	Configurable	The value shall be the logarithm to the base 2 of the of the mean Announce interval, see 7.7.2.2.	8.2.5.4.1		Y	Y		
announce_receipt_timeout	Configurable	The value shall be an integral multiple of Announce intervals, see 7.7.3.1.	8.2.5.4.2		Y	Y		
log_mean_sync_interval	Configurable	The value shall be the logarithm to the base 2 of the mean Sync interval for multicast messages, see 7.7.2.3.	8.2.5.4.3		Y	Y		

Name	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
delay_mechanism	Configurable	The value shall indicate the propagation delay measuring option used by the port in computing mean_path_delay. The value shall be taken from the enumeration in Table 9.	8.2.5.4.4		?	?		AKB: Is this a case where we only support peer delay (P2P) or is it an option in 802.1AS to support Delay request-response (E2E) or DISABLED (syntonize only, transparent clocks)?
log_min_mean_p delay_req_interval	Configurable	The value shall be the logarithm to the base 2 of the minimum mean Pdelay_Req interval, see 7.7.2.5.	8.2.5.4.5		Y	Y		
version_number	Configurable	The value shall indicate the PTP protocol version in use on the port.	8.2.5.4.6		Y	Y		AKB: Won't need this object for initial release of 802.1AS which only support v2 formatting, but there might be a 2.1, 3.0, etc. in the future, so you might as well define this now IMHO, but make it write operation optional if only one version of the protocol is supported.

Name (same/similar object in OC & BC if in bold italic)	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
clock_identity	Static	The value shall be the clock identity, see 7.6.2.1, of the local clock.	8.3.2.2.1		Y	?	Based on MAC address	AKB: I'd assume you would be able to allow overriding of the ID of the clock to other values not based on MAC address.
number_ports	Static	The value shall be the number of PTP ports on the device. For an ordinary clock this shall be the value 1.	8.3.2.2.2		Y	N		
delay_mechanism	Configurable	If the transparent clock is an end-to-end transparent clock, the value shall be E2E, see Table 9. If the transparent clock is a peer-to-peer transparent clock, the value shall be P2P.	8.3.2.2.3		Y	Y		AKB: In 802.1AS do we restrict what kind of delay mechanism you can use for TCs?
primary_domain	Configurable	The value shall be the domain number of the primary syntonization domain, see 10.1. The initialization value shall be 0. (similar to BC/OC object domain_number)	8.3.2.2.4		N	N		AKB: Not necessary for 802.1AS as only one domain is supported.

Name *(same/similar object in OC & BC if in bold italic)*	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
syntonized	Dynamic	The value shall be TRUE if the clock is syntonized to a master clock of the primary syntonization domain, see 10.1, and FALSE otherwise.	8.3.2.2.1		Y	N		
domain_syntonization	Dynamic	The value is an array of length 256 with elements numbered 0 through 255 corresponding to the range of domain numbers. The value of each element shall be TRUE if the device is syntonized to a master clock of the domain corresponding to the element number, and FALSE otherwise.	8.3.2.2.2		N	N		AKB: 802.1AS supports only one domain, so this object is not needed.

Name *(same/similar object in OC & BC if in bold italic)*	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
scaled_fractional_frequency_offset	Dynamic	The value is an array of length 256 with elements numbered 0 through 255 corresponding to the range of domain numbers. The measured fractional frequency offset is defined in 3.1.11. In the definition, FFO is the fractional frequency offset, FR is the frequency of the local oscillator of the transparent clock and FM is the frequency of a master clock of the domain corresponding to the element number as measured by the transparent clock. The value of scaled_fractional_frequency_offset is equal to FFO multiplied by 240, i.e., it is the fractional frequency offset expressed in units of 2-40 . The value of each element is significant only if the corresponding element value of domain_syntonization is TRUE.	8.3.2.2.3		Y (see note)	N		AKB: Assume this is useful for management of TCs in 802.1AS, but not in an array format as only one domain is supported.

Name *(same/similar object in OC & BC if in bold italic)*	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
port_identity	Static (unless system can allow creation of additional PTP ports dynamically?)	The value shall be the PortIdentity attribute of the local port, see 7.5.2.	8.3.4.2.1		Y	N		
log_min_mean_pdelay_req_interval	Static	The value shall be the logarithm to the base 2 of the minimum of the mean value of the Pdelay_Req interval, see 7.7.2.5 *(similar to log_min_mean_delay_req_interval)*	8.3.4.2.2		Y	Y		
faulty	Dynamic	The value of this member shall be TRUE if the port is faulty, and FALSE if the port is operating normally. *(similar to FAULTY port_state)*	8.3.4.2.3		Y	?		AKB: This is listed in IEEE 1588 as Dynamic instead of configurable. Wouldn't you want to make this so you could set this (or is there some other way this value is calculated based on other configurable values??)

Name *(same/similar object in OC & BC if in bold italic)*	Class	Short Description	1588 Section	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
peer_mean_path_delay	Dynamic	If the value of the delay_mechanism member is P2P, the value shall be an estimate of the current one-way propagation delay on the link attached to this port computed using the peer delay mechanism, see 11.4. It is recommended that the data type be TimeInterval. If the value of the delay_mechanism member is E2E, this member's value shall be zero. The initialization value shall be zero.	8.3.4.2.4		Y	N		

Name	Class	Description	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
ptpAdminStatus	Administrative	"The desired state of the protocol engine (for all ports). The testing(3) state indicates that no operational packets can be passed. When the managed system initializes, the protocol engine starts with ptpAdminStatus in the down(2) state. As a result of either explicit management action or per configuration information retained by the managed system, ptpAdminStatus is then changed to either the up(1) or testing(3) states (or remains in the down(2) state)."		Y	Y		AKB: My proposal. Also testing state would be optional. Inspired by ifAdminStatus from RFC 2863

Name	Class	Description	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
ptpOperStatus	Operational	The current operational state of the protocol. The testing(3) state indicates that no operational packets can be passed on any port. If ptpAdminStatus is down(2) then ptpOperStatus should be down(2). If ptpAdminStatus is changed to up(1) then ptpOperStatus should change to up(1) if the protocol engine is ready to transmit and receive network traffic on any interface; it should change to dormant(5) if the protocol engine is waiting for external actions (such as a serial line waiting for an incoming connection); it should remain in the down(2) state if and only if there is a fault that prevents it from going to the up(1) state; it should remain in the notPresent(6) state if the interface has missing components."		Y	N		AKB: My proposal. Only up and down states would be mandatory. Inspired by ptpOperStatus from RFC 2863

IEEE P802.1AS management object worksheet
Version 0.01, 2007-09-27

Name	Class	Description	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
ptpPortAdminStatus	Administrative	"The desired state of a port. The testing(3) state indicates that no operational packets can be passed. When the managed system initializes, the port starts with ptpPortAdminStatus in the down(2) state. As a result of either explicit management action or per configuration information retained by the managed system, ptpPortAdminStatus is then changed to either the up(1) or testing(3) states (or remains in the down(2) state)."		Y	Y		AKB: My proposal. Also testing state would be optional. Inspired by ifAdminStatus from RFC 2863
ptpPortOperStatus	Operational	The current operational state of the port. The testing(3) state indicates that no operational packets can be passed on the port. If ptpPortAdminStatus is down(2) then ptpPortOperStatus should be down(2). If ptpPortAdminStatus is changed to up(1) then ptpPortOperStatus should change to up(1) if the port is ready to transmit and receive network traffic on any interface; it should change to dormant(5) if the port is waiting for external actions (such as a serial line waiting for an incoming connection); it should remain in the down(2) state if and only if there is a fault that prevents it from going to the up(1) state; it should remain in the notPresent(6) state if the port has missing components."		Y	N		AKB: My proposal. Only up and down states would be mandatory. Inspired by ptpPortOperStatus from RFC 2863

Name	Class	Description	802.1AS section	802.1AS Management Read support	802.1AS Management Write Support	Default Value	Comments
ptpPortInOctets	Diagnostic/Performance	Total PTP Octets received		Y	N		Inspired by ifInOctets from RFC 2863
ptpPortInPkts	Diagnostic/Performance	Total PTP packets received		Y	N		Inspired by ifInUcastPkts from RFC 2863
ptpPortOutOctets	Diagnostic/Performance	Total PTP Octets received		Y	N		Inspired by ifOutOctets from RFC 2863
ptpPortOutPkts	Diagnostic/Performance	Total PTP packets received		Y	N		Inspired by ifOutUcastPkts from RFC 2863
ptpPortInErrors	Diagnostic	Invalid PTP packets received		Y	N		Inspired by ifInErrors from RFC 2863
ptpPortOutErrors	Diagnostic	PTP transmit packets discarded due to some error		Y	N		Inspired by ifOutErrors from RFC 2863