

9.2 Application service interface

This section describes the application service interface provided by an 802.1AS Ordinary Clock (OC) to its client application. A single OC may provide more than one instance of this service interface; all such interfaces share a single timescale maintained by the OC entity.

9.2.1 Overview of the service

9.2.1.1 General description of the services provided by the layer

The service functions to inform the client of the current time. Clients may include media mapping and unmapping applications, or other users of the OC timing service.

The mechanism chosen for defining the application service interface follows the “event/timestamp” model: an event is presented to the OC by its client, and the OC returns a timestamp to the client indicating the value of the timescale at the instant the event was presented.

The services are described in an abstract way and do not imply any particular implementation or any exposed interface.

9.2.1.2 Model used for the service specification

The model used in this service specification is identical to that defined in IEEE Std 802.3 sec. 1.2.2. <is there a better citation? 802.3 sec 1.2.2 doesn't define “response” primitives>

9.2.1.3 Overview of interactions

OC_EVENT.request
OC_TIMESTAMP.indication
OC_TIMESTAMP.response

9.2.1.4 Basic services and options

The OC_EVENT.request, OC_TIMESTAMP.indication, and OC_TIMESTAMP.response service primitives described in this subclause are mandatory.

9.2.2 Detailed service specification

9.2.2.1 OC_EVENT.request

9.2.2.1.1 Function

This primitive defines an event whose time is to be measured according to the OC timescale.

9.2.2.1.2 Semantics of the service primitive

The semantics of the primitive are null:

```
OC_EVENT.request ()
```

The presentation of the primitive by the client at the service interface constitutes the event to be timed; no additional information is associated with it.

9.2.2.1.3 When generated

This primitive is generated by the OC client entity whenever a time measurement shall be made.

9.2.2.1.4 Effect of receipt

The receipt of this primitive will cause the OC entity to make a measurement determining the value of the OC timescale at the instant the primitive was received. This value shall subsequently be available through the OC_TIMESTAMP.indication primitive.

9.2.2.2 OC_TIMESTAMP.indication

9.2.2.2.1 Function

This primitive defines the transfer of a measured time value (timestamp) from the OC entity to the OC client entity.

9.2.2.2.2 Semantics of the service primitive

The semantics of the primitive are as follows:

```
OC_TIMESTAMP.indication (  
    timestamp_value;  
    time_valid;  
    overrun;  
)
```

The timestamp_value field is of the time stamp data type defined in sec. 6.4.3.2 and represents a positive time offset relative to the epoch of the OC timescale.

The time_valid field is a boolean which, when set to TRUE, indicates that the time values transferred in the primitive are reliable. The conditions under which the values are considered reliable or unreliable are implementation-specific and outside the scope of this standard.

The overrun field is a boolean which, when set to FALSE, indicates that timestamp information regarding the event immediately prior to the one causing this indication was successfully transferred to the client. For this purpose “success” means that the client returned a corresponding OC_TIMESTAMP.response primitive before this OC_TIMESTAMP.indication was presented.

9.2.2.2.3 When generated

The OC_TIMESTAMP.indication is passed from the OC entity to the OC client entity to indicate the measured value, on the OC timescale, of the most recently processed OC_EVENT.request primitive.

9.2.2.2.4 Effect of receipt

Receipt of this primitive by the OC client causes the client to generate an OC_TIMESTAMP.response primitive.

Other effects of the receipt of this primitive are unspecified. A FALSE value for time_valid or a TRUE value for overrun may cause the client to enter an error condition.

9.2.2.2.5 Additional comments

It is expected that some time will elapse between the presentation of an OC_EVENT.request and the availability of a corresponding OC_TIMESTAMP.indication. In the context of sec.9.2.2.2.3, an OC_EVENT.request is “processed” at the end of this elapsed time. Notwithstanding the elapsed processing time, the time fields in the OC_TIMESTAMP.indication primitive represent the instant the corresponding request was presented. In an implementation where OC_EVENT.request is presented as an electrical signal at a physical pin, the reported timestamp should include a correction for known or estimated propagation delay between the physical interface and the time capture function.

9.2.2.3 OC_TIMESTAMP.response

9.2.2.3.1 Function

This primitive serves as a “handshake” confirming the client’s receipt of the OC_TIMESTAMP.indication primitive.

9.2.2.3.2 Semantics of the service primitive

The semantics of the primitive are null:
OC_TIMESTAMP.response ()

9.2.2.3.3 When generated

The OC_TIMESTAMP.response primitive is generated by the OC client in response to an OC_TIMESTAMP.indication primitive.

9.2.2.3.4 Effect of receipt

The receipt of this primitive by the OC entity affects its internal state. This may affect the value of the overrun field in a subsequent OC_TIMESTAMP.indication.