CCSDS Time Definitions

CCSDS Time BoF

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# Introduction

This document serves as a glossary of technical timing definitions used for reference for the CCSDS Time BoF. The terminology represents the agreement of CCSDS Time BoF participating agencies.

# Definitions:

## Clock

A device that generates periodic, accurately spaced signals for timekeeping applications. A clock consists of at least three parts: an oscillator, a device that counts the oscillations and converts them to units of time interval (such as seconds, minutes, hours, and days), and a means of displaying or recording the results.

## Time and time interval

Time is the marking of an event with respect to a reference origin.

The elapsed time between two events. In time and frequency metrology, time interval is usually measured in small fractions of a [second](https://www.nist.gov/time-and-frequency-services/time-and-frequency-z-s-so#second), such as [milliseconds](https://www.nist.gov/time-and-frequency-services/time-and-frequency-z-m#millisecond), [microseconds](https://www.nist.gov/time-and-frequency-services/time-and-frequency-z-m#microsecond), or [nanoseconds](https://www.nist.gov/time-and-frequency-services/time-and-frequency-z-n-o#nanosecond).

## Time transfer

Time transfer is a mechanism used to compare Time or frequency measurements from one location to another.

Commonly used time transfer methods are:

* one-way
* common-mode, common-view transfer
* two-way methods

## Clock synchronization/correlation

Time correlation is ''the determination of the variance and time offset of two continuous timescales" provided by two different clock-ensemble. this procedure require the knowledge of clock parameters (stability, drift,...) and also propagation delay of the time transfer. 

## Time synchronization

Synchronization is the process of setting a clock-ensemble to the same time.

# References

<https://www.nist.gov/pml/time-and-frequency-division/popular-links/time-frequency-z/time-and-frequency-z-z-index>