

Proposed Draft Objectives

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IEEE 802.3 Improving PTP Timestamping Accuracy Study Group

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CFI Objective

“Improving PTP Timestamping Accuracy on Ethernet Interfaces” Study Group in IEEE 802.3 to consider the development of a PAR and CSD to address high accuracy time transport for IEEE 802.3 Ethernet”

Draft Task Force Objective

To amend IEEE 802.3 to:

- Define optional enhancements to Ethernet support for time synchronization protocols to provide improved timestamp accuracy in support of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements.

Background Information

Application Timing Requirements

Classes C and D were added in 2018 for 5G transport applications

- From ITU-T Recommendation G.8273.2, Timing characteristics of telecom boundary clocks and telecom slave clocks
 - Specifies the max timing errors that can be added by a telecom boundary clock
 - cTE: constant time error
 - dTE_L: low-passed dynamic time error
 - MTIE: Maximum Time Interval Error
 - TDEV: Time Deviation
 - TE_L: constant time error + low-passed dynamic time error
 - TE: constant time error + unfiltered dynamic time error

Time Error Type	Class	Requirement (ns)
max TE	A	100
	B	70
	C	30
	D	for further study
max TE _L	A, B, C	not defined
	D	5

Class	cTE Requirement (ns)
A	±50
B	±20
C	±10
D	for further study

Time Error Type	Class	Requirement (ns)	Observation interval τ (s)
dTE _L	A and B	MTIE = 40	$m < \tau \leq 1000$ (for constant temp)
	A and B	MTIE = 40	$m < \tau \leq 10000$ (for variable temp)
	C	MTIE = 10	$m < \tau \leq 1000$ (for constant temp)
	D	MTIE = for further study	$m < \tau \leq 1000$ (for constant temp)
	A and B	TDEV = 4	$m < \tau \leq 1000$ (for constant temp)
	C	TDEV = 2	$m < \tau \leq 1000$ (for constant temp)
	D	TDEV = for further study	