

# CQF evaluation with DetNet Scaling Requirement

	Requirement	CQF (802.1Qch) evaluation	Remarks
1	Tolerate Time Asynchrony	No	Time sync is mandatory and all nodes rotate transmission buffers according to a wall clock time.
2	Support Large Single-hop Propagation Latency	No	prop latency << cycle interval time $T_c$ . Large prop latency will make $T_c$ extremely large and hard to achieve e2e bounded latency.
3	Accommodate the Higher Link Speed	Partial	Relatively larger time variation (e.g. MTIE, processing latency)=> harder to determine from arrival time which Cycle the packet was sent from
4	(4.1) Be Scalable to The Large Number of Flows (4.2) and Tolerate High Utilization	4.1 Partial 4.2 No	4.1 Transmission control is scalable. Stream gate filtering and policy may not be (can be per stream or some way aggregated). 4.2 Not all cycle time is usable for traffic. Utilization is constrained by ratio of dead time (DT) to $T_c$ . In small $T_c$ cases, hard to achieve high utilization.
5	Prevent Flow Fluctuation from Disrupting Service	Partial	For compliant flows, ok; for non compliant flows, will drop packets since # of buffer is very limited, fundamentally only 2.
6	Tolerate Failures of Links or Nodes and Topology Changes	NA	Not relevant to CQF itself.
7	Be scalable to a Large Number of Hops with Complex Topology (to achieve e2e latency)	No	2-buffer CQF normally supports $100x \mu s T_c$ because the buffer needs to be sufficiently large to absorb the converged flows. # of hops $\approx$ e2e latency/ $T_c$ ; for a given e2e latency, # of hops is limited by $T_c$ . Problematic when $T_c$ is small. Jitter bounded by $2 * T_c$ , ok.
8	Support Multi-Mechanisms in single Domain and Multi-Domains	NA	Not relevant to CQF itself.

- CQF = IEEE 802.1Qch-2017
- DetNet Scaling Requirement = draft-ietf-detnet-scaling-requirements