

CQF evaluation with DetNet Scaling Requirement

	Requirement	CQF (802.1Qch) evaluation	Remarks
1	Tolerate Time Asynchrony § 3.1	No	Time sync is mandatory and all nodes rotate transmission buffers according to a wall clock time.
2	Support Large Single-hop Propagation Latency § 3.2	No	prop latency \ll 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 § 3.3	Partial	Relatively larger time variation (e.g. MTIE, processing latency) \Rightarrow 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 § 3.4	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. Item 2 is also a contributing factor.
5	Prevent Flow Fluctuation from Disrupting Service § 3.5	Yes	Burst accumulation is considered when the traffic patterns are given and overall configuration is provisioned. We do not consider the non-compliant flows here.
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 low e2e latency) § 3.7	Partial	2-buffer CQF normally supports $100 \times \mu s$ 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 (i.e. low e2e latency demand) 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