

P802.1Qdt

Type of Project: Amendment to IEEE Standard 802.1Q-2018

Project Request Type: Initiation / Amendment

PAR Request Date:

PAR Approval Date:

PAR Expiration Date:

PAR Status: Draft

Root Project: 802.1Q-2018

1.1 Project Number: P802.1Qdt

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Project Title: IEEE Standard for Local and Metropolitan Area Networks--Bridges and Bridged Networks

Amendment: Priority-based Flow Control Enhancements

3.1 Working Group: Higher Layer LAN Protocols Working Group(C/LM/802.1 WG)

3.1.1 Contact Information for Working Group Chair:

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3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LM)

3.2.1 Contact Information for Standards Committee Chair:

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3.2.3 Contact Information for Standards Representative:

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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: May 2025

4.3 Projected Completion Date for Submittal to RevCom: Nov 2025

5.1 Approximate number of people expected to be actively involved in the development of this project: 20

5.2.a Scope of the complete standard: This standard specifies Bridges that interconnect individual LANs, each supporting the IEEE 802 MAC Service using a different or identical media access control method, to provide Bridged Networks and VLANs.

5.2.b Scope of the project: This amendment specifies procedures and managed objects for automated Priority-based Flow Control (PFC) headroom calculation and Media Access Control Security (MACsec) protection of PFC frames, using the existing Precision Time Protocol (PTP) and enhancements to the Data Center Bridging Capability Exchange protocol (DCBX).

This amendment places emphasis on the requirements for low latency and lossless transmission in large-scale and geographically dispersed data centers.

This amendment also addresses errors and omissions in the description of existing IEEE Std 802.1Q functionality.

5.3 Is the completion of this standard contingent upon the completion of another standard? No

5.4 Purpose: Bridges, as specified by this standard, allow the compatible interconnection of information technology equipment attached to separate individual LANs.

5.5 Need for the Project: PFC is used to avoid packet loss in low latency, high reliability Ethernet data

centers and data center interconnects. For PFC to function properly and without wasting memory, the amount of headroom buffer must be calculated. Deployment in large scale data center networks and long distance interconnects is currently problematic and requires manual configuration. There are customer requirements for the integrity and confidentiality protection of all frames transmitted between geographically distributed data centers. The current specification is inconsistent and incomplete regarding the operation of PFC and MACsec together.

5.6 Stakeholders for the Standard: Developers and users of networking for data center environments including integrated circuit developers, bridge and end station vendors, network operators and users.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?

No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?

No

7.1 Are there other standards or projects with a similar scope? No

7.2 Is it the intent to develop this document jointly with another organization? No

8.1 Additional Explanatory Notes: #5.2.b:

- 1) PFC and DCBX are specified in IEEE Std 802.1Q: IEEE Standard for Local and Metropolitan Area Networks—Bridges and Bridged Networks
- 2) PTP is specified in IEEE Std 1588: IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems
- 3) MACsec is specified in IEEE Std 802.1AE: IEEE Standard for Local and metropolitan area networks-Media Access Control (MAC) Security