
P802.1EJ

Type of Project: New IEEE Standard
Project Request Type: Initiation / New
PAR Request Date:
PAR Approval Date:
PAR Expiration Date:
PAR Status: Draft

1.1 Project Number: P802.1EJ
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project Title: Backward Notification

3.1 Working Group: Higher Layer LAN Protocols Working Group(C/LAN/MAN/802.1 WG)
3.1.1 Contact Information for Working Group Chair:
Name: Glenn Parsons
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Name: Jessy Rouyer
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3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LAN/MAN)
3.2.1 Contact Information for Standards Committee Chair:
Name: James Gilb
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3.2.2 Contact Information for Standards Committee Vice Chair:
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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:
Jul 2028
4.3 Projected Completion Date for Submittal to RevCom: Jul 2029

5.1 Approximate number of people expected to be actively involved in the development of this project: 20
5.2 Scope of proposed standard: This standard specifies procedures and managed objects, including a YANG data model, for signaling network conditions toward the source of transmission in data center networks. The notification mechanism conveys information to higher-layer entities to enable rapid response for congestion management, path re-balancing, and failure recovery. This standard defines an architectural model describing how notifications are triggered, constructed, and forwarded through Bridges, as well as a service interface for exposing notifications above the link layer. Provisions are included to ensure backward compatibility with IEEE Std 802.1Q.

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

5.4 Purpose: This document will not include a purpose clause.

5.5 Need for the Project: Congestion is detrimental to network performance in data center networks and is particularly impactful to loss-sensitive and latency-sensitive Remote Direct Memory Access (RDMA) protocols widely used in High-Performance Computing (HPC) and Artificial Intelligence (AI) data center networks. PFC is used to avoid packet loss from congestion; however, PFC applies flow control on a hop-by-hop basis, which can result in undesirable side effects at scale, including congestion spreading and head-of-line blocking. Higher-layer end-to-end congestion control mechanisms often react on timescales that are insufficient to promptly address transient congestion or buffer build-up within the network. There is a need for a standardized mechanism by which network elements can signal congestion and other network conditions towards the source of transmission, enabling timely and informed decisions for congestion management and failure convergence. Such signaling complements existing congestion management techniques and improves the overall robustness and efficiency of data center networks.

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?

Yes

Explanation: The YANG Data Model will be assigned a Uniform Resource Name (URN) based on the Registration Authority (RA) URN tutorial and IEEE Std 802d.

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:

While 'YANG' (developed by the Internet Engineering Task Force) appears to be an acronym its expansion 'Yet Another Next Generation' is not meaningful. YANG is a widely-used standard that is relevant to the Registration Authority.

IEEE Std 802.1Q: IEEE Standard for Local and Metropolitan Area Networks—Bridges and Bridged Networks.

#5.5:

RoCE is specified by the Infiniband Trade Association. Supplement to Infiniband Architecture Specification Volume 1 Release 1.2.1 Annex A17: RoCEv2. September 2014: pages 1-23

#6.1.2:

IEEE Std 802 IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture

IEEE Std 802d IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture Amendment 1: Allocation of Uniform Resource Name (URN) Values in IEEE 802 Standards

RA URN tutorial: <http://standards.ieee.org/develop/regauth/tut/ieeearn.pdf>