

Summary of IEEE 802.3 Expressed concerns

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Summary of IEEE 802.3 Expressed Concerns (1 of 2)

- Summary of activities prior to Mar 2022 – See Pages 3 - 5 of <https://mentor.ieee.org/802.1/dcn/22/1-22-0017-00-ICne-cut-through-forwarding-ctf-in-bridges-and-bridged-network-status-update.pdf>
- Email by Bob Grow to 802 EC Reflector, “March PAR comments from 802.3” - <https://ieee802.org/secmail/msg27019.html>
 - PAR – <https://ieee802.org/1/files/public/docs2022/du-draft-PAR-0122-v01.pdf>
 - Comment regarding 5.2 Scope of Proposed Standard”
 - "This standard also specifies requirements and recommendations..." So this project intends to include both requirements as well as informative recommendations? Said another way it intends to be both a Standard and a Recommended Practice contrary to what is specified in 1.2.
 - CSD - <https://ieee802.org/1/files/public/docs2022/du-draft-CSD-0122-v01.pdf>
 - General
 - 1.2.2 Compatibility, Question h –
 - At a time when IEEE 802 is attempting to develop greater consistency on architectural alignment, a “No” response will detract from this effort. A “No” response is inconsistent with the use of an 802.3 MAC (or other 802 MAC) because those MACs include service interfaces that match the 802.1AC service interface.
 - 1.2.2, Compatibility, Question I –
 - On reading, it isn’t clear that this is an approved response from the 802.1 WG. It reads more like a response proposed by the proponents of the CSD to 802.1. Perhaps quotes for what text was approved and a recorded vote of the 802.1 WG would be helpful to understand what the 802.1 response really is. There needs to be very specific text that 802.1 as a WG approved, indicating awareness of the lack of conformance to the criteria and what the deviation to the criteria was that was approved by the WG. It is preferred that this sub-criterion be shown with the motion and vote of 802.1.
 - 1.2.5, Economic Feasibility, Question p
 - CTF bridges violate the 802.3 MAC Service interface where a transmission request is an atomic action. CTF starts a transmission before an entire frame is received and error checked. The CSD ignores the impact CTF bridges have on individual 802 MAC specifications and therefore are not compatible with the MAC models and therefore may not be compatible with other IEEE 802 MAC standards also.

The CSD also ignores the impact on [802.3] management. Please indicate in this item that specifications will require features that minimize distortion of various management attributes or behaviours.
- Presentation by Peter Jones to NEA / Nendica Meeting 4/27/22 – https://www.ieee802.org/3/ad_hoc/ngrates/public/calls/22_0427/jones_nea_01_220427.pdf

The Key Issue from 802.3 Perspective

- Per IEEE 802.3 Clause 4 the Ethernet MAC is by definition “store and forward.”
 - See Clause 4.2.2.1 Bullet c –
 - The handling of incoming and outgoing frames is rather stylized in the procedural model, in the sense that frames are handled as single entities by most of the MAC sublayer and are only serialized for presentation to the Physical Layer.
 - See Clause 4.2.2.1 Bullet d (1) –
 - Processes Versus External Events. It is assumed that the algorithms are executed “very fast” relative to external events, in the sense that a process never falls behind in its work and fails to respond to an external event in a timely manner
 - Other (many many more) references to “store and forward” are in the Pascal Code defining the MAC.
- Supporting cut-through would require significant modification of the Pascal Code that defines the MAC

Potential Outputs of this Joint Effort

- A. Agree that the 802.1 MAC Service Interface specification and 802.3 MAC definition support cut-through, an 802.1 project is formed to address cut-through, and an 802.3 project is not required.
- B. Agree that the 802.1 MAC Service Interface specification and 802.3 MAC definition do not support cut-through and an 802.3 project is required to complement the IEEE 802.1 project.
- C. Agree to disagree and “Cut through” proponents continue to work in IEEE 802.1 only.

Authors' Observations

- Presentations from cut through proponents have focused on Option A in prior NEA / Nendica meetings.
- During update of NEA activities to IEEE 802.3 @ May 2022 Interim, several participants noted the specification of the 802.3 MAC is “store and forward” and none expressed opinion that “cut through forwarding” could be supported.
- Discussions within the joint NEA / Nendica meetings do not appear to have convinced any 802.3 participants that “cut through forwarding” can be supported by the 802.3 MAC
- It is the authors' beliefs that a project within IEEE 802.3 would be needed for the 802.3 MAC to support cut-through.
 - Cut through proponents have not expressed any consideration of how to achieve this.
 - No participants in IEEE 802.3 have expressed interest in this.

Summary

- Option A seem unlikely to produce any forward progress.
- Then following the decision tree leaves Options B and C.