March 10, 2025

To: David Law, IEEE 802.3 Ethernet Working Group Chair, and participants of the IEEE 802.3 Ethernet Working Group

cc: Adam Healey, IEEE 802.3 Ethernet Working Group Vice-Chair; Jon Lewis, IEEE 802.3 Working Group Recording Secretary; John D'Ambrosia, IEEE P802.3dj Task Force Chair; Mark Nowell, IEEE P802.3dj Task Force Vice-Chair

Subject: Ultra-Ethernet Consortium Ethernet Extensions

From: J Metz, Ultra Ethernet Consortium Chair

Dear Mr. Law and participants of IEEE 802.3 Working Group,

The Ultra Ethernet Consortium (UEC) is focused on extending Ethernet with appropriate features to provide excellent support for systems running AI/ML/HPC workloads.

We would like to inform IEEE 802.3 of some of our extensions to the IEEE 802.3 Ethernet standard, included in the Ultra Ethernet (UE) PHY specifications, which is currently in Draft 0.81.

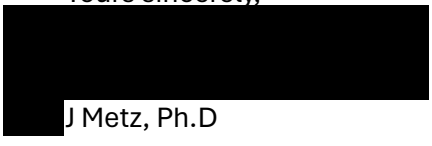
The specific extensions are Link Level Retry (LLR) and Credit-Based Flow Control (CBFC). For these extensions, UE leverages the Ordered Set mechanism of the BASE-R PCS (e.g. IEEE Std 802.3-2022, clause 82) and adds Control Ordered Sets, as described below. In addition, for LLR, UE uses the MAC frame preamble to encode additional control information such as sequence numbers.

The UE Control Ordered Sets are formed by using Ordered Sets as defined in IEEE 802.3-2022, Clause 82.2.3.4, Table 82-1 with an O-Code of 0x6 to distinguish them from other types of Ordered Sets. Control Ordered Sets can be intermixed with packet data and are communicated between the PCS and its client in parallel to the packet data, enabling exchange of information between endpoints.

We would like to inform IEEE 802.3 of our use of O-Code 0x6 and would welcome any feedback on this selection. We anticipate that some individuals will be working to file a maintenance request to add this use to the existing footnote on Table 82-1.

We look forward to future communication with you.

Yours sincerely,



J Metz, Ph.D
Chair, Ultra Ethernet Consortium