

Interpretation Number: 4-07/02 (Maximum Frame Size)
Topic: Maximum Frame Size
Relevant Clauses: 4.2.4.2
Classification: Unambiguous

Interpretation Request

Request for Interpretation of 802.3 MAC behavior when it is attached to the 802.1D/Q Bridge.

It is clear that IEEE 802.3 MAC may not send frames greater than 1518 bytes in length for untagged frame and 1522 bytes for a tagged (802.3ac) frame. It is also clear (from 4.2.4.2.1 a.) that Reception of a frame greater than these are allowed to be truncated (and reported as a error) but not required to do so.

In an implementation designed to meet IEEE 802.1D/Q Bridge with integrated IEEE 802.3 MAC, it may receive well-formed (correct frame format with valid FCS) frame that is “slightly” longer than 1518/1522 bytes. It is desirable to allow these frames to be forwarded. However, simply by allowing these frames to be switched, does this implementation violate this aspect of IEEE 802.3 MAC standard? One could argue that since a frame reception does NOT enforce the frame size limit, it is acceptable to allow it to reach the bridge relay function, but on its egress, a MAC could send a frame that is longer than the maximum MTU specified. But one could further argue that, so long as the implementation only generates longer frame if and only if it received one, the implementation is still conformant in this respect. Please ignore the 4 bytes of 802.3ac/802.1Q tag generation/removal issue when answering this question. The reading of IEEE 802.1D Clause 6.3.8 allows any MTU to be supported and also allows for only supporting smallest common denominator between bridged LAN.

So what is not clear, and would like the clarification/interpretation of the clause 4.2.4.2.1 relative to 802.1D bridging, if a MAC receives frames longer than 1518/1522, otherwise well formed, and relays it to a egress port, and the egress port sends this frame, does the implementation violate the standard? Or this extended length support not covered by the standard? It would settle some internal debate if you could answer both questions and provide any other helpful guidance for us.

===== BEGIN From IEEE 802.3-2000 =====

4.2.4.2 Receive media access management

4.2.4.2.1 Framing

The CSMA/CD sublayer recognizes the boundaries of an incoming frame by monitoring the receive Data-Valid signal provided by the Physical Layer. Two possible length errors can occur that indicate ill-framed data: the frame may be too long, or its length may not be an integer number of octets.

- a) Maximum Frame Size. The receiving CSMA/CD sublayer is not required to enforce the frame size limit, but it is allowed to truncate frames longer than maxUntaggedFrameSize octets and report this event as an (implementation-dependent) error. A receiving CSMA/CD sublayer that

supports tagged MAC frames (see 3.5) may similarly truncate frames longer than (maxUntaggedFrameSize + qTag- PrefixSize) octets in length, and report this event as an (implementation-dependent) error.

- b) Integer Number of Octets in Frame. Since the format of a valid frame specifies an integer number of octets, only a collision or an error can produce a frame with a length that is not an integer multiple of 8 bits. Complete frames (that is, not rejected as collision fragments; see 4.2.4.2.2) that do not contain an integer number of octets are truncated to the nearest octet boundary. If frame check sequence validation detects an error in such a frame, the status code alignmentError is reported.

===== END From IEEE 802.3-2000 =====

===== BEGIN From IEEE 802.1-1998 =====

Clause 6.3.8, “The Maximum Service Data Unit Size that can be supported by an IEEE 802 LAN varies with the MAC method and its associated parameters (speed, electrical characteristics, etc.). It may be constrained by the owner of the LAN. The Maximum Service Data Unit Size supported by a Bridge between two LANs is the smaller of that supported by the LANs. No attempt is made by a Bridge to relay a frame to a LAN that does not support the size of Service Data Unit conveyed by that frame”.

Interpretation for IEEE std 802.3-2002

The standard clearly states in 3.2.7 that the maximum frame size is 1518 (for untagged frames) or 1522 (for tagged frames).

A DTE (MAC plus MAC Client) that issues frames greater than the maximum frame size is not compliant.