Interpretation Number: 1-11/06
Topic: 1000BASE-X IFG encoding rules
Relevant Clause: Clause 36
Classification: Withdrawn by requester

Interpretation Request

1. The specific designation of the standard, including the year of publication.

IEEE Std 802.3-2002

2. The specific subsection being questioned.

Sections 36.2.4.14 and 36.2.4.14.1, and 36.2.5.2.1.

3. The applicable conditions for the case in question.

I would like to submit a couple of interpretation requests of the IEEE Std 802.3-2002 Standard to the attention of the IEEE802.3 WG. These interpretations affect the way the minimum interFrameGap (IFG) is calculated, and consequently, what the maximum data rate will be in a 1GbE link when even- or odd-size frames are transmitted.

Statement 1

At the beginning of page 47 in Section 36.2.4.14 End_of_Packet delimiter (EPD) the document reads:

'The receiver considers the MAC interpacket gap (IFG) to have begun two octets prior to the transmission of /I/. For example, when a packet is terminated by EPD, the /T/R/ portion occupies part of the region considered by the MAC to be the IFG.'

Statement 2

The next Section 36.2.4.14.1 EPD Rules paragraph c) reads as follows:

'1) if /R/ is transmitted in an even numbered code-group position, the PCS appends a single additional /R/ to the code-group stream to ensure that the subsequent /I/ is aligned on an even-numbered code-group boundary and EPD transmission is complete;'

Interpretation Request 1:

In accordance with Statement 1 the receive considers that the IFG starts two octets prior to /I/. Also, per Statement 2 if the /R/ is transmitted on an even boundary and extra /R/ is appended. If an extra /R/ is appended, is Statement 1 still valid, i.e., IFG starts two bytes prior to /I/?.

If this were the case, /T/ would not be part of the IFG octet count and the 'actual' number of octets between frames would be incremented by one when an extra /R/ is appended.

Interpretation Request 2:

Statement 2 uses the were "appends" which in accordance with the Webster dictionary means "to add as a supplement". If I implement a design per Statement 2, I would be adding one extra octet to the IPG for odd-size frames and, in turn, slowing the data rate. For example, if the transmitter is sending even-size frames at full rate, the minimum IFG would be 12 octets (/T/R/ + 10 /I/'s). If the transmitter is sending odd-size frames at full rate the minimum IFG would be 13 octets (/T/R/R/ + 10 /I/'s). Was this the intention when the document was generated?

If not, the word "appends" should be substituted by "replaces" in which case the IFG for full rate odd-size frames should be 12 octets (/T/R/R/ + 9 /I/'s).

In relationship to the same subject, Figure 36-5 shows the transitions from EPD2_NOEXT and EPD3 to XMIT_DATA after the last /R/ is transmitted, however it does not show, for each case, the minimum number of /I/'s before the next START_OF_PACKET.

Therefore it is still not clear whether the minimum number of /I/'s in the IFG after /T/R/R/ is 9 or 10 for maximum transmission rate.
