Cl **45** *SC* **45.2.1.186e.1** *P* **51** *L* **16** # 99

Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *Mixing Segment*

My comment number #206 against D2.2 with "Accept in Principle" resulted in parial replacements CL147 to change "multidrop" with "mixing segment", but the comment #206 request was to do careful search and replacement for the whole draft.
L16 "Muiltidrop mode ability" would change to "half-duplex" mode ability in this case.

SuggestedRemedy

Do careful search of whole draft for "multidrop" and replace the text and nearby words to mixing segment, or
half-duplex, or
shared medium, or
other appropriate wording that already been in use.

Response *Response Status* **U**

REJECT.

During implementation of #206 against d2p2, each occurance of "multidrop" was carefully reviewed. The instances that the commenter refers to relate to the name of the mode, which was specifically excluded from the resolution.

Cl **45** *SC* **45.2.3.68b.5** *P* **54** *L* **40** # 100

Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *PCS*

[Comment on unchanged text and with no unresoilved negative]. "Fault -- Fault condition detected.. " is just too vague. Does reader assume the "fault" relates to PCS fault? And is it any detectable fault? Any implementation specific faults? So if I read this latched bit as one, what information do I get -- there was a fault and we don't know what caused it. So what value is there? Makes little sense. I cannot even suggest wording that may be satisfactory.

SuggestedRemedy

Assuming this is PCS fault TX or RX.. Reference detected fault types in relevant PCS clauses. If this is just thrown in for any fault and .3cg want it, then say "ANY DETECTED PCS FAULT". If there is no agreement how this is used, then I suggest deleting it.

Response *Response Status* **U**

REJECT.
The referenced text in the table at page 54 line 40 is correct.
The subclause referenced in the subclause field is standard language in clause 45 registers for description of PCS faults in IEEE Std 802.3-2018.

Cl **45** *SC* **45.2.3.68d.1** *P* **57** *L* **32** # 102

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

[Unsatified Comment Re-submit Due to Incorrect use of "Accept in Principle"]
My comment number #211 against D2.2 states my concern where PLCA resides. Just RS? Or also in PCS and/or PMA? I requested remedy is to delete or clarify where PLCA function resides.
The committee resolution was to change "PLCA RS required functions" with "the encoding of BEACON and COMMIT", which completely misses the stated concern.
10BASE-T1S PCS contains PLCA components that are optional. This is entirely inconsistent with PLCA is a optional function in RS layer.
It looks to be that PLCA is also an optional function in PCS layer. If this is the case, the standard should state this. And if the PLCA is also an optional function in PMA layer, it should also be stated as such.

SuggestedRemedy

Comment number #211 requested remedy was "Either delete this [PLCA Support], or clarify which layer[s], PLCA resides." You may want to reverse the changes in D2.3, because the change was not requested.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Accomodated by comment 117.
Response to comment 117 is:
ACCEPT IN PRINCIPLE.
Implement changes in
http://www.ieee802.org/3/cg/public/Feb2019/zimmerman_3cg_01_0219.pdf

Cl **45** *SC* **45.2.3.68f** *P* **58** *L* **18** # 103

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

[Unsatified Comment - "Accept in Principle"]
My comment #212 on D2.2 suggested a remedy that was not accepted. Text in D2.3 introduced bigger concern (the original was just cut-&paste editorial error).
Also line 25. ".results in a corrupted signal at.the MDI..." is no way to describe collision on the medium. Corrupted singal could be caused by many ways, one of which is contention on the wire. Detection is also an issue that strong station may not see corruptioned signal during a contention on a wire.

SuggestedRemedy

Please referece the sub-clause where collision detect on the medium is specified, and change the text to "..results in collision detect on the medium" I could not find the clause easily.

Response *Response Status* **U**

REJECT.
The name of this counter has been changed by the response to comment 105 to better align with what the counter counts.

The ballot resolution committee believes that accepting this comment would make the text in this clause inconsistent with the rest of the draft, particularly clause 147.3.5.

The requirement there is "When operating in half-duplex mode, the 10BASE-T1S PHY shall detect when a transmission initiated locally results in a corrupted signal at the MDI as a collision." The descriptive text at 45.2.3.68f line 18 precisely repeats this requirement without sending the reader to look up what is meant by another term.

Cl **45** *SC* **45.2.3.68f** *P* **58** *L* **18** # 104

Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *MDI*

Also line 25. ".MDI.". There is no MDI defined in D2.3. If my other comment is rejected, consider this comment.

SuggestedRemedy

Replace ".MDI." to ".medium."

Response *Response Status* **U**

REJECT.

The ballot resolution committee suspects that the commenter is confusing MDI with MDI connector. The MDI is a defined interface point in Clause 147.

Cl **45** *SC* **45.2.3.68f** *P* **58** *L* **17** # 105

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *PLCA*

Also line 23. "PhysicalColCnt". There is only one collision type -- collision on the medium. It should state "CollsionCnt" to not cause confustion.

SuggestedRemedy

Replace "PhysicalColCnt" to "CollisionCnt"

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
The ballot resolution committee believes that changing the name as the commenter suggests would cause additional confusion; however, the name should be changed to align better with the behavior of the counter.

Change all occurances of "PhysicalColCnt" to "CorruptedTxCnt"

Cl **45** *SC* **45.2.3.68f** *P* **58** *L* **17** # 106
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PLCA*

[Unsatisifed Comment - Reject, with info to the commenter that has little relevance to the concern.]
My comment #214 on D2.2 had a response as a part of the reject, with the following info: "REJECT.
When optional PLCA RS is enabled, the MAC will count the number of collisions reported by the RS via the PLS_SIGNAL.indication primitive. Having a register that counts the number of corrupted transmissions at the MDI detected at the PCS or PMA sublayer is, as commenter says, a useful indication for diagnosing misconfiguration problems and to evaluate the line quality."
My comment #214 was: "I see the benefits of # of collisions experienced for a given packet transmit attempts -- indicates some qualitative measure of congestion. I don't see the value nor relevance of counting collisions since beginning of time. I cannot locate (easily, anway) justification for adding this counter -- and even more so in PHY/PCS rather than in the MAC."
The concern still stands. Counting collisions ONLY when the local MAC attempted a collision from the begining of time does NOT provide any useful value. In addition, the comment response note suggests that it is NOT counting collision, but corrupted transmissions, which is NOT collision. If you meant corrupted transmission, then it you should say corrupted transmission (although I don't see how that is differentialed from FCS and Alignment error and short events, et cetera). If you meant collision, I do not see any benefits to this counter beyond several [real] collision related counters already in place (e.g. one, more than one, 16, etc).

SuggestedRemedy

The remedy request is still the same as my prior comment -- "Please delete this counter, or reject this comment and point me to the rationale and utility
of this counter."

Response *Response Status* **U**

REJECT.

The ballot resolution committee believes that rationale is provided in the response to comment #214 against d2p2. Commenter provides no new information and insufficient remedy.

Cl **146** *SC* **146.4.3** *P* **138** *L* **34** # 112
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PMA*

[Relatecd to rejected comment #278 on D2.2].

Full-duplex operation over one pair should have echo-cancellation (cancel TX from RX) onto/from media. I cannot find any reference to this function. 100BASE-T1 std, in 96.4.3 has text of "PMA Receive has Signal Equalization and Echo Cancellation sub-functions These sub-functions are used to determine the receiver performance and generate loc_rcvr_status..."

REJECT based on comment on unchanged text does NOT relive the WG from forwarding std draft that is considered incomplete or known errors. It should be clear to the readers of our standard what function are to be impliemented (some of which that are REQUIRED for interoperability are to be specified for the standard to eb complete). How the echo cancellation may be implemented may be left out, but *architecture (which is what we do in 802.3) must be described and specified.

SuggestedRemedy

Please provide a reference to echo cancellation function. And it would be good to have a reference to that function in CL 146.4.3 introductory paragraph (not there now). Just to be clear -- I am not asking for echo cancellation function specification. I am asking for architectual existance of echo cancellation function that must be there for this PHY to work.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Add the following new sentences to the end of the first paragraph of 146.4.3 (P138 L34) (after "signal flow of the 10BASE-T1L PMA Receive function.")
"To achieve the indicated performance, it is highly recommended that PMA Receive include the functions of signal equalization and echo cancellation. The sequence of symbols assigned to tx_symb_vector is needed to perform echo cancellation."

Cl **146** *SC* **146.8** *P* **159** *L* **1** # 113

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *MDI*

[Relatecd to Accept in Principle comment #231 on D2.2].
Comment response agred that connectors described MAYBE used at the medium. But the tile of this subclause still say "146.8 MDI specifications".

SuggestedRemedy

Previous remedy was to use "MDI considerations", and still stands.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Commenter is incorrect -
The connectors in 146.8.1 may be optional, however, any interface must meet the specifications in 146.8 in its subordinate subclauses which provide specifications at the MDI. 146.8.2 and 146.8.3 provide electrical specifications for the MDI, 146.8.4 and 146.8.5 specify fault tolerance. "considerations" is not appropriate - these are requirements common to BASE-T and BASE-T1 PHY specifications in 802.3.

However, clause 146 is missing PICS entries for these requirements, and this may be the source of the commenter's confusion.

Add new subclause 146.11.4.5 (after Link Segment), and renumber subsequent PICS subclauses. Containing PICS entries from http://www.ieee802.org/3/cg/public/Feb2019/Clause 146 PICS.pdf with editorial license to conform to PICS formatting.

Cl **147** *SC* **147** *P* **173** *L* **1** # 116

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Link Segment*

[Related to, but not same as, rejected comment #210 on D2.2, where the concern was Broadmarket Potential of 10BASE-T1S half-duplex point-to-point PHY (the only mandatory mode] that does not support repeaters]
Really a chater and scope of this PHY clause and CSD concern.
This clause has three separate PHYs that should not be considered as one PHY with two options.

Full-Duplex P2P PHY: Performs echo cancellation full-duplex over one transmission line.

Half-Duplex P2P PHY: Tradition would say echo cancellation in support of full-duplex on the medium, and performs logical collision detection. But in this clause, it has been silent on echo cancellation and collision detection method. Comments requesting these two to be clarifed is rejected as "implementation dependeant" (my comment #242 on D2.2). 100% collision detection assurance (architecturally) that has been our requirements is completely ignored in this project. Echo cancellation + logical collision would be satisfactory (common with Full-duplex P2P PHY), or collision detection on shared medium without echo cancelation (whatever it is... it's missing in all drafts up to D2.2. In D2.3 states "corrupted signal at MDI" is deemed as collsion (147.3.5), without any supporting material that assures 100% collision detection.

Half-Duplex Shared Medium PHY: Tradition would say no echo cancellation but detect multiple transmissions on the wire through analog (DC level) means. In this clause, it has been silent on collision detection method. Comment requesting collision detection function to be clarified is rejected as implementation dependant. 100% collision detection assurance (architecturally) that has been our requirements is completely ignored in this project.

Looks like there is one PHY that does echo-cancellation, one PHY that does NOT do echo-cancellation and undefined (or just "data corruption" in D2.3) collission detect method, and one PHY that may be of some combination of the two.

SuggestedRemedy

Pick the one PHY that meets CSD and objectives as written, or split this clause into at least two (one for P2P and one for Shared medium) separate PHY clauses and modify the CSD and objects as appropirate.

Response *Response Status* **U**

REJECT.
Commenter fails to demonstrate a problem, and, clause is consistent with 802.3 objectives as approved, which have one phy with multiple modes, consistent with previous projects.

Cl **147** *SC* **147.3.7.1** *P* **191** *L* **5** # 117

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

[CSD and Layer violation concern]
WRT to "When optional PLCA RS operations are supported and enabled, the PHY shall notify the RS of a received BEACON indication by the means of MII interface as specified in 22.2.2.8.". This statement makes support of PLCA RS in 10BASE-T1S PHY not optional. PLCA RS is advertised as optional RS. This and two other shalls in this sub-clause makes it mandatoy implementation in all 10BASE-T1S PHYs.

SuggestedRemedy

Delete CL147.3.7.1 requirementss.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Implement changes in
http://www.ieee802.org/3/cg/public/Feb2019/zimmerman_3cg_01_0219.pdf

Cl **147** *SC* **147.3.7.2** *P* **191** *L* **5** # 118

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PLCA*

[CSD and Layer violation concern]
WRT to "When optional PLCA RS operations are supported and enabled, the PHY shall notify the RS of a received COMMIT indication by the means of MII interface as specified in 22.2.2.8.". This statement makes support of PLCA RS in 10BASE-T1S PHY not optional. PLCA RS is advertised as optional RS. This and two other shalls in this sub-clause makes it mandatoy implementation in all 10BASE-T1S PHYs.

SuggestedRemedy

Delete CL147.3.7.2 requirementss.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Accomodated by comment 117.
Response to comment 117 is:
ACCEPT IN PRINCIPLE.
Implement changes in
http://www.ieee802.org/3/cg/public/Feb2019/zimmerman_3cg_01_0219.pdf

Cl **01** *SC* **1.1.3** *P* **27** *L* **8** # 119

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *MII*

[PAR scope] 10 Mb/s project uses AUI or MII. 802.3cg uses MII not xGMII. How do I know? It references CL22, which is MII, and MII is referenced in the CRD for this project. This change in D2.3 is technically incorrect.

SuggestedRemedy

Remove 10BASE-T1L and 10BASE-T1S from xMII column in the diagram and also in the note, and put them below MII column in the diagram.

Response *Response Status* **U**

REJECT.

Commenter is incorrect that xMII refers to xGMII and does not refer to MII.
xMII is a general term which applies to all forms of MII.

The note to the figure (as amended to add 10BASE-T1L and 10BASE-T1S) now says:
"NOTE—In this figure, the xMII is used as a generic term for the Media Independent Interfaces for implementations of 10BASE-T1L, 10BASE-T1S, and 100 Mb/s and above. For example: for 100 Mb/s implementations this interface is called MII; for 1 Gb/s implementations it is called GMII; for 10 Gb/s implementations it is called XGMII; etc."

Cl **22** *SC* **22** *P* **32** *L* **10** # 120

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *MII*

[CSD Compatibility] Changes to CL22 that effect existing exposed interoperability test point that is MII may and likely cause compatibility issues, and potentially deem existing installed base that are compliant to IEEE 802.3-2018 no longer compliant.

It is CLEAR that ALL proposed changes to CL22 is due to inclusion of CL148 PLCA - optional RS Layer that is performing media access control at the cost of effecting compatibility (see http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf) to installed base of exposed interoperatbility inteterface. This is not acceptable.

SuggestedRemedy

Reverse all changes to CL22 that effect MII behavior.

Response *Response Status* **U**

REJECT.

Commenter fails to show a compatibility problem.

Commenter is incorrect - use of reserved codes preserves compatibility, as has been successfully done in previous projects.

See http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf slide 34.

Straw Poll
I support rejecting comment 120 with the response:
"Commenter fails to show a compatibility problem.

Commenter is incorrect - use of reserved codes preserves compatibility, as has been successfully done in previous projects.

See http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf slide 34."
Y:13
N:0
A:3

Cl **22** *SC* **22** *P* **32** *L* **49** # 121

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *MII*

[CSD Compatibility[]
"... with the exception of 10BASE-T1L (see 146.3.3.1).." Following 10BASE-T1L (see 146.3.3.1) reference and looing at the state diagram in Fig 146-5 and variables, there is no technical reason why 10BASE-T1L needs this exception. The state diagram supports TXER signal on MII, if TXER is present and used along TXEN. Classic TXER signal behavior unto PHY -- historically, this was justified to signal buffer underrun on frame in transmiision. The logic follows like this. IF TXER is present and used, along TXEN, THEN Fig 146-5 supports transmit error. BUT if TXER (all in TXEN relevant states) was not present and used, then there is little use for its support in Fig 146-5. Therefore, inclusion of 10BASE-T1L in this statement is not necessary.

Furthermore, inclusion of 10BASE-T1L (CL146) as referenced above in CL22 distracts from the fact that all modifications to CL22 stems from inclusion of PLCA (CL148) RS layer that is in contention -- that PLCA is a new media access control (MAC) -- optionally used with 10BASE-T1S (CL147). 10BASE-T1L (CL146) PHY works perfectly well with existing 802.3-2018 CL22 MII, and therefore compatible with all legacy installed base M. IIs that are compliant to it, unlike PLCA RS.

SuggestedRemedy

Delete "10BASE-T1L (see 146.3.3.1) and " and modify SF17 in PICS table accordingly.

Response *Response Status* **U**

REJECT.

Commenter fails to show a compatibility problem.

Commenter fails to provide sufficient remedy, as TX_ER is used in clause 146 PCS transmit (and receive) state diagrams to signal transmit error to the far end, aligned with the more complex encoding which has previously only been used in PHYs of 100 Mb/s and greater speed. The proposed remedy fails to address the function in clause 146.

Y:14
N:1
A:2

Cl **148** *SC* **148** *P* **221** *L* **1** # 128

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *PLCA Scope*

The inclusion of the new CSMA/CA shared media access control mechanism (labeled PLCA) which overrides CSMA/CD as the media access control:
1. Is out of scope for the PAR approved for the project
2. Does not conform to the CSD approved for the project
3. Is not needed to satisfy any of the OBJECTIVES approved for the project
4. Pollutes the DISTINCT IDENTITY of 802.3 as The Standard for Ethernet when CSMA/CA deserves and should be given a project with its own DISTINCT IDENTITY.

These points will be discussed in further detail on the attached ADDITIONAL COMMENTS document.

SuggestedRemedy

Remove clause 148 labeled "PLCA Reconciliation Sublayer (RS)" and related text from the draft and use the existing clause 22 as the RS to reconcile the MII to the current standard 802.3 MAC. This will allow the project to proceed and fully meet the requirements of the approved PAR, CSD and 802.3 Objectives.

(What to do with the removed material is outside the scope of this comment but I am happy to entertain and fully participate in that discussion in a supportive manner.)

ALTERNATIVELY (and not preferred) the PAR, CSD and 802.3 Objectives could be updated and amended in a manner that would establish a need for a CSMA/CA solution to be part of the project.

Response *Response Status* **U**

REJECT.
The ballot resolution committee believes that the commenter is incorrect in asserting PLCA is a new media access control layer overriding the CSMA/CD MAC. PLCA architecturally fits at the reconciliation sublayer and performs functions allocated to the physical layer. It requires the CSMA/CD MAC for media access control.
See http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf and http://www.ieee802.org/3/cg/public/adhoc/brandt_020619_3cg_01_adhoc.pdf for discussion.

Straw Poll:
I support the following response to comment 128:
REJECT.
The ballot resolution committee believes that the commenter is incorrect in asserting PLCA is a new media access control layer overriding the CSMA/CD MAC. PLCA architecturally fits at the reconciliation sublayer and performs functions allocated to the physical layer. It requires the CSMA/CD MAC for media access control.
See http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf and http://www.ieee802.org/3/cg/public/adhoc/brandt_020619_3cg_01_adhoc.pdf for discussion.