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* **W**

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* **W**

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* **45.2.3.68c.3** *P* **56** *L* **53** # 101

Kim, Yong NIO

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

".. When not operating in multidrop mode and.." is not necessary when we agree that multidriop is to be replaced by "mixing segment" and multidrop mode is to be replaced with half-duplex mode, et cetera.

SuggestedRemedy

Remove the referenced text string.

Response *Response Status* **W**

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* **45.2.3.68d.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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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* **W**

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.

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl **01** SC **1.4.389a** P **29** L **16** # 196

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item - Definitions*

This could be a pile on comment. .avoid physical collision on the medium. There is a definition for collision and contention. What is "physical collision" on the medium conveyed in the definitions.

SuggestedRemedy

change "physical collision" to "collision". Or expand why the word "physical" is needed.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "A method for generating transmit opportunities for 10BASE-T1S multidrop PHYs operating on mixing segments in order to avoid physical collisions on the medium. (See IEEE Std 802.3, Clause 148.)"

with, "A method for generating transmit opportunities for 10BASE-T1S operating on mixing segments. (See IEEE Std 802.3, Clause 148.)"

Cl **22** SC **22.2.2.4** P **33** L **13** # 198

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - Definitions*

Also 22.2.2.5, 22.2.2.8 22.8.3.2 CL22 MII is an existing exposed interoperability test point. Any material changes to its function effect interoperability to installed base. EEE related modifications prior connects to EEE services client, not MAC. These proposed changes directly effect interoperability to existing installed base to MAC services.

SuggestedRemedy

Reverse all proposed modifications to CL22 that effect shall shatement that existed prior. A good test for this would be that there is no modifications to the PICS table with status "M". See Slides 4~6 in http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf for a complext context.

Response *Response Status* **W**

REJECT.

Commenter fails to identify a specific compatibility problem or specific PICS items. Compatibility is satisfied and has been demonstated. Refer to http://www.ieee802.org/3/cg/public/Jan2019/baggett_3cg_01_0119.pdf, http://www.ieee802.org/3/cg/public/July2018/PLCA%20overview.pdf (slides 16 through 21), and http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf (slides 29, 34, and 35) for examples.

Other than PICS item SF17, which has been modified to exclude the new PHYs in this draft, there are no changes to add new Mandatory PICS items other than those conditioned on new options (see 22.8.2.3).

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl **30** SC **30.2.2.1** P **34** L **13** # 199
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - Management*

PHY is NOT the same as Physcal Layer in layer definition. PHY has xMII on one side and MDI on the other (1.4.391). RS in Physical Layer but not in PHY. So by definition, oPLCA CANNOT be in oPHYEntity. Note: look at other RS related entities in Fig 30-3 to see the consistency

SuggestedRemedy

Change the text so that the oPLCA is iin oMAC (not oPHY), and make other appropirate changes

Response *Response Status* **W**

REJECT.

PLCA management was moved under the PHY entity in response to satisfied TR comment 301 on initial working group ballot.

Additional information: The Reconciliation Sublayer extensions specified in Clause 65 for point-to-point emulation extend the Reconciliation Sublayer to support multiple MACs above a single PHY, see Figure 65-1 'RS location in the OSI protocol stack'. These extensions effectively add a set of functions above the PLS service interface at the 'top' of the existing Reconciliation Sublayer specified in Clause 35 to provide support for multiple instances of the PLS service interface. These functions include replacing some of the preamble on transmit with information protected by a CRC8, and examining this information on receive to determine which of the multiple MACs a packet is forwarded to. These are in effect a set of functions operating between the existing Reconciliation Sublayer and the multiple MACs, and as a result, the oOMPEmulation object to support these additional functions has to be placed between the multiple oMACEntity objects and the single oPHYEntity object. Note the many-to-one mapping from the oMACEntity object to the oOMPEmulation object in Figure 30-3 DTE System entity relationship diagram.

This is not the case for Energy-Efficient Ethernet or Time Synchronisation which did not impact the interface presented to the MAC. As a result, the additional attributes were either placed in the oPHYEntity object, this was the case for Energy-Efficient Ethernet, or in an object contained within the oPHYEntity object, this the case for Time Synchronisation where the oTimeSync object was added. It is for the same reasons that the oPLCA object should be contained within the oPHYEntity object too.

Cl **30** SC **30.2.3** P **35** L **37** # 200
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - Management*

PHY is NOT the same as Physcal Layer in layer definition. PHY has xMII on one side and MDI on the other (1.4.391). RS in Physical Layer but not in PHY. So by definition, oPLCA CANNOT be in oPHYEntity. Note: look at other RS related entities in Fig 30-3 to see the consistency

SuggestedRemedy

Move oPLCA from below oPHY and locate it below oMAC

Response *Response Status* **W**

REJECT.

PLCA management was moved under the PHY entity in response to satisfied TR comment 301 on initial working group ballot.

Additional information: The Reconciliation Sublayer extensions specified in Clause 65 for point-to-point emulation extend the Reconciliation Sublayer to support multiple MACs above a single PHY, see Figure 65-1 'RS location in the OSI protocol stack'. These extensions effectively add a set of functions above the PLS service interface at the 'top' of the existing Reconciliation Sublayer specified in Clause 35 to provide support for multiple instances of the PLS service interface. These functions include replacing some of the preamble on transmit with information protected by a CRC8, and examining this information on receive to determine which of the multiple MACs a packet is forwarded to. These are in effect a set of functions operating between the existing Reconciliation Sublayer and the multiple MACs, and as a result, the oOMPEmulation object to support these additional functions has to be placed between the multiple oMACEntity objects and the single oPHYEntity object. Note the many-to-one mapping from the oMACEntity object to the oOMPEmulation object in Figure 30-3 DTE System entity relationship diagram.

This is not the case for Energy-Efficient Ethernet or Time Synchronisation which did not impact the interface presented to the MAC. As a result, the additional attributes were either placed in the oPHYEntity object, this was the case for Energy-Efficient Ethernet, or in an object contained within the oPHYEntity object, this the case for Time Synchronisation where the oTimeSync object was added. It is for the same reasons that the oPLCA object should be contained within the oPHYEntity object too.

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl **30** SC **30.3.9.2.7** P **39** L **47** # 205
Kim, Yong NIO

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

aPLCABurstTimer has at least two isseus. 1) name seem to indicate timer burst, but the definition says wait timer before terminating burst. Should rename to reduce confustion. 2) With infinitely fast statemachines and atomic frame transfers, and RS being above the xMII counters in bit times makes little sense. Obviously exposed interfaces are exceptions. If the intention is to allow building a non-complaint PHY that includes PLCA in the PHY, then this timer may be relevant in implementations (not to the specification which is done in architectural frame work). I assum this is not the intent. If this is the intent, please go through appropriate process.

SuggestedRemedy

WRT to 1) please consider chaning the timer name to more descriptive name, if 2) is rejected. If 2) is accepted, then please ignore 1) comment.

Response *Response Status* **W**

REJECT.

This appears to be two comments in one.

1 (re:timer naming): Commenter provides insufficient information for remedy.
aPLCABurstTimer is consistent with the timer named in clause 148.
2 (re: process): Commenter provides insufficient information for remedy. Commenter is incorrect; the timer is in the physical layer and not the MAC.

Cl **147** SC **147.1** P **167** L **17** # 206
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item - Multidrop*

Only place the "multidrop mode" is defined is in 147.1 and says "a half duplex shared-medium mode, referred to as multidrop mode, capable of operating with multiple link partners connected to a mixing segment" I know this term has been in use for a long time in the .3cg draft development. But I don't see any benefit to introducing a new term. Traditionally we had mixing and link segments, and we have half-duplex point to multi-point (P2MP), and full duplex point to point (P2P) operations. I do not see any reason to introduce a new term that does not seem to have sufficent difference from traditional terms in function. Even in CL147 spec -- see 147.3.3.2, duplex_mode was sufficient.

SuggestedRemedy

Please consider careful search and replacement of "multidrop" "and multidrop over mixing segment" with point to multipoint (P2MP), or in many cases just "half-duplex", or "half-duplex over mixing segment". I don't see how it is reader-friendly to have so many terms to refer to the same thing. Painful now, but we have to live with the specified text [almost] forever.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
P167 L24: Delete "multidrop"
P167 L46: Delete "multidrop"
P213 L39: Change "multidrop network" to "mixing segment"
P218 L26: Change "multidrop network" to "mixing segment"
P224 L16: Change "multidrop network" to "mixing segment"
P49 L45 & L47: Change "multidrop operation over a mixing segment network" to "multidrop mode"
P49 L48: Change "multidrop operation" to "multidrop mode"

Add editor's note at top of 147.1:
Editor's note (to be removed following draft 2.3) - Commenters are encouraged to consider possible alternate names for "multidrop mode" using existing 802.3 terminology which are descriptive and compact.

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl **147** *SC* **147.3.7** *P* **184** *L* **5** # 209

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Editorial*

Optional support for RS layer, separatated from the PHY via xMII and PCS does not seem to have any existing interface to convery message primitives referred to here. Please describe HOW it is conveyed from PHY to RS.

SuggestedRemedy

Please point out the message passing interface that conveys these additional and optional messages between PHY and RS -- in which case, this comment will be withdrawn. Or describe how these messages are converyed.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
(commenter appears confused by an editorial error which left optional support of PLCA RS separated from the text it applied to)
Accomodated by comment #190.
Resolution of comment #190 is:
ACCEPT IN PRINCIPLE.
Move all text at page 188/31-48 (effectively the headers and content of sub-clauses "147.3.8.3 Generation of BEACON indication" and "147.3.8.4 Generation of COMMIT indication") before sub-clause "147.3.8 Optional support for PCS status generation", turning those into "147.3.7.1 Generation of BEACON indication" and "147.3.7.2 Generation of COMMIT indication"

Cl **147** *SC* **147.1** *P* **167** *L* **12** # 210

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item - CSD*

Really a CSD issue: Among the10BASE-T1S three mode of operation -- mandatory - half-duplex P2P, optional - half-duplex P2MP, optional - full-duplex P2P, one could argue the mandatory mode of operation, thus only one required to claim conformance, has the least broad market potential. Just as a reminder -- half duplex P2P broad market, typically associated with star-wired multi-port repeater has been rejected by rejecting operation with CL9 repeaters.

SuggestedRemedy

Consider deleting the P2P half-duplex mandatory and upgrade one of the other modes to mandatory, OR justify why P2P half-duplex still has broad market potential claied in CSD. OR, the intent is for P2P half-duplex to be mandatory, and at least one of the two remaining modes mandatorily implemented, then correct the text and objectivies as appropirate (and CSD if appropriate). [Remember each of these "mode" is a new PHY.]. By doing mandatory to be 1 + 2 or 1 + 3 but not 1 alone, you may also avoid broad market potential challenge on 1 only

Response *Response Status* **W**

REJECT.
Commenter is incorrect, a number of individuals with a broad spectrum of affiliations agreed on an objective for this. The Criteria for Standards Development (e.g., broad market potential) apply to the entire standard:
====
Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
a) Broad sets of applicability.
B) Multiple vendors and numerous users.
====
As written (and commonly) they do not mention objective by objective, or else they would have to be modified every time an objective is changed. The objectives are chosen to fit within the broader CSDs, by the applicability and the multiple interest groups. The existing 802.3cg broad market potential speaks to 10 Mb/s single-pair Ethernet in industrial, automotive, and intra-system applications, and the number and breadth of individuals and companies which have expressed interest in the standard. These have voted to approve adding the objective for P2P.

Cl **45** SC **45.2.3.68d.1** P **55** L **27** # 211
Kim, Yong NIO

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

PLCA Support (3.2292.15) means there is a 10BASE-T1S PHY and 10BASE-T1S PLCA PHY. So Is the PLCA RS function or RS, PCS, and possibly PMA function? Based on this setting, it seems to indicate that PLCA is not limited to RS. It would be good to clarify where all the layers PLCA optinoal feature/function/option reside

SuggestedRemedy

Either delete this, or clarify which layer PLCA resides.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "indicates the PCS does not support PLCA RS required functions"

with, "indicates the PCS does not support the encodings of BEACON and COMMIT".

Cl **45** SC **45.2.3.68f** P **56** L **18** # 212
Kim, Yong NIO

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

Description says "..remote jabber errors received.." Should say "collision"

SuggestedRemedy

My preference is "collsions" not "physical collision" (I have a separate commnet WRT this)

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "16 bits field counting the number of remote jabber errors received since last read of this register"

with, "16 bit field counting each time a transmission initiated locally results in a corrupted signal at the MDI since last read of this register"

Cl **45** SC **45.2.3.68f.1** P **56** L **25** # 213
Kim, Yong NIO

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

"..i.e., excluding the ones triggered by the optional PLCA RS).." makes little sense. How do you exclude events in RS in PHY, and also "triggered" is vague. Please clarify.

SuggestedRemedy

Please clarify how RS layer events could be excluded in PHY (via references may be) or some other way.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "Bits 3.2294.15:0 reports the number of physical collisions (i.e., excluding the ones triggered by the optional PLCA RS) occurred since last time register 3.2294 was read."

with, "Bits 3.2294.15:0 count up each time a transmission initiated locally results in a corrupted signal at the MDI."

Cl **45** SC **45.2.3.68f** P **56** L **18** # 214
Kim, Yong NIO

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

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.

SuggestedRemedy

Please delete this counter, or reject this comment and point me to the rationale and utility of this counter.

Response *Response Status* **W**

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.

Cl **45** *SC* **45.2.13.4** *P* **64** *L* **64** # 220

Kim, Yong NIO

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

Related to my other comment on 30.2.9.2.7 (and should consider together), 1) name seem to indicate timer burst, but the definition says wait timer before terminating burst. Should rename to reduce confustion. 2) With infinitely fast statemachines and atomic frame transfers, and RS being above the xMII counters in bit times makes little sense. Obviously exposed interfaces are exceptions. If the intention is to allow building a non-complaint PHY that includes PLCA in the PHY, then this timer may be relevant in implementations (not to the specification which is done in architectural frame work). I assum this is not the intent. If this is the intent, please go through appropriate process.

SuggestedRemedy

WRT to 1) please consider chaning the timer name to more descriptive name, if 2) is rejected. If 2) is accepted, then please ignore 1) comment.

Response *Response Status* **W**

REJECT.

This appears to be two comments in one.

1 (re:timer naming): Commenter provides insufficient information for remedy. aPLCABurstTimer is consistent with the timer named in clause 148.
2 (re: process): Commenter provides insufficient information for remedy. Commenter is incorrect; the timer is in the physical layer and not the MAC.

Cl **00** *SC* **0** *P* **0** *L* **0** # 223

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item - Definitions*

Use of the word "collision" and use of term "logical collision" "local collision", and "physical collision. This is a pile on comment to unresolved D2.0 draft comment. Use of terms other than just "collisoin" in .3cg bothered me. This time, I went through some research. 1.1.2.1 Half duplex operation states "...if... message collides...to ensure propogation of collision through out the system." states collision is system wide. 1.4.202 collsion: A condition that results from concurrent transmission from multiple data terminal equipment (DTE) sources wihtin an single collision domain. And 1.4.203 collision domain: A single, half duplex mode CSMA/CD network. If two or more Media Access Control (MAC) sublayers are within the same collsion domain and both transmit at the same time, a collision will occur. MAC sublayers separated by a repater..." All of these prompt whether .3cg's use of "logical collsion" or "local collision" are proper use of the word collsion. "physical collision" should just be "collsion". In addition, the use of "logical collision" to describe an event that is not an observable event on the medium is confusing to 802.3 readers, who associates collision to an event on the shared medium.

SuggestedRemedy

Please consider careful global search and replace of "physical coillsion" to just "collsion" and use some other term for "logical collision" and "local collision" if that remains in the draft. Cannot commup with a good suggestion for the alternate word, since the "local collision" function within .3cg in my mind is access control mechanism.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Note: the terms "logical collision" and "physical collision" are removed from the draft by these changes and other comments:

P224 L6: Delete "This is called a logical collision."

P225, L10: Replace, "and a logical collision is triggered" with, "and a collision is triggered"

P183, L17: Replace, "When operating in half-duplex mode, the 10BASE-T1S PHY shall detect physical collisions on the media during data transmission." with, "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."

P213, L44-45: Delete, "At any time, only the owner of the current transmit opportunity is allowed to send data over the medium, therefore avoiding physical collisions."

P218, L26: Delete, "PLCA Control state diagram is responsible for synchronizing transmit opportunities across the multidrop network to avoid physical collisions."

P224, L42: Delete, ", which would normally result in a physical collision"

P225, L1: Replace, "The variable delay line is a small buffer that is necessary in order to

avoid physical collisions by delaying transmission to the MII until the exclusive transmit opportunity for the node arrives." with, "The variable delay line is a small buffer that aligns transmission with the transmit opportunity."

Cl **146** *SC* **146.8.1** *P* **153** *L* **3** # 231

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *MDI*

This says "this section defines the MDI for 10BASE-T1L", but it does NOT. MDI is a *mandatory* "shall"-stated Medium Dependant Interface for 10BASE-T1L. Tjhis section does NOT specify MDI. It provides (abeit useful) suggestions and diagrams but no specification. Please decide whether this project has an MDI (or set of MDIs). And if MDI is indeeed specified, please change the CL title to include MDI (currently just ....PMA)

SuggestedRemedy

Either specify "the MDI for 10BASE-T1L" or not, and make downstream consequential changes. If not specified, then perhaps use "MDI considerations" not "MDI specifications"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Change from "This section defines the MDI for 10BASE-T1L."

to,

"This subclause describes connectors which may be used at the MDI. It also specifies electrical requirements, including fault tolerance, at the MDI.

Cl **147** *SC* **147.3.2.2** *P* **176** *L* **22** # 237

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

Based on my reading, tx_cmd encoding has been changed to be implemented regardless of PLCA RS layer option. Unnessary specifications.

SuggestedRemedy

Reverse the change and make any corrections WRT to T and I.

Response *Response Status* **W**

REJECT.
tx_cmd is implemented regardless of the PLCA RS layer option, and T & I are necessary to implement heartbeat (147.3.8)

Cl **147** *SC* **147.3.3.2** *P* **179** *L* **50** # 241

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

"If Multidrop mode MDIO register bit 1.2297.10 is set to one and multidrop mode is supported according to bit 1.2298.10 then duplex_mode is set to DUPLEX_HALF" does not cover the case of half-duplex and P2P -- the mandatory operation.

SuggestedRemedy

Please add text to include P2P half, or exclude. 2 out of three modes are covered at present.

Response *Response Status* **W**

REJECT.
Commenter is incorrect, as all cases are covered in the full paragraph. "If Multidrop mode MDIO register bit 1.2297.10 is set to one and multidrop mode is supported according to bit 1.2298.10 then duplex_mode is set to DUPLEX_HALF." (commenter's quoted text - says multidrop mode supported and enabled sets duplex mode to DUPLEX_HALF). Text then continues, "Else, if Auto-Negotiation is enabled then duplex_mode is set by the priority resolution defined in 98B.4." - this covers point to point and half-duplex when Auto-Negotiation is active. Then it continues and covers all other cases - "Otherwise, this variable is set by MDIO register bit 3.2291.8. If MDIO is not implemented, duplex_mode is set by the means of an equivalent interface."

Cl **147** *SC* **147.3.5** *P* **183** *L* **21** # 242

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

"The method for detecting a collision is implementation dependent but the following requirements have to be
fulfilled:" is grossly insufficient. Collision detection method must be specified and reliability of collision detection must be validated.

SuggestedRemedy

Without collision detection specification, this draft is grossly incomplete. I expect technically complete draft to include specifications on collision detect.

Response *Response Status* **W**

REJECT.
Commenter provides insufficient information for remedy. The standard specifies behavior, not implementation, and behavioral requirements for the collision detection are provided. Similarly, the standard does not specify how to equalize the received signal or how to cancel echoes, but states the transmitter electrical parameters, link segment transmission parameters, and receiver behavior (e.g., frame loss ratio and noise level tests) necessary for the implementation to meet.

Cl **147** *SC* **147.3.5** *P* **183** *L* **26** # 243

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

"The PHY shall assert CRS in presence of a signal resulting from a collision between two or more stations." combined with a) WRT col, mandates a behavior that cannot be conformance tested. Assert CRS before COL, after COL, how long after collision condition on the medium, and when to deassert, by when? Could it deassert 256 bit time later?

SuggestedRemedy

this specifciation is grossly incomplete. Please complete it. I expect technically complete draft to include specifications on carrier sense from collision.

Response *Response Status* **W**

REJECT.
CRS is already specified in Clause 22.2.2.11 - It is asserted before or coincidently with COL and de-asserted after or coincidently with COL. See figure 22-11.
COL is defined in 22.2.2.12 to be asserted for the duration of the collision on the line. Its assertion shall occur within one slotTime as specified in Clause 4 to avoid a late collision error. See e.g. Figure 4-5.

Cl **147** *SC* **147.3.6** *P* **183** *L* **30** # 244

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PCS*

"When operating in half-duplex mode, the 10BASE-T1S PHY shall sense when the media is busy and convey
this information to the MAC asserting the signal CRS on the MII as specified in 22.2.2.11."
is grossly insufficent for CSMA/CD to work. How, when, and condition, signal assert and deassert time, etc should all be specified.

SuggestedRemedy

this specifciation is grossly incomplete. Please complete it. I expect technically complete draft to include specifications on carrier sense beahvior.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
On page 183, lines 30-32, replace,
"the 10BASE-T1S PHY shall sense when the media is busy and convey this information to the MAC asserting the signal CRS on the MII"

with,
"the 10BASE-T1S PHY senses when the media is busy and conveys this information to the MAC by asserting the signal CRS on the MII"

Cl **147** *SC* **147.3.8** *P* **184** *L* **7** # 245

Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *PCS*

Reading into "Heart-beat (HB)" -- the funciton REQUIRES support of BEACON, etc, in PLCA option in RS, to work properly. This means PLCA option is NOT an option if Augo-neg is implemented and enabled.

SuggestedRemedy

Please clarify whether PLCA RS layer is an option or mandatory. The current draft says optional in most places.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

On page 184, lines 17-18, replace,
"The HB generation is disabled when the PHY is configured for operation over a mixing-segment network or a PLCA BEACON indication is detected on the line."

with,
"The HB generation is disabled when the PHY is configured for operation over a mixing segment or a BEACON is detected."

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Cl **147** SC **147.3.8** P **184** L **7** # 246
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PCS*

Related to my other comment WRT half-duplex P2P mode WITHOUT repeater support makes little sense WRT broadmarket potential and suggest deleting that mode, and if that is considered positively, then consider replacing H-B with active idle for full-duplex P2P mode and have it align with 10BASE-T1L. H-B is being added in D2.2 in support of a mode that makes little market sense.

SuggestedRemedy

Please conditionally (delete P2P HD) consider this suggestion (replacement of HB)

Response *Response Status* **W**

REJECT.

Comment #210 was rejected. The resolution to comment #210 is:

Commenter is incorrect, a number of individuals with a broad spectrum of affiliations agreed on an objective for this. The Criteria for Standards Development (e.g., broad market potential) apply to the entire standard:
====
Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
a) Broad sets of applicability.
B) Multiple vendors and numerous users.
====
As written (and commonly) they do not mention objective by objective, or else they would have to be modified every time an objective is changed. The objectives are chosen to fit within the broader CSDs, by the applicability and the multiple interest groups. The existing 802.3cg broad market potential speaks to 10 Mb/s single-pair Ethernet in industrial, automotive, and intra-system applications, and the number and breadth of individuals and companies which have expressed interest in the standard. These have voted to approve adding the objective for P2P.

Cl **147** SC **147.3.8.3** P **188** L **33** # 248
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *EZ*

"In compliance to 148.4.4.2.1, when 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 could be read that 10BASE-T1S PHY support of PLCA related signals are NOT optional. If this is the intent, PLEASE explicitly state it (probably somewhere near 147.1) If not, then adjust the text to reflect optional nature of PLCA RS support.

SuggestedRemedy

Please consider and do one of the two choices.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace,
"when PLCA RS operations"

with,
"when optional PLCA RS operations"

Cl **147** SC **147.3.8.4** P **188** L **42** # 249
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *EZ*

"In compliance to 148.4.4.2.2, when 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 could be read that 10BASE-T1S PHY support of PLCA related signals are NOT optinoal. If this is the intent, PLEASE explicltluy state it (probably somewhere near 147.1) If not, then adjust the text to reflect optional nature of PLCA RS support.

SuggestedRemedy

Please consider and do one of the two choices. Could be considered together with my comment to 147.3.8.3

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace,
"when PLCA RS operations"

with,
"when optional PLCA RS operations"

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Cl **147** SC **147.6.1** P **196** L **41** # 252
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *AutoNeg*

"Auto-Negotiation may be performed as part of the initial set-up of the link and allows negotiation of the duplex mode of operation." and AN for half-duplex P2P related text should be deleted, IFF, sucn mode is deemed to not meet broad market potential (per my other comment)

SuggestedRemedy

Please conditionally (delete P2P HD) consider deleting the referenced sentence.

Response *Response Status* **W**

REJECT.

Comment #210 was rejected. The resolution to comment #210 is:

Commenter is incorrect, a number of individuals with a broad spectrum of affiliations agreed on an objective for this. The Criteria for Standards Development (e.g., broad market potential) apply to the entire standard:
====
Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
a) Broad sets of applicability.
B) Multiple vendors and numerous users.
====
As written (and commonly) they do not mention objective by objective, or else they would have to be modified every time an objective is changed. The objectives are chosen to fit within the broader CSDs, by the applicability and the multiple interest groups. The existing 802.3cg broad market potential speaks to 10 Mb/s single-pair Ethernet in industrial, automotive, and intra-system applications, and the number and breadth of individuals and companies which have expressed interest in the standard. These have voted to approve adding the objective for P2P.

Cl **147** SC **147.9.1** P **198** L **48** # 257
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *MDI*

This says "this section defines the MDI for 10BASE-T1S", but it does NOT. MDI is a *mandatory* "shall"-stated Medium Dependant Interface for 10BASE-TSL. Tjhis section does NOT specify MDI. It provides (abeit useful) suggestions and diagrams but no specification. Please decide whether this project has an MDI (or set of MDIs). And if MDI is indeeed specified, please change the CL title to include MDI (currently just ....PMA)

SuggestedRemedy

Either specify "the MDI for 10BASE-T1S" or not, and make downstream consequential changes. If not specified, then perhaps use "MDI considerations" not "MDI specifications"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Text commenter refers to does not exist.

Insert new paragraph in 147.9 to align with 146.8 per comment 231:

"This subclause describes connectors which may be used at the MDI. It also specifies electrical requirements, including fault tolerance, at the MDI."

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Cl **148** SC **148.2** P **213** L **48** # 259

Kim, Yong NIO

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

the node with ID = 0 (PLCA Coordinator) specification is absent. Searching for coordinator finds this reference and AN section, and no where any specification WRT to the coordinator function.

SuggestedRemedy

Without the coorinator function, how it is assigned, the draft is incomplete. CSD concern. Also see slide 11~13 of
http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved by comment #262. The resolution to comment #262 is:

ACCEPT IN PRINCIPLE.

Replace, "Transmit opportunities are generated in a round-robin fashion every time the node with ID = 0 (PLCA coordinator) signals a BEACON on the medium, indicating the start of a new cycle."

with, "Transmit opportunities are generated in a round-robin fashion. The node with ID = 0 signals a BEACON on the medium. Reception of a BEACON indicates the start of a new cycle of transmit opportunities."

Replace, "cycle" with, "cycle of transmit opportunities" at P219 L26, and P219 L29.

Replace, "PLCA cycle" with, "cycle of transmit opportunities" on P218 L41.

Cl **148** SC **148.2** P **213** L **45** # 261

Kim, Yong NIO

Comment Type **ER** *Comment Status* **A** *Editorial*

"avoiding physical collisions" should just be "avoiding collisions". Collisions on the medium. There is no other kind. The other collision "local collision" referred to in CL148 is more of access control and asserting COL signal in order to do access control. Readers of 802.3 understand collision, and introducing two new terms would be confusing without any derived benefit.

SuggestedRemedy

Consider and do so (accepting this comment means careful global search and repace of "physical collision")

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Resolve with #223.

Resolution of comment #223 is:
There are 3 parts to this comment, so all 3 will be addressed.
A. "local collision" - There is no such thing as a local collision in the draft. There is only the 'local collision domain', where local refers to the domain, not the collision. The term collision domain is used as defined in 1.4.203.
B. "logical collision" - In this case, the term collision will suffice. Delete use of "logical collision" in the only two places it occurs:
148.4.6.1, P224 L6: Delete "This is called a logical collision."
148.4.6.1, P225, L10: Change "and a logical collision is triggered" to "and a collision is triggered"

Cl **148** *SC* **148.2** *P* **213** *L* **48** # 262
Kim, Yong NIO

Comment Type **TR** *Comment Status* **A** *Editorial*

What is "new cycle" and later "PLCA cycle"? The term is used without definition or clear reference. Also this text indicates BEACON indicates start of new cycle, but RESYNC also starts new cycle from node ID <> 0, in presumablly exception handling case. Shouldn't we know how node ID =0 function (coordinator) behaves to implementj a system?

SuggestedRemedy

Define or specifiy [PLCA] cycle somewhere and provide a reference to it.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace, "Transmit opportunities are generated in a round-robin fashion every time the node with ID = 0 (PLCA coordinator) signals a BEACON on the medium, indicating the start of a new cycle."

with, "Transmit opportunities are generated in a round-robin fashion. The node with ID = 0 signals a BEACON on the medium. Reception of a BEACON indicates the start of a new cycle of transmit opportunities."

Replace, "cycle" with, "cycle of transmit opportunities" at P219 L26, and P219 L29.

Replace, "PLCA cycle" with, "cycle of transmit opportunities" on P218 L41.

Cl **148** *SC* **148.2** *P* **213** *L* **39** # 264
Kim, Yong NIO

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

"The working principle of PLCA is that transmit opportunities on a multidrop network are granted in sequence based on a node ID unique to the local collision domain (set by the management entity)." I agree with sense of this sentence WRT to PLCA, and PLCA looks to be an alternate medium access control.

SuggestedRemedy

CSD concern. Also see slide 7~10 of
http://www.ieee802.org/3/cg/public/Nov2018/Kim_3cg_01a_1118.pdf

Response *Response Status* **W**

REJECT.

Commenter provides insufficient information for a remedy. PLCA is not a MAC.

Refer to http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf

Strawpoll #6: I support rejecting this comment with the rationale: "Commenter provides insufficient information for a remedy. PLCA is not a MAC.

Refer to http://www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf"

Task Force: Y:19 N:1 A:6
802.3 Voters: Y:15 N:1 A:1

Cl **148** *SC* **148.2** *P* **213** *L* **52** # 265
Kim, Yong NIO

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

CSMA/CD -- Carrier Sense, Multiple Access, Collision Detect. Multiple Access has to do with fairness to access the network. How does invidually and optionally enabling multiple transmit opportunities preserve fairness? I did not see any presenations in the .3cg project area nor in this draft

SuggestedRemedy

CSD concern, WRT to compatibility (at the network system level, on fairness part of Ethernet).

Response *Response Status* **W**

REJECT.
Commenter provides insufficient information to identify comment with the text, and insufficient information for a remedy. The referenced text cannot be a CSD violation impacting compatibility because it is informative.

Cl **148** *SC* **148.4.4.1.1** *P* **217** *L* **32** # 267

Kim, Yong NIO

Comment Type **ER** *Comment Status* **R** *Editorial*

148.4.4 says "Requirements for the PHY". The text in 148.4.4.1.1 says "The BEACON function is specified in 148.4.5.1.", And 148.4.5.1 specifies Beacon control function overall. It does NOT clearly contain requiremetns for support of BEACON in PHY.

SuggestedRemedy

Provide a better referece to only the PHY requirement that supports the PLCA function.

Response *Response Status* **W**

REJECT.

Commenter is incorrect. The remainder of 148.4.4.1.1 contains 2 "shall" requirements on the PHY (see comment #270). The reference to 148.4.5.1 mentioned in 148.4.4.1.1 is an informative reference tying the reader to how the BEACON works in the Figure 148-3 state diagram.

Cl **148** *SC* **148.4.4** *P* **217** *L* **24** # 268

Kim, Yong NIO

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

148.1 states "PLCA is defined for half-duplex mode of operation only. The PLCA RS is specified for operation with the PHY defined in Clause 147 (10BASE-T1S).". So perhaps 148.4.4. should reference relevant clauses in 147 -- it would be specific and reader friendly, and avoid making non-normative statements such as "PHYs are free to map the BEACON request to any suitable line coding as long as the requirements defined herein are met." in line 41. And similar comment to COMMIT, etc.

SuggestedRemedy

I do not see the [incomplete] generic PHY mapping, when PLCA is tightly coupled with 10BASE-T1S half-duplex PHY.

Response *Response Status* **W**

REJECT.
Commenter fails to provide sufficient information to implement a remedy.

The text commented on is out of scope for recirculation as text was unchanged.

Cl **148** *SC* **148.4.5.1** *P* **218** *L* **32** # 269

Kim, Yong NIO

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

"To achieve error free operation the PLCA node should be configured appropriately before transmit functions
are enabled." -- While this is good thought, it is not useful unless the spec completes the thought on how we achieve that. Please delete the unnessary text or add text to make this statement more useful

SuggestedRemedy

Please delete, or add text on how.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Insert the following after the referenced sentence,
"Appropriate configuration includes:
a) each local_nodeID is unique to the local collision domain,
b) there is one and only one node with local_nodeID = 0 on the local collision domain,
c) the transmit opportunity timer (to_timer) is set equal across all the nodes on the local collision domain,
d) plca_node_count is set on the node with local_nodeID = 0 to the number of nodes on the local collision domain"

Cl **148** SC **148.4.5.2** P **223** L **3234** # 273
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *Burst Mode*

CSMA/CD -- Carrier Sense, Multiple Access, Collision Detect. Multiple Access has to do with fairness to access the network. How does invidually and optionally enabling multiple transmit opportunities preserve fairness? The range of 0..255 includes potential transport protocol timeouts by starving other nodes.

SuggestedRemedy

CSD concern, WRT to compatibility (at the network system level, on fairness part of Ethernet, and timeout concerns in upper layer transport protocols in use. Define number narrowly to practical lower bound, if this # is kept in the draft.

Response *Response Status* **W**

REJECT.
While comment mentions fairness, CSD, and compatibility, commenter provides insufficient information to connect this to the referenced text and remedy which is related to the bounds for the variable max_bc.

In many ways, PLCA Burst mode operation is similar to half-duplex Burst mode present in 1000BASE-T.

The range of 0..255 is a reasonable number. This can be explained because the max_bc is related to the product of the ratio between the maximum allowed packet size and the minimum allowed packet size on the network, which is ~24, and the number of nodes. Therefore for an 8 node network, max_bc could reasonably be as big as 192.

Burst mode is designed to intentionally unbalance the fairness in favor of specific nodes to achieve better performance in specific cases. PLCA Burst mode cannot starve nodes in the network. In conclusion this is a desired (optional) feature, not a side-effect of PLCA.
Burst mode is described here "http://www.ieee802.org/3/cg/public/Nov2018/beruto_3cg_PLCA_burst_mode_revB%20.pdf " and one of its possible use cases is described here "http://www.ieee802.org/3/cg/public/Nov2018/xu_3cg_01b_1118.pdf"

Cl **148** SC **148.4.6.4** P **228** L **51** # 274
Kim, Yong NIO

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

Use of commit_timer is not merited. All packets are atomically transferred above the RS. This type of counter woud only be relevant if this function is implemented in PHY. If the intent is support the function in the PHY sideof PCS, then make it explicit. BTW, the name is a bit misleading too. The burst_wait_timer or such would be more descriptive (if this comment is rejected).

SuggestedRemedy

Delete this timer and adjust the statemachnies with the traditional model of atomic transfer of whole packet.

Response *Response Status* **W**

REJECT.

The RS is below the MAC where packets are not atomically transferred.

Cl **147** SC **147.4.3** P **190** L **44** # 277
Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PMA*

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..."

SuggestedRemedy

Please provide a reference to echo cancellation function. And it would be good to have a reference to that function in CL 147.4.3 introductory paragraph (not there now).

Response *Response Status* **W**

REJECT.

Comment is out of scope (on unchanged text) and does not change requirements or address a problem, only adds informative tutorial text on receiver design.

Additionally, while reference to echo cancellation occurs in other 802.3 clauses, calling out such a signal processing function in the standard opens the reader to specifying parameters of this function which are not needed for interoperability. Further, the additional text would be with regards to an implementation description rather than interoperability.

gement Parameters for 10 Mb/s Operation and Associated Power Delivery over a Single Balanced Pair of

Cl **146** SC **146.4.3** P **133** L **32** # 278

Kim, Yong NIO

Comment Type **TR** *Comment Status* **R** *PMA*

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..."

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).

Response *Response Status* **W**

REJECT.
Comment is out of scope (on unchanged text) and does not change requirements or address a problem, only adds informative tutorial text on receiver design.

Additionally, while reference to echo cancellation occurs in other 802.3 clauses, calling out such a signal processing function in the standard opens the reader to specifying parameters of this function which are not needed for interoperability. Further, the additional text would be with regards to an implementation description rather than interoperability.

Cl **148** SC **148** P **213** L **1** # 322

Thompson, Geoff GraCaSI S.A.

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

10 Mb/s half duplex Ethernet offers the lowest level of performance in the market success Ethernet family (ignoring 1BASE5 which was not a market success). 802.3 and the networking market have developed successful improved performance variations of Ethernet over the years. Each of these improvements was judged before the project was authorized to meet the CSD or its predecessor, the Five Criteria. There has never been a project approved in 802.3 for the performance space between 10M CSMA/CD and either 10M Full Duplex or 100M CSMA/CD. The addition of a new access method to "improve" our worst performer was done for this project with no mention of this major addition to the scope and features of this project with no mention of it whatsoever in the project paperwork (PAR, CSD original Project Objectives). Further, the addition of PLCA to the draft clearly constitutes a new medium access control (MAC) protocol which overrides the shared media access method and the basic peer nature of Ethernet thus, the mechanism for it belongs in the Media Access Control (MAC) sublayer according to 802 tradition and to IEEE 802 Overview and Architecture. Further, the non-peer nature of PLCA is specifically contrary to the 802 Overview and Architecture (Ref: Std 802 4.1 para. 6) and thus violates the Compatibility criteria of the CSD. It is clear that when the project was started there either was no anticipated requirement for a new access method or the addition of a new access method was sandbagged, presumably because it could then be added to the project without being subjected to the rigors of the CSD examination. Standardized 10 Mb/s CSMA/CD has proved itself adequate for hundreds of millions of installations. Where it is not adequate the legitimate 802 process and the market have chosen full duplex and/or higher speed is the appropriate path within the standard for higher performance.

SuggestedRemedy

Bring the project back into the bounds of the PAR scope and into compliance with 802 and the layer model by removing clause 148 and all other changes in the draft supporting PLCA elsewhere in the draft. I believe that this includes removing all reconciliation sub-layer functionality from the draft as no reconciliation should be required between a 10 Mb/s PHY and the legacy CSMA/CD MAC.

Response *Response Status* **U**

REJECT.

Commenter incorrectly posits that the Clause 148 PLCA RS is a new MAC. It does not meet the requirements for a MAC, and, leaves the MAC functionality with Clause 4, which, in fact, it could not work without. Commenter incompletely quotes IEEE Std 802-2014 4.1, paragraph 6 leading to incorrect conclusions regarding peer-to-peer networking. Additionally, commenter's suggested remedy appears to assert that the Clause 148 reconciliation sublayer is required. It is not; use of the Clause 148 PLCA RS is optional.

See www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf.

Strawpoll #4: I support rejecting this comment with the rationale: "Commenter incorrectly posits that the Clause 148 PLCA RS is a new MAC. It does not meet the requirements for a MAC, and, leaves the MAC functionality with Clause 4, which, in fact, it could not work

without. Commenter incompletely quotes IEEE Std 802-2014 4.1, paragraph 6 leading to incorrect conclusions regarding peer-to-peer networking. Additionally, commenter's suggested remedy appears to assert that the Clause 148 reconciliation sublayer is required. It is not; use of the Clause 148 PLCA RS is optional.

See www.ieee802.org/3/cg/public/Jan2019/Tutorial_cg_0119_final.pdf."

Task Force: Y:30 N:2 A:6
802.3 Voters: Y:18 N:2 A:1

Cl **45** *SC* **45.2.1.186c.4** *P* **42** *L* **44** # 337

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *PMA*

The behavior coming out of sleep is not implementation specific, it is governed by what happens upon reset.

SuggestedRemedy

Fix text.

Response *Response Status* **U**

REJECT.

While often confused with sleep mode or EEE mode, low-power mode is neither. It is a standard low-power state where the PHY is only responsive to MDIO, and exit requires a reset (and therefore retraining, per the PHY control diagram). It is mirrored in the PMA control bit 1.0.11, the PMA/PMD control 1 register - common to most PHYs. The low-power mode functionality specified in 802.3cg is specified in other PHY clauses throughout 802.3, including clause 28, clause 36, clause 37 and clause 97 (1000BASE-T1), with identical or nearly identical specification of the implementation-specific nature of the function.

Commenter and Chair are encouraged to submit a maintenance request to deal with this confusion globally.

Cl **00** *SC* **0** *P* **0** *L* **0** # 632

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item AUI*

Draft does not conform to the model shown in Figure 22-1 in that there is no AUI specified.

SuggestedRemedy

Include the specification of an AUI to the specification in order to make this new PHY a fully-fledged and compatible member of the family of 10 Mb/s interfaces.

Response *Response Status* **U**

REJECT.

Consensus not to change. Refer to motion 9 from Unconfirmed_minutes_3cg_0918.pdf

Cl **00** *SC* **13** *P* *L* **3** # 661

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item Repeaters*

When we added this note we thought we were through with 10 Mb/s and half duplex forever. That appears not to be the case.

SuggestedRemedy

Remove the note and update clause 13 appropriately to add 10BASE-T1S as a full fledged member of the 10 Mb/s CSMA/CD family.

Response *Response Status* **U**

REJECT.

Consensus not to change. Refer to motion 9 from Unconfirmed_minutes_3cg_0918.pdf

Cl **22** *SC* **22** *P* **25** *L* **1** # 658

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item PLCA*

The proposed changes in this clause are at odds with the statement in the approved criteria on compatibility that states "As a PHY amendment to IEEE Std 802.3, the proposed project will use (the existing) MII"

SuggestedRemedy

Remove clause 148 and related text from the draft. If PLCA is desired as an addition to the standards family it should be placed appropriately at MAC Control or higher within the layer structure and have its own CFI.

Response *Response Status* **U**

REJECT. Group to discuss.

Straw Poll: Reject comment #658 because 1) PLCA is compatible and operates with the CSMA CD MAC, not as a MAC function and 2) PLCA operates as a reconcillation sublayer and does not change the PLS service primitives.

Y: 27
N: 2
A: 7

Cl **22** *SC* **22.2.2.4** *P* **25** *L* **13** # 292

KIM, YONG NIO

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

The strike outs "Other. shall have no effect upon the PHY". This proposed change could potentially make existing systems non-compliant. So this potentially violates CRD (compatibility) and may cause other issues.

SuggestedRemedy

please fix it.

Response *Response Status* **W**

REJECT.

This text has not been deleted. An additional pair of TXD values have been inserted, which result in the text being moved to page 25, line 21 of draft 2.0.

Cl **22** *SC* **22.2.2.4** *P* **25** *L* **22** # 294

KIM, YONG NIO

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

The sentence "Other.shall.. upon the PHY"

SuggestedRemedy

Unneceesary text. But if you feel it is necessary, define what "shall have no effect" means, so that it could be added to the PICS and tested.

Response *Response Status* **W**

REJECT.

This is not new text. It is present in clause 22.2.2.4 of 802.3-2018. Removing this sentence may cause backward compatibility issues.

An additional pair of TXD values have been inserted, which result in the text being moved to page 25, line 21 of draft 2.0.

Cl **22** *SC* **22.2.2.5** *P* **25** *L* **46** # 295

KIM, YONG NIO

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

The proposed sentence "Assertion of the TX_ER signal shall not affect.".potentially make existing systems non-compliant. So this potentially violates CRD (compatibility) and may cause other issues.

SuggestedRemedy

please fix it.

Response *Response Status* **W**

REJECT.

No change is being made to the original clause 22 "shall not affect" text. The modification is the addition of "(with the exception of 10BASE-T1S and 10BASE-T1L)". The idea, which has been discussed in the group, is that we don't want to preclude using TX_ER with new 10BASE-T PHYs, so an exception has been added.

Cl **30** *SC* **30.2.1** *P* **30** *L* **25** # 301

KIM, YONG NIO

Comment Type **TR** *Comment Status* **A** *Management*

oPLCA 30.3.9 block is misplaced. It is mutually exclusive with oMACMergeEntity and oOMPEmulation and possibly others.

SuggestedRemedy

Please fix it so that they are not mutually exclusive with compatible entities.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Move oPLCA under oPHYentity in Figure 30-3

Jon Lewis to implement change.

Cl **30** *SC* **30.3.9.2.4** *P* **32** *L* **22** # 311

KIM, YONG NIO

Comment Type **TR** *Comment Status* **A** *Management*

There is no description on how NodeID=0 is assigned (or elected). How each NodeID is assured to be unique. How duplicate NodeID (error condition) is handled.

SuggestedRemedy

Please add details or references to these behaviors.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accomodated by #598 which specifies locally unique NodeID within a collision domain.

Description or requirements of assignment of parameters in the management entity is beyond the scope of this standard.

Cl **30** *SC* **30.5.1.1.4** *P* **33** *L* **47** # 313

KIM, YONG NIO

Comment Type **TR** *Comment Status* **R** *Big Ticket Item AUI*

If 10BASE-T1S PHY supports CSMA/CD, then it should operate similiarly to 10BASE5, etc WRT to MAU not available/avialable as stated in second paragarph.

SuggestedRemedy

Please add appropriate references of media loopback. Current references are only to AUI

Response *Response Status* **W**

REJECT.

Consensus not to change. Refer to motion 9 from Unconfirmed_minutes_3cg_0918.pdf

Cl **45** *SC* **45.2.3.58c** *P* **47** *L* **19** # 274

KIM, YONG NIO

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

If PLCA network does not work with repeaters, and a single multiple access segment cannot go beyond <nn> of nodes, why is the field much greater than necessary? It would be appropriate to set the value range to be the same as the actual segment max, and set the rest of the bits as reserved.

SuggestedRemedy

Please do so.

Response *Response Status* **W**

REJECT.

PLCA does not have a maximum size specified in Clause 148.

Cl **45** *SC* **45.2.3.58c** *P* **47** *L* **25** # 273

KIM, YONG NIO

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

Does the network segment work fine when nodes initialize with all defaults (in this case nodeID=255)? If so, then please explain how it works in CL147. If not, please explain why the default value matter.

SuggestedRemedy

Please reference appropirate part of CL147 that describes NodeID=255 default operation, or delete, or add other clarifications needed.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Replace "The default value of bits 3.2289.7:0 is 255." with, "The configurarion of local_nodeID is beyond the scope of this standard. When PLCA operation is disabled these values have no effect."

Cl **45** *SC* **45.2.3.58d.1** *P* **47** *L* **44** # 275

KIM, YONG NIO

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

Default value of 20 bit times seems exceessive for system that initailize with the value, when E2E delay for 25 m is 1.25 BT. Adding RX latency (148.4.5.1) delta, which is not spec'ed but the worst case (one could be at 0 us and another could be at 4 us in 147.11) the value could be 41.25 us for 25 m segment. None of these equate to 20 bit times default.

SuggestedRemedy

Please spec appropriate default for system operation when systems initialize from default.

Response *Response Status* **W**

REJECT.

Commenter does not provide sufficient remedy. The default value for PLCA TO_TIMER was considered by the Task Force.

Cl **45** *SC* **45.2.3.58e.3** *P* **48** *L* **45** # 276

KIM, YONG NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item PLCA_EN*

PLCA is not a part of PCS. Need to move this bit to appropirate layer (RS) register

SuggestedRemedy

Please do so.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Move *all* PLCA related bits to a dedicated subclause / address range in Clause 45. This includes registers to be added after accepting #556.

Implement changes marked with #276 in http://www.ieee802.org/3/cg/public/Sept2018/beruto_02_Cl_45_d2p0_proposed.pdf

Cl **45** *SC* **45.2.3.58e.4** *P* **48** *L* **50** # 277

KIM, YONG NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item PLCA_EN*

PLCA is not a part of PCS. Need to move this bit to appropirate layer (RS) register

SuggestedRemedy

Please do so.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Move *all* PLCA related bits to a dedicated subclause / address range in Clause 45. This includes registers to be added after accepting #556.

Implement changes marked with #277 in
http://www.ieee802.org/3/cg/public/Sept2018/beruto_02_Cl_45_d2p0_proposed.pdf

Cl **45** *SC* **45.2.3.58f.1** *P* **49** *L* **27** # 278

KIM, YONG NIO

Comment Type **TR** *Comment Status* **A** *Big Ticket Item PLCA_EN*

PLCA is not a part of PCS. Need to move this bit to appropirate layer (RS) register

SuggestedRemedy

Please do so.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Move *all* PLCA related bits to a dedicated subclause / address range in Clause 45. This includes registers to be added after accepting #556.

Implement changes marked with #278 in
http://www.ieee802.org/3/cg/public/Sept2018/beruto_02_Cl_45_d2p0_proposed.pdf

Cl **147** *SC* **147** *P* **145** *L* **1** # 659

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item AUI*

There is no AUI defined in the draft. The AUI is an essential element of all 802.3 10 Mb/s PHY specifications. This is particularly true in the case of half duplex applications where it is used as a timing test point for calculating the delay used in CSMA/CD round trip timing sums (Ref: Table 4-2). An AUI definition point is also needed (even if it never appears externally on a piece of equipment) in order to be able to include the cl. 9 repeater in networking configurations. Even though (almost) no one else remembers it or thinks it is relevant, the c. 9 repeater is a valuable tool in the network kit. It has a very, very low transister count when compared to a bridge and much lower delay (~ 9 bit times) and jitter (not dependent on packet length) such that it is a superior element for time sensitive applications in terms of cost and performance.

SuggestedRemedy

Define and specify the AUI (no connector specification required) for the 10BASE-T1S PHY for use as a functional test point, a timing test point and a standardized element edge for IP implementations of the PHY.

Response *Response Status* **U**

REJECT.

Consensus not to change. Refer to motion 9 from Unconfirmed_minutes_3cg_0918.pdf

Cl **147** *SC* **147.1** *P* *L* **22** # 637

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

The inclusion of PLCA in this project is (1) a layer violation and (2) out of scope for a Physical Layer project according to clause 1.1 of the standard. Inclusion of PLCA conflicts with paragraph 3 of the responses to the "Compatibility" criteria of the CSD.

SuggestedRemedy

Remove this paragraph from the draft and related text from this project. If PLCA is desired as an addition to the standards family it should be placed appropriately within the layer structure and have its own CFI.

Response *Response Status* **U**

REJECT.

PLCA maps existing MAC PLS primitives to MII, which is in-line with what an RS is supposed to do. PLCA is defined as a reconciliation sublayer, which has been considered part of a Physical Layer specification project. As long as this is the case, the text belongs in the subclause.

Straw Poll: I support rejecting this comment with the rationale above.
Y:25
N: 1
A: 5

Cl **147** *SC* **147.1.1** *P* *L* **26** # 638

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item AUI*

The text and Fig 147-1 do not align to Fig 1-1 of the standard which is intended to comprehensively cover 802.3.

SuggestedRemedy

Remove Fig 147-1 and reference Fig 1-1 or duplicate the 10 Mb/s portion of 1.1 here. Alter the implementation of 10BASE-T1S to align to the 1.1 model.

Response *Response Status* **U**

REJECT.

Consensus not to change. Refer to motion 9 from Unconfirmed_minutes_3cg_0918.pdf

Cl **147** *SC* **147.2** *P* *L* **34** # 642

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item Primitives*

The claim is that this PHY uses the MII, the reference to 40.2 is to the GMII

SuggestedRemedy

Change the reference to an MII clause and use the same primitives as existing 10/100 PHYs without alteration.

Response *Response Status* **U**

REJECT.

The reference is identical to that in c96 100BASE-T1. This is a reference to "Service primitives and interfaces", not MII.

Straw poll to reject comment with the above rationale:
Y: 9
N: 0
A: 21

Cl **147** *SC* **147.3.1** *P* *L* **3** # 643

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **A** *EZ*

It is not clear from the description whether "PCS Reset" produces a level or a pulse on its output. i.e. does it take a !PCS Reset to complete the reset and release the device for operation.

SuggestedRemedy

Clarify

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
WORK WITH PIER ON THIS
Change this:
====
PCS reset initializes all PCS functions. The PCS Reset function shall be executed whenever one of the following conditions occur:
a) Power on (see 36.2.5.1.3).
B) The receipt of a request for reset from the management entity.
PCS Reset shall set pcs_reset = ON while any of the above reset conditions holds true. All state diagrams take the open-ended pcs_reset branch upon execution of PCS Reset. The reference diagrams do not explicitly show the PCS Reset function.
====
to this:
====
PCS reset initializes all PCS functions. The PCS Reset function shall be executed whenever any of the following conditions occur:
a) Power on causes power_on = TRUE (see 36.2.5.1.3) while pcs_reset = OFF.
B) The receipt of a request for reset from the management entity (see 3.2291.15 in 45.2.3.58e.1), independently from the current state of pcs_reset.
All state diagrams take the open-ended pcs_reset branch upon execution of PCS Reset.
PCS Reset shall keep pcs_reset = ON until the complete execution of the PCS Reset function, after which it is set to pcs_reset = OFF. The reference diagrams do not explicitly show the PCS Reset function.
====

Cl **147** *SC* **147.3.2.2** *P* *L* **44** # 645

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

PLCA is out of scope for this project and a layer violation for a PHY project.

SuggestedRemedy

Remove this variable and its descriptive paragraph.

Response *Response Status* **U**

REJECT.

See comment #637 for rationale.

Cl **147** *SC* **147.3.2.2** *P* *L* **50** # 646

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

PLCA is out of scope for this project and a layer violation for a PHY project.

SuggestedRemedy

Remove the remainder of PCLA from this project draft.

Response *Response Status* **U**

REJECT.

See comment #637 for rationale.

Cl **147** *SC* **147.3.5** *P* *L* **10** # 648

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *Big Ticket Item Repeaters*

Collision detect as described here purports to detect a collision between this station and one other station. It does not descibe any way to detect a collision between any other two or more stations.

SuggestedRemedy

Add collision detection based on energy received. Lack of this aspect constitues a lack of completeness in the basic function of the specified device and therefore the draft. Restart the initial WG Ballot.

Response *Response Status* **U**

REJECT.
PHYs detect activity on the bus, specific detection of collision is not required, nor is the method.

Commenter indicates that his concern is reliable detection of activity with an arbitrary number of transmitters.

Straw Poll:
I support:
REJECT - PHYs detect activity on the bus, specific detection of collision is not required, nor is the method.
Y:7
N:2
A:11

I support:
ACCEPT. (commenter's proposed resolution is: Add collision detection based on energy received. Restart the initial WG Ballot.)
Y:0
N:9

TFTD

Cl **147** *SC* **147.3.7** *P* *L* **1** # 650

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

PLCA is out of scope for this project and a layer violation for a PHY project.

SuggestedRemedy

Remove the entirety of cl. 147.3.7.

Response *Response Status* **U**

REJECT.

See comment #637 for rationale.

Cl **148** *SC* **148** *P* **173** *L* # 287

KIM, YONG NIO

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

CL 4.3.3 variable definition of carrierSense is in conflict with how CL173 PLCA is using carrier sense. "The overall event of activity on the physical medium is signaled to the MAC sublayer by the variable carrierSense". And "var carrierSense: Boolean;
In half duplex mode, the MAC sublayer shall monitor the value of carrierSense to defer its own transmissions when the medium is busy. The Physical Layer sets carrierSense to true immediately upon detection of activity on the physical medium. After the activity on the physical medium ceases, carrierSense is set to false. Note that the true/false transitions of carrierSense are not defined to be precisely synchronized with the beginning and the end of the frame, but may precede the beginning and lag the end, respectively. (See 4.2 for details.) In full duplex mode, carrierSense is undefined." CL173 use of carrier sense is in conflict w/ CL4. These conflicted use are pervasive, e.g. CL148.4.6.1 holds carrier_on active even when there is no activity on the physical medium.

SuggestedRemedy

Either include CL4 carrier sense related maintanance changes as a part of PLCA, or change PLCA to work with CL4 carrier sense as defined.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Accomodated by #649.

Cl **148** *SC* **148** *P* **173** *L* **1** # 656

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

The inclusion of PLCA in this project is (1) a layer violation and (2) out of scope for a Physical Layer project according to clause 1.1 of the standard. Inclusion of PLCA conflicts with paragraph 3 of the responses to the "Compatibility" criteria of the CSD.

SuggestedRemedy

Remove clause 148 and related text from the draft. If PLCA is desired as an addition to the standards family it should be placed appropriately within the layer structure and have its own CFI.

Response *Response Status* **U**

REJECT.

See comment #637 for rationale.

Cl **148** *SC* **148.1** *P* **173** *L* **14** # 657

Thompson, Geoff GraCaSI S.A.

Comment Type **TR** *Comment Status* **A** *ig Ticket Item PLCA_SCOPE*

According to this text, "PLCA is designed to work on top of CSMA/CD". Therefore it is mispositioned in the stack by being placed within the PHY which is below the CSMA/CD mechanism.

SuggestedRemedy

Remove clause 148 and related text from the draft. If PLCA is desired as an addition to the standards family it should be placed appropriately at MAC Control or higher within the layer structure and have its own CFI.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #657 in the right boxes.

NOTE: Intention was to specify that PLCA is not a replacement of CSMA/CD but instead it's a method that works in conjuction with CSMA/CD functions.

Cl **148** *SC* **148.2** *P* **173** *L* **25** # 286

KIM, YONG NIO

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

"..round-robin fashion every time the PHY with node ID = 0 signals a BEACON on the medium, indicating the start of a new cycle" -- this specification does not describe how a node ID=0 is selected (or elected), and how the system handles duplicate node id=0 or absense of node id=0. Also not specified are node id conflict (duplicate node id s)

SuggestedRemedy

The draft is not complete without these specifications. Specify these to complete the spec. Ethernet std has management optional, config rules are known, and required protocol to config are specified (e.g. channel traninig)

Response *Response Status* **W**

REJECT.
No consensus to change
Commenter is referred to comment 598 with respect to node ID assignment and management operation.

Cl **148** *SC* **148.4.2** *P* **176** *L* # 289

KIM, YONG NIO

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

RS is defined in CL1 "1.4.425 Reconciliation Sublayer (RS): A mapping function that reconciles the signals at the Media Independent Interface (MII) to the Media Access Control (MAC)-Physical Signaling Sublayer (PLS) service definitions. (See IEEE Std 802.3, Clause 22.)", and consistent with CL22.1.1. Even when MII signals are used to convery signals for EEE, it is still performing reconciliation. PLCA is using signals in RS (collision, carrier-sense, etc) while creating a completely different and new medium access control (MAC) method. PLCA function does not belong in RS.

SuggestedRemedy

Move PLCA outside of RS (which only translates MII signals to PLS signals, for the dataplane as well as control like EEE states, not a new media access control method. And if necessary, revise CSD and objectives as appropirate.

Response *Response Status* **W**

REJECT.

See comment #637 for rationale.

Cl **148** *SC* **148.4.4.1.2** *P* **178** *L* **51** # 603

KIM, YONG NIO

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

"A Commit request shall not.. PHY. RX_DV.." has two problems. What PHY is "the PHY", and how does the PHY know not to assert RX_DV signal in accordance to CL148 state diagram.

SuggestedRemedy

Please fix it. If fixable.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

As stated in the same subclause "PHY specifications are free to map the COMMIT request to any suitable line coding as long as the requirement defined herein are met."

The purpose of this sentence is to ensure that whatever mapping is chosen in specific PHY clauses for the COMMIT request, this one is not interpreted as normal data (asserting RX_DV).

Suggested resolution should clarify this better.

Proposed resolution in Clause_148_r2p0_resolution.pdf. Changes are marked with #comment number in the right boxes.

NOTE: CRS assertion is not to be specified here (it's implicit in CRS definition). See resolution of #649

Cl **148** *SC* **148.4.4.1.2** *P* **178** *L* **51** # 602

KIM, YONG NIO

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

"thus request, the PHY shall asset the CRS..." has two problems. What PHY is "the PHY", and how does PHY assert CRS in accordance to CL148 state diagram

SuggestedRemedy

Please fix it. If fixable.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.
Solved by #603 and #649

Cl **148** *SC* **148.4.5.1** *P* **181** *L* **50** # 604

KIM, YONG NIO

Comment Type **TR** *Comment Status* **R** *ig Ticket Item PLCA_SCOPE*

PLCA Control state diagram (Fig 148-5) and related text seems to describe Token bus-like medium access control funciton (without details on how the token (BEACON) is initialized, how duplilcate tokens are handled (duplicate nodeID=0), how lost token (null nodeID=0) is handled). This is NOT appropriate function for RS (CL22) layer that conveys (translates) signals between PLS and MII

SuggestedRemedy

Move CL148 function so CL4 MAC Clause where it belongs. Make approporate changes to CRD and objectives list, if deemed needed.

Response *Response Status* **W**

REJECT.

See comment #637 for rationale.

Cl **148** *SC* **148.4.6.1** *P* **187** *L* **54** # 605

KIM, YONG NIO

Comment Type **TR** *Comment Status* **R** *t Item HALF_DUPLEX_802.1*

PLCA Data state diagram (Fig 148-6) introduces a new behavior WRT media loopback when transmitting. Prior to CL148, CL4 half-duplex MAC reflects all TX packets back to RX (reflected by the half-duplex medium). CL4 full-duplex MAC does not reflect any TX back to RX. There is recognized inconsistancy in 802.1 MAC Services defintion (e.g. thought experiment -- how does broadcast frame transmitted by a bridge to a half-duplex medium behave as per std, and how does a system actually behave)? This statemachine introduces a new behavior for the half-duplex MAC, where the TX is not reflected back to RX. An EXISTING system that is not aware of 802.3cg behavior would IGNORE (with half-duplex MAC) RX when it is also TX, when in fact RX is independant transmission that must be received (otherwise packet was transmited to the network and lost silently by being ignored (reflected).

SuggestedRemedy

While the 802.1 MAC services issues has nothing to do with 802.3cg scope, the 802 and 802.3 compatibility is IN scope, because by introducing a different behavior. Existing systems (MACs and Bridges) would potentially not process any RX that is coincidental with its own TX. Please fix it, if fixible. 8802.1 MAC Services maintanance change may be required be reviewed together with this issue.

Response *Response Status* **W**

REJECT.

PLCA is compatible with the clause 4 MAC as specified in 802.3. Maintenance on clause 4 or other Standards is outside the scope of this project. The P802.3cg Task Force Chair will forward this comment to 802.3 Maintenance for consideration.