Cl **82** *SC* **82.2.17.2** *P* **36** *L* **5** # 1

Ran, Adee
Cisco Systems

Comment Type **T** *Comment Status* **R** *stateless decoder*

"RXD<63:0> and RXC<7:0> are set to the constant LBLOCK_R (see 82.2.19.2.1)"
A cleaner way to write this is using the variable rx_raw (defined in 82.2.19.2.2), which encodes RXD and RXC. This would also be more consistent with the state-diagram decoder.

SuggestedRemedy

Change to
"rx_raw (see 82.2.19.2.2) is set to the constant LBLOCK_R (see 82.2.19.2.1)"

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **30** *SC* **30.17.1.4** *P* **22** *L* **7** # 2

Ran, Adee
Cisco Systems

Comment Type **T** *Comment Status* **A** *(bucket)*

"When set to enabled and the remote peer also supports the packet metadata capability (confirmed through a mechanism beyond the scope of this standard), the packet metadata capability becomes active. The default value is disabled. All packet metadata capabilities are disabled upon link failure."
This means "enable=true" does not actually activate the EMS - it is conditional on negotiation with the remote peer. If that's the case then negotiation should be in scope, because it gates the activation of the function after the management enables it. And strictly speaking, management does not know whether the "enable" took effect or not because the negotiation result is not defined in the standard (out of scope).
It would be cleaner to define this attribute as direct enablement of the capability, and specify that it shall be enabled only after confirmation that the remote peer also supports the capability.

Similarly for 30.17.1.5 aEMSLinkMetadataEnable.

SuggestedRemedy

Change to
"When set to TRUE the packet metadata capability becomes active. The default value is FALSE. This attribute shall not be set to TRUE until it has been confirmed that the remote peer also
supports the packet metadata capability. The confirmation mechanism is beyond the scope of this standard. Upon link failure this attribute is set to FALSE.

Apply corresponding changes in 30.17.1.5 for link metadata capability.

Response *Response Status* **C**

ACCEPT.

The comment points out a improvement and clarification for the text related to enabling metadata and link metadata and the connection to negotiation which is out of scope of this standard.

Implement suggested remedy with editorial license.

Make similar changes to 30.17.1.5 for the link metadata description with editorial license.

Cl **30** *SC* **30.17.1.4** *P* **22** *L* **7** # 3

Ran, Adee Cisco Systems

Comment Type **ER** *Comment Status* **A** *(bucket)*

The "Syntax" of this attribute is defined as BOOLEAN with values TRUE and FALSE, but the "BEHAVIOR DEFINED AS" uses the values enabled and disabled.
Similarly for 30.17.1.5 aEMSLinkMetadataEnable.

SuggestedRemedy

Change to TRUE/FALSE, also in 30.17.1.5.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved with the response to comment #47.

Cl **82** *SC* **82.2.3.6** *P* **34** *L* **21** # 4

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *ordered set definitions*

The "40GBASE-R and 100GBASE-R control code" value for the Sequency ordered set row is poorly written - "control codes are set to 0x00" is unclear. The new Control ordered set has a clearer description, and the existing one would be improved by aligning it to the new one.

SuggestedRemedy

Change from
"Encoded by block type 0x4B plus O code, control codes are set to 0x00"
to
"Encoded by block type 0x4B and a zero O code"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The sentence in question has not been modified from the current baseline standard and should not need to be modified. However, the reference to "control codes" is vague and not a clear reference to anything. It becomes obvious that this statement is not clear compared to the new defintion of control ordered sets added to the same table.

Implement the suggested remedy with editorial license.

Cl **82** *SC* **82.2.3.9** *P* **34** *L* **33** # 5

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *ordered set definitions*

The subclause title "Ordered set (/O/)" is inadequate - there is no /O/ in Table 82-1 so /O/ is not a known notation. (this is a problem in the base document, but since the text is changed significantly, it's a good opportunity to fix it).

More importantly, the new sentence "The notation /O/ is used to represent either the /Q/ or /C/ control characters" in the subclause text is not helpful, because treatment of these control characters is completely different. The term "/O/" is only used once in clause 82 other than in this definition, in 82.2.19.2.3, which is part of the state diagram encoder; its original definition was effectively /Q/. However, the state diagram decoder should not be changed, because EMS requires use of the stateless encoder. The text in D1.0 would make the state diagram decoder recognize the new control code /C/ that appears in Table 82-1.

The suggested remedy keeps the state diagram encoder definition unmodified (only accounting for sequence ordered sets) and removes the confusing /O/ notation.

SuggestedRemedy

In 82.2.3.9, change the subclause title to "Ordered sets (/Q/ or /C/)", and delete the sentence "The notation /O/ is used to represent either the /Q/ or /C/ control characters".

In the last paragraph of 82.2.19.2.3, change from
"A valid ordered set consists of a valid /O/ character in the first character and data characters in the seven characters following the /O/. A valid /O/ is any character with a value for O code in Table 82–1"
to
"A valid ordered set consists of a valid /Q/ character in the first character and data characters in the seven characters following the /Q/".

Response *Response Status* **C**

REJECT.

The CRG reviewed the presentation at:
https://www.ieee802.org/3/dt/public/26_11/ran_3dt_02_2611.pdf

There was extensive discussion of this topic which should continue.

There is no consensus to make a change at this time.

Cl **82** *SC* **82.2.19.2.3** *P* **36** *L* **35** # 6

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **R** *ordered set definitions*

The definition of T_TYPE in 82.2.19.2.3 (in 802.3-2022, currently not included in the draft) includes the term /O/ twice in the definitions of values "C" and "T". As noted in another comment, this should be changed because the meaning of /O/ is changed by this amendment.

Note also that for "C", the definition includes "control characters other than ..." which effectively (based on the original Table 82-1) means only 8 idles (/I/), but it's not obvious; the definition can be simplified and clarified.
The definition of "T" can be similarly simplified.

If the suggested remedy is not accepted, at the minimum, change the two instances of /O/ to /Q/ (subject of another comment).

SuggestedRemedy

Bring in the definition of T_TYPE in 82.2.19.2.3 (currently not included in the draft).
Change item a) in the definition of "C" from
"Eight valid control characters other than /O/, /S/, /T/, /LI/, and /E/"
to
"Eight /I/ characters"
In the definition of "T", change from
"all characters following the /T/ are valid control characters other than /O/, /S/ and /T/"
to
"all characters following the /T/ are /I/, /LI/, or /E/".

Response *Response Status* **C**

REJECT.

The CRG reviewed the presentation at:
https://www.ieee802.org/3/dt/public/26_11/ran_3dt_02_2611.pdf

Resolved using the response to comment #5.

Cl **82** *SC* **82.5a** *P* **39** *L* **7** # 7

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *EMS ability/enable*

The new subclause for EMS mixes the concepts of support, functionality/capabilities, and enablement. A PCS may support have the functionality required to support EMS but not enable it. In that case, the "shall" statements are irrelevant.

Also, RS-FEC is a different sublayer so the "shall" statements for the RS-FEC are out of place in the PCS clause; they should be made in clauses 91 and 161. The EMS functions of the PCS and the RS-FEC can be enabled/disabled by the same management variable

SuggestedRemedy

Rewrite 82.5a in terms of required PCS functionality (support of stateless encoder and decoder, control ordered sets, and disabling the BER monitor).
Move the RS-FEC requirements to clauses 91 and 161.

Define new variables ems_link_abiilty, ems_link_enable, ems_packet_ability, ems_packet_enable, in both the PCS clauses and the RS-FEC clauses. Specify in each clause which functionality is controlled by the "enable" variable. Use the variables in the definitions of the functions, e.g. in 82.2.4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The CRG reviewed the presentation at:
https://www.ieee802.org/3/dt/public/26_11/ran_3dt_01_2611.pdf
The CRG reviewed the editorial slides 11-16 at:
https://www.ieee802.org/3/dt/public/26_11/opsasnick_3dt_03a_2611.pdf

The suggested remedy (as elaborated in ran_3dt_01_2611) has two main suggested changes which can be addressed separately:

1. Change the way the new PCS/FEC functionality is enabled for EMS. The current approach in the draft is to have an ability/enable variables for each individual function, and the suggestion is to change this to a more "global" set of 4 variables - an ability/enable for each type of metadata, ems_packet_metadata and ems_link_metadata so the new functionality is all enabled as a group together.

2. The draft currently has all xBASE-R EMS requirements for a particular xBASE-R family of PHYs in the xBASE-R PCS clause. The suggestion is to split the PCS and FEC EMS requirements, locating them in the respective PCS or FEC clauses for the 50GBASE-R and 100GBASE-R families (this is not an issue for the 200G+ families since the FEC is part of the those PCS clauses). Also, put any "overall" requirements and pointers to the PCS and FEC requirements for each xBASE-R family in a new subclause in Clause 195.

For #1:
There are several pros and cons of each approach to the ability/enable issue. This question deserves more time to flush out with offline discussion (and a possible ad-hoc meeting) to come to a consensus regarding approach.

For #2:
The draft currently does not have any references to specific xBASE-R PHY families in Clause 195. Using Clause 195 as the starting point to list the xBASE-R PHY families that support EMS with pointers to the relevant PCS and FEC subclauses along with top-level requirements is a better starting point for the reader than the PCS clauses.

Implement the changes outlined in opasasnick_3dt_03a, slides 15-16, with editorial license.

[Editor's note: CC 82, 91, 161, 133, 134, 195]

Cl **82** *SC* **82.7.4.1** *P* **41** *L* **17** # 8

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *PICS*

As defined in 82.2.4 the state diagram encoder is mandatory (if the stateless encoder is not enabled, the state diagram must be used).
Similarly for the state diagram decoder in 82.2.17, and possibly in other PCS clauses.

SuggestedRemedy

In items C11 and C14, change the status to "M".
Apply in other PCS clauses if necessary.

Response *Response Status* **C**

REJECT.

In the PICS table in 82.7.4.1:
C11 is "Supports state diagram encoder" and has status O.1
C12 is "Supports stateless encoder" and has status O.1
C13 is "Supports stateless encoder" and has status "EML:M"
The O.<n> status means that one or more of the set "<n>" is required (mandatory).
From 21.6.2 that defines the PICS special symbols:
O.<n> optional field/function, but at least one of the group of options labeled by the same numeral <n> is required.

An implementation is free to implement either C11 or C12 or both. Setting C11 to "M"" would mean that a new implementation cannot provide only the stateless encoder.

Item C13 is used to indicate that the stateless option is required to support link metadata.

The same principle is used for the state-diagram and stateless decoders, using C14, C15, C16. C14 cannot be made mandatory witout eliminating the option to only implement the stateless decoder.

This comment is related to comment #7 and the approach to enabling the new functionality required for EMS.

There is no consensus to make this change at this time.

Cl **82** *SC* **82.7.4.1** *P* **41** *L* **20** # 9

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **R** *PICS*

Stateless encoder is mandatory when EML is supported, as defined by item C13. C12 contradicts that by making it optional.
Similarly for the stateless decoder, and possibly in other PCS clauses

SuggestedRemedy

Delete items C12 and C15.
Apply in other PCS clauses if necessary.

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #8.

Cl **119** *SC* **119.2.6.2.3** *P* **48** *L* **4** # 10

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *(bucket)*

119.2.6.2.3 (in 802.3-2022, currently not in the draft) includes definition of T_TYPE, which should be modified similarly to the one in 82.2.19.2.3.

SuggestedRemedy

Bring in this subclause and apply the necessary changes (also subject of other comments).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **195** *SC* **195.2** *P* **70** *L* **15** # 11

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *EMS intro wording*

"EMS provides two optional capabilities"
It is an implementation that provides capabilities (or doesn't).
The word "comprises" is suitable here, but the simpler "includes" would also work.

SuggestedRemedy

Change "provides" to "includes".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

A small change to the wording will make it more clear.

Change the text
from:
"EMS provides two optional capabilities: packet metadata and link metadata."
to:
"EMS defines two optional capabilities: packet metadata and link metadata."

Cl **195** *SC* **195.3.2** *P* **71** *L* **34** # 12

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"The EMS client initiates the transmission of metadata by delivering it to the gRS over the EMSI transmit interfaces. The EMS client accepts received metadata from the gRS over the EMSI receive interfaces."
"transmit interfaces" and "receiver interfaces" are undefined; There are service interface primitives.

Also, "accepts received metadata" is inaccurate - it simply receives it.

SuggestedRemedy

Change "EMSI transmit interfaces" to "EMS_PM.request or EMS_LM.request primitives".
Change "EMSI receive interfaces" to "EMS_PM.indication or EMS_LM.indication primitives".
Change "accepts received metadata" to "receives metadata".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the first two sentences in 195.3.2
from:
"The EMS client initiates the transmission of metadata by delivering it to the gRS over the EMSI transmit interfaces. The EMS client accepts received metadata from the gRS over the EMSI receive interfaces."
to:
"The EMS client initiates the transmission of metadata by delivering it to the gRS using the EMS_PM.request and EMS_LM.request primitives. The EMS client receives metadata from the gRS using the EMS_PM.indication and EMS_LM.indication primitives."

Implement with editorial license.

Cl **195** *SC* **195.3.4.2.1** *P* **72** *L* **47** # 13

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *Rx Frame Error*

"The data conveyed by EMS_PM.indication might not be valid for use by the EMS client if the MAC client detects a packet framing error or FCS error in the received packet"

This is a frightening statement!
But in fact it refers to an almost impossible situation. The assumption is that the packet data is protected by the FEC and errors are fully marked, so FCS and framing errors should prevent packets from being delivered to MAC (FEC failure to detect an errored codeword has negligible probability).

Also, "packet framing error" is undefined, and CRC errors are checked in the MAC (e.g. 4A.2.4.1.2), not in the MAC client. The MAC client will simply not receive a packet that fails a CRC check.

SuggestedRemedy

Delete the quoted sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The phrase "packet framing error" here was intended to describe the reception of an incomplete frame due to part of that frame being in an errored codeword. The intention of the quoted sentence is to make the reader aware that the EMS client may not always use the data from the EMS_PM.indication primitive, even if it contains valid metadata. The wording can be improved rather than deleted entirely.

Change the text
from:
"The data conveyed by EMS_PM.indication might not be valid for use by the EMS client if the MAC client detects a packet framing error or FCS error in the received packet. Communication from the MAC client to the EMS client is beyond the scope of this standard."
to:
"The data conveyed by EMS_PM.indication might be in error if the MAC indicates an error in the associated packet."

Cl **195** *SC* **195.3.4.2.1** *P* **72** *L* **49** # 14

Ran, Adee Cisco Systems

Comment Type **TR** *Comment Status* **A** *Rx Frame Error*

"Communication from the MAC client to the EMS client is beyond the scope of this standard"
This does not need to be stated - the standard is about Ethernet, not its clients.
Assuming the previous sentence will also be deleted (subject of another comment), this statement would also be out of place.

SuggestedRemedy

Delete the quoted sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #13.

Cl **195** *SC* **195.3.4.2.3** *P* **73** *L* **9** # 15

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"the EMS client extracts metadata from the packet_metadata parameter. The action it takes, if any, is beyond the scope of this standard"

"if any" better matches the statement "extracts metadata" because metadata does not exist for all packets. if there is metadata, the EMS client is very likely to take some action, so "if any" makes little sense. Also, it goes without saying, and less is more.

Similarly in 195.3.5.2.3.

SuggestedRemedy

Delete "if any", here and in 195.3.5.2.3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment points out that the phrase "if any" is not needed. It would be better to remove this from the locations pointed to by the comment.

In 195.3.4.2.3, replace:
"The action it takes, if any, is beyond the scope of this standard."
with:
"The action it takes is beyond the scope of this standard."

In 195.3.5.2.3, replace:
"What actions it takes, if any, based on the extracted metadata is beyond the scope of this standard."
with:
"The action it takes is beyond the scope of this standard."

Cl **195** *SC* **195.4** *P* **74** *L* **14** # 16

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"These two gRS functions are defined to support the EMSI."
Thie sentence is redundant - the remainder of the paragraph says the same.
An implementation supports the EMSI (or doesn't), not the functions.

SuggestedRemedy

Delete the quoted sentence.

Response *Response Status* **C**

ACCEPT.

Cl **195** *SC* **195.4.1.1** *P* **75** *L* **9** # 17

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

The "packet metadata" subclause has many instances of "shall" and some instances of "can" that don't go together.
Also, for the first "shall" (which encompasses the rest) it is unclear that the gRS is responsible for the actions.

Also applies in 195.4.1.2.

SuggestedRemedy

Change "the following actions shall occur" to "the gRS shall perform the following actions".
Change the remaining "shall" statements in this subclause to description of the actions - "is replaced", "discards", "replaces", "is transmitted".

Make similar changes in 195.4.1.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The suggested remedy improves the readability of the draft.

In 195.4.1.1, change the first sentence:
from:
"If the packet metadata capability is enabled, then the following actions shall occur upon receipt of ...."
to:
"If the packet metadata capability is enabled, then the the gRS shall perform the following actions upon receipt of ...."

and change the 3rd sentence of the 2nd paragraph
from:
"... specifies whether octet i of the next transmitted packet shall be replaced."
to:
"... specifies whether octet i of the next transmitted packet is replaced."

and change the 1st sentence of the 3rd paragraph
from:
"... then the gRS shall discard the ..."
to:
"... then the gRS discards the ..."

and change 2nd sentence of the 3rd paragraph
from:
"The gRS shall replace the discarded bits ...."
to:
"The gRS replaces the discarded bits ...."

and change the 1st sentence of the 4th paragrpah
from:
"... the next transmitted packet shall be transmitted unchanged."
to:
"... the next transmitted packet is transmitted unchanged."

Make similar changes to the use of "shall" in 195.4.1.2.

Implement with editorial license.

Cl **195** *SC* **195.4.1.1** *P* **75** *L* **13** # 18

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *EMS preamble*

"Octets 1 through 7 can be replaced with packet metadata"
This statement is redundant due to the subsequent sentences.

SuggestedRemedy

Delete the quoted sentence.
In the subsequent sentence, change "whether octet i of the next transmitted packet shall be replaced" to "whether octet i of the next transmitted packet is replaced by packet metadata"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment makes a valid point that this sentence is not needed; however, it is useful to the reader to explain why octet 0 cannot be replaced with metadata. This was the original intent of the saying only octets 1 to 7 can be replaced.

In 195.4.1.1, change the following sentence in the 2nd paragraph,
from:
"Octets 1 through 7 can be replaced with packet metadata."
to:
"The first octet (octet 0) of the preamble cannot be replaced with metadata because the PCS sets this octet of the 66-bit block to the block type value."

Implement with editorial license.

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **9** # 19

Ran, Adee Cisco Systems

Comment Type **T** *Comment Status* **A** *Link Metadata Idle Effect*

"The impact of control ordered set insertion on the Deficit Idle Count (DIC) (see 81.3.1.4) is application dependent and beyond the scope of this standard"

This sentence is out of place in the list item it is in. DIC is potentially affect4ed by an EMS_LM.request received during idle too (the first item), and in fact it is more relevant there.

The impact is definitely within the scope of the standard, even if it is application dependent.

If a CtlOS replaces idle characters it practically reduces the number of idles and the receiving PCS cannot delete the CtlOS (unlike idles) so apparently the DIC should be affected - more idles should be inserted to ensure the receiver can delete idles for frequency offset compensation.

If the CtlOS is within packet data then it does not reduce the number of idles so DIC should not be affected.

SuggestedRemedy

If it is desired to keep the effect on DIC implementation dependent move this statement to a paragraph after the list, and delete "and beyond the scope of this standard".

But preferably, specify that a request received during idle increases the DIC by 8 (such that idles will be inserted to compensate), and a request received during packet transmission does not..

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The insertion of control ordered sets can potentially affect the overall rate of idles as well as the MAC effective data rate. It is intentionally left to the application to determine whether to offset these effects by incrementing or decrementing the DIC to add or delete idles. It is also up to the application to ensure that the rate of idles remains sufficient to allow a receiver to delete idles for clock frequency compensation.

The list in 195.4.1.2 describes the possible actions upon receipt of an EMS_LM.request. The text about DIC and the effect on idles should be described in a paragraph to be added after the list.

Move the quoted sentence in the comment from the 2nd dashed list item to after the dashed list and change the text
from:
"The impact of control ordered set insertion on the Deficit Idle Count (DIC) (see 81.3.1.4) is application dependent and beyond the scope of this standard."
to:
"The impact of control ordered set insertion on the Deficit Idle Count (DIC) (see 81.3.1.4) is not specified. It is required to maintain a sufficient rate of IDLE blocks to allow the transmitting or receiving PCS to delete IDLE blocks for clock rate and alignment marker compensation."

Implement with editorial license.

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **22** # 20

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"Table 81–3 specifies all permissible encodings of TXC and TXD including the control character for control ordered sets (0x5C)"
This sentence is redundant due to the next paragraph and Table 195-1.

SuggestedRemedy

Delete the quoted sentence. In the paragraph above this sentence, change "(TXC=1)" to ""(TXC=1, TXD=0x5C)"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the redundant sentence, but retain the reference to Table 81–3 where the control characters are defined.

Change the two paragraphs at line 17 in 195.4.1.2
from:
"A control ordered set is transmitted on the xMII as a single control character (TXC=1) followed by seven data octets (TXC=0). The control character shall be aligned to lane 0 of the xMII data interface. The general format of a control ordered set is similar to a sequence ordered set (see 81.3.4 and Table 81–5) but uses a different control character.

Table 81–3 specifies all permissible encodings of TXC and TXD including the control character for control ordered sets (0x5C)."

to:
"A control ordered set is transmitted on the xMII as a single control character, TXC=1 and TXD=0x5C (see Table 81–3), followed by seven data octets with TXC=0. The control character shall be aligned to lane 0 of the xMII data interface. The format of a control ordered set is the same as a sequence ordered set (see 81.3.4 and Table 81–5) but with a different control character value."

Implement with editorial license.

Cl **195** *SC* **195.4.2.1** *P* **77** *L* **32** # 21

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"The gRS does not propagate packet metadata to the MAC."
This sentence is redundant due to the next sentence. Say what is done, not what is not done.

SuggestedRemedy

Delete the quoted sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In the second paragraph of 195.4.2.1, the first sentence says the packet metadata is sent to the client. The second sentence says the packet metadata is not sent to the MAC. The third sentence gives specific instructions on how the packet metadata is replaced when transmitting the packet to the MAC. It would be a better introduction to the gRS actions to say the gRS replaces the packet metadata that is sent to the MAC.

Change the 2nd sentence of the 2nd paragraph of 195.4.2.1
from:
The gRS does not propagate packet metadata to the MAC."
to:
"The gRS replaces the packet metadata with a standard preamble and SFD when transmitting the packet to the MAC."

Cl **195** *SC* **195.4.2.2** *P* **77** *L* **52** # 22

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"Table 81–4 specifies all permissible encodings of RXC and RXD including the value for the control character for control ordered sets (0x5C)"
The only relevant information in Table 81-4 is the fact that the control character is 0x5C. So say it in the previous paragraph.

SuggestedRemedy

Delete the quoted sentence. In the second paragraph, change "(RXC=1)" to ""(RXC=1, RXD=0x5C)".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the redundant sentence, but retain the reference to Table 81–4 where the control characters are defined.

Change the two paragraphs at line 49 in 195.4.2.2
From:
"A control ordered set is received on the xMII as a single control character (RXC=1) followed by 7 data octets (RXC=0). The control character is always aligned to lane 0 of the xMII data interface.

Table 81–4 specifies all permissible encodings of RXC and RXD including the value for the control character for control ordered sets (0x5C)."

To:
"A control ordered set is received on the xMII as a single control character, RXC=1 and RXD=0x5C (see Table 81–4), followed by seven data octets with RXC=0. The control character is always aligned to lane 0 of the xMII data interface."

Cl **195** *SC* **195.5.4.1** *P* **80** *L* **24** # 23

Ran, Adee Cisco Systems

Comment Type **ER** *Comment Status* **A** *(bucket)*

There is a requirement in 195.4.2.1 to restore the original preamble.
The value/comment of PM2 does not mention this requirement, so the item does not fully cover the requirements of the subclause.

SuggestedRemedy

Delete the value/comment of PM2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #24.

Cl **195** *SC* **195.5.4.2** *P* **80** *L* **35** # 24

Ran, Adee Cisco Systems

Comment Type **ER** *Comment Status* **A** *(bucket)*

Why "can generate" in LM1 - metadata from the EMS client must cause generation of CtlOS
Also for PM1

SuggestedRemedy

Delete the value/comment of LM1 and PM1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

As the comment points out the "Value/Comment" column for the PICS in PM1, PM2, LM1 and LM2 do not specify everything the function must do. The subclause reference contains the full description. It is better to leave just the subclause reference.

Remove all text from the "Value/Comment " column for PM1, PM2, LM1 and LM2 in 195.5.4.1 and 195.5.4.2.

Cl **195** *SC* **195.5.4.2** *P* **80** *L* **38** # 25

Ran, Adee Cisco Systems

Comment Type **ER** *Comment Status* **A** *(bucket)*

There is a requirement in 195.4.2.2 to drop the CtlOS from the bit stream delivered to the MAC.
The value/comment of LM2 does not mention this requirement, so the item does not fully cover the requirements of the subclause.

SuggestedRemedy

Delete the value/comment of LM2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #24.

Cl **30** *SC* **30.2.5** *P* **20** *L* **23** # 26

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

30.17 is in this amendment

SuggestedRemedy

Make it an active xref

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.17.1.1** *P* **21** *L* **20** # 27

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

Clause 195 is in this amendment

SuggestedRemedy

Make it an active xref

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.17.1.11** *P* **23** *L* **41** # 28

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

missing space in "50Gb/s"
Also in 30.17.1.12
Also in 174 in "1.6Tb/s"

SuggestedRemedy

Insert spaces

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Numerical values should be separated from thier units by a space.

Implement the suggested remedy in 30.17.1.11, 30.17.1.12 and in the heading of 174.

Also add a space between the numerical value and the units on page 2 in the "Abstract" section (50Gb/s) as well as any other occurances with the same issue.

Implement with editorial license.

[Editor's note: CC 30, 174, FM]

Cl **45** *SC* **45.2.1.116.aa** *P* **25** *L* **37** # 29

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

Cross-references to subclauses should not include "clause" (several times in this subclause)

SuggestedRemedy

Change the xref format to omit "clause"

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.3.1** *P* **32** *L* **27** # 30

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

number mismatch "four bits" / "is labeled"

SuggestedRemedy

Change "four bits" to "nibble"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #89

Cl **82** *SC* **82.2.4** *P* **35** *L* **13** # 31

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"option not enabled"

SuggestedRemedy

Change to "option is not enabled"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment points out that the word "is" is missing from this sentence. The full context is shown in the following instructions.

In 82.2.4, change the last sentense
from:
"If the stateless encoder option not enabled, then the state-diagram encoder defined in 82.2.4.1 is used."
to:
"If the stateless encoder option is not enabled, then the state-diagram encoder defined in 82.2.4.1 is used."

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **18** # 32

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"The general format of a control ordered set is similar to a sequence ordered set (see 81.3.4 and Table 81–5) but uses a different control character."
could be less wordy.

SuggestedRemedy

Change to
"The format of a control ordered set is similar to a sequence ordered set (see 81.3.4 and Table 81–5) with a different control character."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved with the response to comment #20

Cl **195** *SC* **195.2** *P* **70** *L* **24** # 33

Ran, Adee Cisco Systems

Comment Type **E** *Comment Status* **A** *(bucket)*

"Within the scope of this clause, the term gRS is used"
Unnecessarily wordy; the term is used in the clause, not in its scope

SuggestedRemedy

Delete "the scope of"

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.4** *P* **35** *L* **10** # 34

de Koos, Andras Microchip Technology

Comment Type **E** *Comment Status* **A** *(bucket)*

Typo : BASR-R

SuggestedRemedy

BASE-R

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment points out a typo, that needs to be fixed.

In 82.2.4, change the beginning of the second paragraph
from:
"For 100GBASR-R, the PCS ...."
to:
"For 100GBASE-R, the PCS ...."

Cl **82** *SC* **82.2.4.2** *P* **35** *L* **27** # 35

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **R** *stateless decoder*

Should include the motivation for mandating the statless encoder, similar to what is done for the HIBER disable.

SuggestedRemedy

Add sentence : "The ability to enable the stateless encoder is required to support EMS (see 82.5a)."

Response *Response Status* **C**

REJECT.

This comment is related to comment #7 and the approach to enabling the new functionality required for EMS.

There is no consensus to make this change at this time.

Cl **82** *SC* **82.2.17.2** *P* **36** *L* **7** # 36

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **R** *stateless decoder*

Should include the motivation for mandating the statless decoder, similar to what is done for the HIBER disable.

SuggestedRemedy

Add sentence : "The ability to enable the stateless decoder is required to support EMS (see 82.5a)."

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #35.

Cl **82** *SC* **82.2.17.2** *P* **36** *L* **4** # 37

de Koos, Andras Microchip Technology

Comment Type **E** *Comment Status* **A** *stateless decoder*

"When PCS reset is asserted or align_status is false, or r_test_mode is true,"
"When A or B or C" should be replaced with "When A, B, or C"

SuggestedRemedy

replace with:
"When PCS reset is asserted, align_status is false, or r_test_mode is true,"

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.5a** *P* **39** *L* **24** # 38

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **A** *CAUI-n*

"The CAUI-n, which are not protected by FEC, are not supported with EMS. To support EMS, a 100GAUI-n shall be used in any 100 Gb/s Physical Layer which requires a C2C or C2M interface."

CAUI-4 does NOT necessarily mean there is no FEC. It could use an RS(528,514). (I often use CAUI-4 to mean no-FEC, but that's not actually correct!) Look at figure 83E-1 in 802.3-2022 for an example.
- 100GAUI-n implies the use of the RS(544,514) FEC. 100GAUI-4 runs at 26.5625 Gbps/lane
- CAUI-4 may or may not have an RS(528,514). Runs at 25.78125 Gbps/lane

So could EMS be used where there is a CAUI-4 with RS(528,514) FEC??

(note that the LAUI-2 sentence in clause 134 is correct - the LAUI-2 indeed never has a FEC).

SuggestedRemedy

Remedy depends on the intent:

If CAUI-4 with RS(528,514) is intended to be allowed with EMS, then rephrase as:
"CAUI-n without RS-FEC are not supported with EMS. To support EMS, CAUI-4 with RS(528,514) or 100GAUI-n (always with RS(544,514)) shall be used in any 100 Gb/s Physical Layer which requires a C2C or C2M interface."

If the intent is to exclude all CAUI-n interfaces, including those using the RS(528,514) FEC, then rephrase as:
"CAUI-n are not supported with EMS"
AND change the bullet point above that "A Reed-Solomon FEC (RS-FEC) shall be used as defined in either Clause 91 or Clause 161." to specify that it must be an RS(544,514) FEC.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Inplement the option in the suggested remedy to allow EMS to be supported with a CAUI-n that includes RS(528).

These changes should be implemented in Clause 195 to correspond to the response to comment #7.

[Editor's note: CC 195]

Implement with editorial license.

Cl **91** *SC* **91.5.3.3** *P* **43** *L* **16** # 39

de Koos, Andras Microchip Technology

Comment Type **E** *Comment Status* **A** *(bucket)*

"codeword contains errors that were not corrected… it shall esure than for every other 257-bit block within the codeword…"

Breaking up the old sentence makes the new sentences less clear.

Comment also applies to Clauses 134 and 161

SuggestedRemedy

Rephrase using the word "errored" in the new sentences.
"When using the sparse error marking method, for every other 257-bit block within the errored codeword starting with…"
"When using the full error marking method, for every 66-bit block within the errored codeword and the first four 66-bit blocks of the following codeword…"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text in question was updated with the least possible chages to the phrashing used in the current baseline. But since the description of the FEC codeword error marking is now much longer to support a new marking mode in addition to the old marking mode, the suggested remedy of adding the adjective "errored" to describe the codeword that is being marked as bad does make the text easier to understand and is a very small change in 91.5.3.3 and 134.5.3.3. However, the same change cannot be made in 161.5.3.3 where ther are blocks of two "associated codewords", which includes at least one errored codeword. The phrase "associated codewords" is used from the preceeding paragraph (in the base documant that is not shown in the 802.3dt updates) and is already sufficiently clear.

In 91.5.3.3. in the 2nd paragraph, change the text in the first sentence
from:
"... for every other 257-bit block within the codeword ..."
to:
"... for every other 257-bit block within the errored codeword ..."

and in the 3rd paragraph, change the text in the first sentence
from:
"... for every 66-bit block within the codeword ..."
to:
"... for every 66-bit block within the errored codeword ..."

Make similar changes to the 2nd and 3rd paragrphs in 134.5.3.3 with editorial license.

Cl **91** *SC* **91.5.3.3** *P* **43** *L* **26** # 40

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **A** *Full error marking*

"and the first four 66-bit blocks of the following codeword (accounting for any alignment marker removal),"

I don't understand why/how erroring the first four 66-bit blocks of the codeword following the errored codeword "accounts for alignment marker removal". I don't see why erroring additional 66-bit blocks beyond the errored CW is necessary at all. The 20x 66-bit blocks that make up the PCS alignment markers always fall entirely within one FEC CW. They are removed and re-inserted at the same place in the stream of 66b blocks, and this removal/insertion is just so that they bypass the 257b-66b transdecoder.

Comment applies to Clauses 134 and 161 as well.

SuggestedRemedy

Consider whether the erroring the first 4 66-bit blocks of the next codeword is truly necessary.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Marking the four 66-bit blocks after the error codeword is necessary due to the "error extension" of the descrambler. The descrmbler XOR's each bit with two bits from the previous 58 bits (using an X^58 polynomial). "Errored bits" from the bad codeword can also corrupt "good bits" up to 58 bits ahead. The descrambler operates on 257-bit blocks before the inverse transcoding converts the 257-bit block back into 4 66-bit blocks. The 257-bit block has "control bits" within the first 8 or so bits that determine how all 4 blocks are inverse-transcoded. If those control bits are corrupted the inverse transcode of any of the 4 66-bit blocks that make up the 257-bit block may be affected and must be also be marked as error blocks

The wording "(accounting for any alignment marker removal)" is the wording chosen in 802.3dj for 119.2.5.3 to describe the same function. The descrambler "jumps" across the AMs (AMs are not scrambled). The 4 blocks immediately after an errored codeword might be AMs, and the descrambler error extension would actually affect the four 66-blocks after the AMs. The wording here is the as the wording used in 119.2.5.3, but it is very vague and can be improved.

The real issue is with the "(accounting for alignment marker removeal)" wording.

In 91.5.3.3 change the specified text:
from:
"When using the full error marking method, for every 66-bit block within the codeword and the first four 66-bit blocks of the following codeword (accounting for any alignment marker removal), the synchronization header is set to 11"
to:
"When using the full error marking method, for every 66-bit block within the codeword and the first four 66-bit blocks of the following codeword (after any alignment markers if present), the synchronization header is set to 11."

Make similar changes in 134 and 161.

Implement with editorial license.

[Editor's note: CC 134, 161]

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Cl **91** *SC* **91.7.4.2** *P* **45** *L* **48** # 41

de Koos, Andras Microchip Technology

Comment Type **E** *Comment Status* **A** *PICS*

Why is the RF11 PICS item needed in Clause91? It is little different than RF10 ("supports" vs "uses").

Similar comment applies to many PICS items: If it's mandatory for EMS (or EML/EMP) and otherwise optional, then can the existing PICS item just be optional in general, but mandatory when EMS is supported? for example, the item TF10 in Clause 91 (802.3-2022) avoids duplicating the PICS item by specifying two contexts in the 'status' column : "KR4:M or SR4:M"

SuggestedRemedy

Add EMS:M to the status column of RF10, and delete RF11.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

RF9 is "Sparse error marking method" and has status "O.1"
RF10 is "Full error marking method" and has status "O.1"
RF11 is "Full error marking method" and has status "EMS:M"

An implementation may optionally support the sparse or full error marking methods (or both - support for 1 or more is required) as indicated by RF9 and RF10. But if EMS is supported, the full error marking mode must be used - which is indicated by RF11. This is why RF10 and RF11 are both needed.

From 21.6.2 which defines the PICS special symbols:
O.<n> optional field/function, but at least one of the group of options labeled by the same numeral <n> is required.

With the current PICS entries as written, if EMS is supported, the full error marking method is required to be supported by RF11 (so it can be enabled by the user). If EMS is not supported, then either the sparce or full (or both) error marking methods may be supported.

The current PICS statements would be answered as follows:
- If EMS is supported, then RF11 must be marked Yes, RF10 would also be marked Yes, and RF9 may be marked Yes or No.
- If EMS is not supported, then RF11 would check "N/A", and one or more of RF9 and RF10 can be marked as Yes. So there are three possibilities for RF9/RF10: RF9=Yes and RF10=No, or RF9=No and RF10=Yes, or RF9=Yes and RF11=Yes. Setting both RF9 and RF10 to No would be non-compliant.

Based on this, the Value/Comment field for R11 should say "supports" not "uses".

In the PICs table in 91.7.4.2, change the Value/Comment column for RF11
from
"Error indication function uses full error marking"
to:
"Error indication function supports full error marking"

This comment is related to comment #7 and the approach to enabling the new functionality required for EMS.

[Editor's note: The original comment listed page 45 and had no line number. The line number was updated to 48 to correspond to location of RF10.]

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **5** # 42

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **A** *Link Metadata Idle Effect*

"If the EMS_LM.request is received during idle, the gRS shall insert a control ordered set in place of an IDLE block on the xMII transmit path."

IF it is a long string of idles, then overwriting idles with CtlOS is fine.
But if the number of idles is already at it's allowable minimum, then I don't believe that overwriting idles is appropriate. If too many idles are overwritten with CtlOS in the RS, then there could be too few idles available for removal downstream
- in the TxPCS (to compensate for AM insertion),
- in an MII-Extender (which may need to remove idles to adapth the stream to a slower clock).

SuggestedRemedy

Some rules around overwriting idles, especially when the idles are already close to the allowable minimum, is necessary.

Add a caveat to the end of the sentence as follows:
"If the EMS_LM.request is received during idle, the gRS may insert a control ordered set in place of an IDLE block on the xMII transmit path, while still respecting the minimum required IDLE content of the link."

Also, the note about DIC could be applied to the first two bullet points, not only the 2nd one.
"The impact of control ordered set insertion on the Deficit Idle Count (DIC) (see 81.3.1.4) is application dependent and beyond the scope of this standard."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #19.

Cl **119** *SC* **119.2.3.1** *P* **48** *L* **4** # 43

Opsasnick, Eugene Broadcom

Comment Type **TR** *Comment Status* **A** *(bucket)*

The notation conventions for the 64B/66B code in 119.2.3.1 need to be modified for the new control ordered set in the same way that was done in 82.2.3.1.

SuggestedRemedy

Bring subclause 119.2.3.1 into the draft and modify the second paragraph in the same way as 82.2.3.1 as needed for the sequence ordered sets and control ordered sets

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **82** *SC* **82.2.3.6** *P* **34** *L* **24** # 44

Opsasnick, Eugene Broadcom

Comment Type **E** *Comment Status* **R** *Control OS notation*

In Table 82-1, the notation /C/ is defined to represent the new Control ordered set. But the capital letter C (without slashes) is also used to represent the control characters /I/ and /E/ as defined in 82.2.3.1 and used in Figure 82-5. The different meanings for "C" and "/C/" may be confusing. A different letter could be used for the new control ordered set notation.

SuggestedRemedy

In Table 82-1, change the Notation definition for the Control ordered set from "/C/" to "/R/". Make corresponding changes wherever /C/ is currently used, including 82.2.3.1, 82.2.3.9, and 82.2.19.2.3.

Response *Response Status* **C**

REJECT.

There was extensive discussion of this topic related to comment #5 which should continue.

There is no consensus to make this change at this time.

Cl **FM** *SC* **FM** *P* **11** *L* **28** # 45

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

Corrigendum 2 has been approved and published

SuggestedRemedy

Change Cor 2-20xx to Cor 2-2026

Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30** *P* **19** *L* # 46

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *(bucket)*

Clause 30.1.4 has text in the penultimate paragraph that needs to be modified to reflect the addition of clause 30.17: "The above items are defined in 30.3 through 30.16.1 of this clause in terms of the template requirements of ISO/IEC 10165-4:1991."

SuggestedRemedy

Bring 30.1.4 into the document, and update the sentence in question to replace 30.16.1 with 30.17.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **30** *SC* **30.17** *P* **21** *L* **14** # 47

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

Throughout the clause, the way the attributes with BOOLEAN syntax are defined is not consistent with other subclauses. If the APPROPRIATE SYNTAX is BOOLEAN, there is no need to spell out TRUE and FALSE in the APPROPRIATE SYNTAX, as by definition a BOOLEAN only takes those values. The meaning of TRUE and FALSE should be explained in the BEHAVIOUR DEFINED AS.

SuggestedRemedy

Update all the BOOLEAN variables so that they read like this:
APPROPRIATE SYNTAX
  BOOLEAN
BEHAVIOUR DEFINED AS:
  True if …. and false otherwise. <other behavior as needed>

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license, for the BOOLEAN variables in 30.17.1.1, 30.17.1.2, 30.17.1.3, 30.17.1.4 and 30.17.1.5.

Cl **45** *SC* **45.2.1.116.aa** *P* **25** *L* **38** # 48

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *CL 30 Objects*

When full error marking is disabled, does that imply that sparse error marking is what is done if error marking is otherwise enabled? If so, it it would be good to state that here.

SuggestedRemedy

Add this text before the last sentence of the first paragraph: "When the full error marking method is disabled, sparse error marking (see Clause 91.5.3.3, Clause 134.5.3.3 and Clause 161.5.3.3) is performed if error marking is enabled."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment points out that the draft can be more clear.

Implement the suggested remedy with editorial license.

Cl **81** *SC* **81.3.1.2** *P* **30** *L* **48** # 49

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

The wording "Control control character combination of TXC and TXD" is awkward.

SuggestedRemedy

Rewrite the sentence to use a structure more like the existing sentence regarding EEE:
A PHY with EMS capability shall use the combination of TXC and TXD as shown in Table 81-3 for Control to transmit control ordered sets (see 195.4.1.2).

Response *Response Status* **C**

ACCEPT.

Cl **81** *SC* **81.3.2.3** *P* **31** *L* **49** # 50

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

"Control control character" is awkward.

SuggestedRemedy

Replace "...Start control character, Terminate control character, Sequence control character, Control control character, or Error control character…"
with
"...Start, Terminate, Sequence, Control, or Error control character…"

Replace "The Control control character is used for control ordered sets as described in 195.4.2.2."
with
"A PHY with EMS capability uses the combination of RXC and RXD as shown in Table 81-4 for Control to identify control ordered sets as described in 195.4.2.2."

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.1** *P* **32** *L* **18** # 51

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *BER monitor*

The last sentence seems to be justifying the rest of the text that is added, which seems unnecessary. It is also written too softly - 82.5a mandates that BER monitor be disabled, not just the ability to disable it, in order to use EMS.

SuggestedRemedy

Delete "The ability to disable the BER monitor process is required to support EMS (see 82.5a)." or replace it with "Support for EMS requires the BER monitor to be disabled (see 82.5a).".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggestion to make the statement stronger to say that BER monitor is required to be disabled for EMS.

Change the last sentense in 82.2.1
from:
"The ability to disable the BER monitor process is required to support EMS (see 82.5a)."
to:
"The ability to disable the BER monitor process is required to support EMS and when EMS is enabled, the BER monitor shall be disabled (see 82.5a)."

Cl **82** *SC* **82.2.3.3** *P* **33** *L* **17** # 52

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *O code in Link Metadata*

While this was not the intent, changing format 0x4B is potentially creating issues with other SDOs that have defined ordered sets (as documented in note a to Table 82-1) based on the prior definition of control block type 0x4B. The changes in 82.2.3.6 are effectively converting those non-802.3 ordered sets into a new format, i.e., they are effectively altering the specs of INCITS, OIF, and ITU-T (or forcing them to refer to an older version of 802.3 for the definition). Specifically, since the only option for ordered sets previously was /Q/, and the assocaited xMII code 0x9C, that is what they used. The new Table 82-1 says that is not the case, so it's actually incorrect regarding O codes 0xF, 0x5, and 0xC. At the same time, the ordered sets defined by OIF and ITU-T (and maybe also INCITS) do have the property that they cannot be deleted for rate adaptation purposes - so they do share some of the behavior of the newly defined control ordered sets.

SuggestedRemedy

Reconsider whether reuse of control block type 0x4B is the best way to indicate the new ordered set format used by EMS, or if maybe it would be better to use a different control block type to introduce a format that is different from how 0x4B was originally defined.

If the preference is to continue using 0x4B and distinguish the format only based on the O code, it needs to be more clear that the ordered sets defined by INCITS, OIF, and ITU-T are not using the "new" format with D4'-D7 bytes, but rather have fixed those bytes to zeros per the previous definition with Z4-Z7. 802.3 should proably not attempt to classify those ordered sets as sequence or control, since 802.3 didn't define them and has no control over how they are used. The purpose of note a in the table was to ensure that future 802.3 enhancments would not use those O codes, so the main body of the table should not referernce them.

Modify the "O code" column in Table 82-1 to replace "0x1 - 0xF" with "0x1-0x4, 0x6-0xB, 0xD-0xE" .

Response *Response Status* **C**

ACCEPT.

The change to block type 0x4B which allows 3.5 octets to carry any value is backward compatable with the previous defintion that required those 3.5 octets to be "all zeros" and therefore is safe for any previously defined ordered sets.

The 802.3dt amendment does not specify any use of the previously resevered O code values used by other SDOs (shown in the Table 82-1 footnote); it only formalizes an interface and method for those SDOs to transmit and receive their ordered sets within the 802.3 standard. Other SDOs can choose to continue to use the same method.

The CRG reviewed slides 1-7 of the presentation at:
https://www.ieee802.org/3/dt/public/26_11/huber_3dt_01_2611.pdf
The CRG reviewed the presentation at:
https://www.ieee802.org/3/dt/public/26_11/ran_3dt_02_2611.pdf
The CRG reviewed slides 3-10 of the editorial slides at:
https://www.ieee802.org/3/dt/public/26_11/opsasnick_3dt_03_2611.pdf

For clarification of the specification of the control ordered sets, the follow text is to be added to the footnote of Table 82-1:
"The format of these ordered sets is outside the scope of this specification."

Implement with editorial license.

Cl **82** *SC* **82.2.4** *P* **35** *L* **3** # 53

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

Since the third paragraph is being replaced by two paragraphs, it would be more clear if the editing instruction also indicated the insertion of the fourth paragraph

SuggestedRemedy

Revise the editing instruction to read:
Change the 3rd paragraph of 82.2.4 and insert new 4th paragraph as follows:

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.4** *P* **35** *L* **12** # 54

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

Missing an 'is' in the last sentence

SuggestedRemedy

Change "If the stateless encoder option not enabled, then the state-diagram encoder defined in 82.2.4.1 is used."
to
"If the stateless encoder option is not enabled, then the state-diagram encoder defined in 82.2.4.1 is used."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment is a duplicate of comment #31.
Resolved using the response to comment #31.

Cl **82** *SC* **82.2.19.2.2** *P* **36** *L* **21** # 55

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *BER monitor*

If r_disable_ber_monitor exists only to replicate the value of BER_monitor_disable, why do we need to define it?

SuggestedRemedy

Remove r_disable_ber_monitor definition, and change figure 82-15 and the associated editor's note (in 82.2.19.3) to use BER_monitor_disable rather than r_disable_ber_monitor

Response *Response Status* **C**

REJECT.

The state diagram variable r_disable_ber_monitor is defined for use in state diagram Figure 82-15. By convention, all variables used in the state diagrams are defined in 82.2.19.2.2 "State variables" so the reader will know where to find them without cross-references in the state diagram figures. The variable BER_monitor_disable is defined in subclause 82.2.1. If BER_monitor_disable were used in the state diagram, the reader would not find it in 82.2.19.2.2 and would not know where to look for its definition. Defining r_disable_ber_monitor in 82.2.19.2.2 makes it easy for the reader to find, and it is simply defined as having the same value as BER_monitor_disable and includes a cross-reference to subclause 82.2.1 which has the definition of BER_monitor_disable.

There is no consensus to make the suggested change.

Cl **82** *SC* **82.7.3** *P* **40** *L* **21** # 56

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *PICS*

The PCS itself doesn't support EMS, or have any awareness of whether metadata is being used; as 82.5a explains, the PCS just needs to be configured in a certain way if the gRS (and thus the PHY as a whole) is supporting EMS.

SuggestedRemedy

Change the Feature to "PHY supports EMS packet or link metadata", and make similar changes to EML and EMP.

Response *Response Status* **C**

REJECT.

The comment refers to item "EMS" in the PICS table in 82.7.3, which lists the feature "Supports Ethernet metadata serveices (EMS)" with Status field set to "PCS100:O".

The comment requests to change the name of the item from "Supports EMS ..." to "PHY supports EMS ...". As currently written, the item implicitly means "PCS support EMS" since this is a PICS table entry in a PCS clause.

While it is a valid question to first ask if the PHY supports EMS; it does not belong in this table. If a PHY is claimed to support EMS, then each sublayer of the PHY with specific support for EMS must have those features implemented. The PICS items in this table, in this PCS clause, are for these PCS "per-sublayer" requirements to indicate if the PCS supports EMS and the necessary specific features in the PCS are implemented.

This comment is related to comment #7 and the approach to enabling the new functionality required for EMS.

There is no consensus to make this change at this time.

Cl **82** *SC* **82.7.3** *P* **40** *L* **27** # 57

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

EMP is not used in any of the subsequent tables, so it should not have a * in front of it

SuggestedRemedy

Change *EMP to EMP

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.7.4.1** *P* **41** *L* **17** # 58

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *PICS*

There are some oddities in this table. C12 says the stateless encoder is optional, while C13 says it's mandatory based on EML (and likewise C15 and 16 wrt the decoder). The set of items is correctly expressing the requirements for compliance, but having multiple items with the same feature (eg. C12 and C13 both saying supports stateless encoder) sort of looks like a copy-paste mistake.

SuggestedRemedy

Consider adding text in the value/comment column for C13 and C16 indicating that the stateless encoder/decoder is in general optional, but is required if EML is supported. (yes, the table already says all that, but putting it in words in the comment column makes it more clear that the two rows for "supports stateless encoder/decoder" are intentional).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

As the comment points out, the PICS items are correct as written. The use of two separate items with the same name may look odd - and is probably a new method for how PICS items are written in the standard. To make it clear that this is intentional and not a mistake, a description can be added to the optional item, C12.

In the PICS table in 82.7.4.1 add this text to the Value/Comment column of item C12: "Optional only if Ethernet metadata services are not supported as indicated by items EML and C13."

Make similar changes to other PICS tables with the same structure where a feature has two entries because it is optional unless required by EMS. This occurs in PICS tables in 91.7.4.2, 119.7.4.2, 133.5.4.1, 134.7.4.2, 161.7.4.2, 172.7.4.1, and 175.9.4.1.

Implement with editorial license.

This comment is related to comment #7 and the approach to enabling the new functionality required for EMS.

[Editor's note: CC 91, 119, 133, 134, 161, 172, 175]

Cl **82** *SC* **82.7.4.1** *P* **41** *L* **17** # 59

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *PICS*

A PCS either uses the state diagram encoder or the stateless encoder (and likewise for the decoder). As such, the groups should be O/n (one and only one of the optoins) rather than O.n (at least one of the options).

SuggestedRemedy

Change the O.1 for C11 and C12 to O/1. Change the O.2 for C14 and C15 to O/2.

Response *Response Status* **C**

REJECT.

By setting the requirement as "one or more", an implementation is free to implement both the state-diagram based, and stateless versions of the PCS encoder/decoder. This allows the user to select between either implementation, which are interoperable, but have different error correction properties. This could be important for an implementation that wants to support both CAUI-n and 100GAUI-n (required by EMS) for different uses.

Cl **91** *SC* **91.7.3** *P* **45** *L* **18** # 60

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *PICS*

The FEC sublayer doesn't have any awareness of EMS (since the EMS functions are in the gRS), and in fact the behavior of a FEC sublayer that supports EMS vs one that does not, but happens to use the full error marking method, would be indistinguishable. As such, having a feature of "Supports EMS packet or link metadata", with no reference to any subclause, is awkward

SuggestedRemedy

Change the Feature to "PHY supports EMS packet or link metadata", and add a reference to 195.2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Based on the response to comment #7, the RS-FEC requirements for EMS are being moved to a new subclause in Clause 91.

Update this PICS statement to reference the new subclause in Clause 91 with the RS-FEC requirements for EMS.

Cross-references are missing in similar PICS tables in Clauses 161 and 134.
Make a similar change to the PICS table in Clause 161.7.3 by adding a cross-reference to the new subclause in Clause 161 with the RS_FEC EMS requirements.
Make a similar change to the PICS table in Clause 134.7.3 by adding a cross-reference to the new subclause in Clause 134 with the RS_FEC EMS requirements.

Implement with editorial license.

[Editor's note: CC 134 161]

Cl **119** *SC* **119.7.3** *P* **49** *L* **19** # 61

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *PICS*

The PCS itself doesn't support EMS, or have any awareness of whether metadata is being used; as 119.5a explains, the PCS just needs to be configured in a certain way if the gRS (and thus the PHY as a whole) is supporting EMS.

SuggestedRemedy

Change the Feature to "PHY supports EML packet or link metadata" and make a similar change to the EMP row.

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #56.

Cl **119** *SC* **119.7.4.1** *P* **49** *L* **42** # 62

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *PICS*

The structure of this table isn't quite right. In the table in 802.3dj, TF2 and TF3 determine whether the state diagram or stateless encoder is used, based on the answer to item *SE. TF3 (uses stateless encoder) has the status SE:M. In that context, adding SEM as yet another item that can make the stateless encoder mandatory seems awkward.

SuggestedRemedy

Delete the new item SEM. Bring TF2 and TF3 into the table. Change the status of TF3 to "SE + EML: M"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The PICS are correct as written (similar to the PICS in 82.7.4.1, the subject of comment #58, although with a slightly different structure).The suggested remedy is an alternate method of writing the PICS for the same set of requirements, where the stateless decoder is optional unless EMS is supported which makes it mandatory. Items SE and SEM have the same "Feature" name which is also the subject of comment #58.

Leaving item SEM as a separate item makes the EMS requirement stand out on its own and the SE and SEM features can be differentiated as is done in 82.7.4.1 based on comment #58; however, using the suggested remedy to change the status of TF3, elimitates the need for item SEM, making the suggested remedy a smaller change to the PICS tables which is also desirable. There is still the possibility of the EMS (EML) feature being set to Yes and SE being set to No which is self-contradictory based on SEM (or TF3). Adding a note to item SE is also helpful to point out the EMS requirement is similar to what was added in 82.7.4.1 by comment #58.

In the PICS table in 119.7.4.1, add this text to "Comment/Values" column for item SE:
"Optional only if Ethernet metadata services are not supported as indicated by items EML and TF3."

Remove item SEM from the table.

Add item TF3 from amendment 802.3dj and change the Status column of item TF3,
from:
"SE:M"
to:
"SE+EML:M"

Make simlar changes to the PICS tables for the stateless decoder:

In the PICS table in 119.7.4.2, add this text to "Comment/Values"" column for item SD
"Optional only if Ethernet metadata services are not supported as indicated by items EML and RF8."

Remove item SED from the table.

Add item RF8 from amendment 802.3dj and change the Status column of item RF8, from:
"SE:M"
to:
"SE+EML:M"

Make similar changes to the PICS tables in for the 1.6TbE PCS in 175.9.4.1 (comment #74) and 175.9.4.2 (comment#75).

Implement with editorial license.

This comment is related to comment #7 and the approach to enabling the new functionality required for EMS.

[Editor's note: CC 175]

Cl **119** *SC* **119.7.4.2** *P* **50** *L* **12** # 63

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *PICS*

The structure of this table isn't quite right. In the table in 802.3dj, RF7 and RF8 determine whether the state diagram or stateless encoder is used, based on the answer to item *SD. RF8 (uses stateless decoder) has the status SD:M. In that context, adding SDM as yet another item that can make the stateless encoder mandatory seems awkward.

SuggestedRemedy

Delete the new item SDM. Bring RF7 and RF8 into the table. Change the status of RF7 to "SD + EML: M"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #62

Cl **119** *SC* **119.7.4.3** *P* **50** *L* **38** # 64

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

Formatting issue on the bottom border of the lower right corner cell

SuggestedRemedy

Fix the formatting

Response *Response Status* **C**

ACCEPT.

Cl **133** *SC* **133.5.3** *P* **53** *L* **17** # 65

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *PICS*

The PCS itself doesn't support EMS, or have any awareness of whether metadata is being used; as 133.3a explains, the PCS just needs to be configured in a certain way if the gRS (and thus the PHY as a whole) is supporting EMS.

SuggestedRemedy

Change the Feature to "PHY supports EMS packet or link metadata", and make similar changes to EML and EMP.

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #56.

Cl **133** *SC* **133.5.3** *P* **53** *L* **23** # 66

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

EMP is not used in any of the subsequent tables, so it should not have a * in front of it

SuggestedRemedy

Change *EMP to EMP

Response *Response Status* **C**

ACCEPT.

Cl **133** *SC* **133.5.4.1** *P* **54** *L* **20** # 67

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *PICS*

There are some oddities in this table. C12 says the stateless encoder is optional, while C13 says it's mandatory based on EML (and likewise C15 and 16 wrt the decoder). The set of items is correctly expressing the requirements for compliance, but having multiple items with the same feature (eg. C12 and C13 both saying supports stateless encoder) sort of looks like a copy-paste mistake.

SuggestedRemedy

Consider adding text in the value/comment column for C13 and C16 indicating that the stateless encoder/decoder is in general optional, but is required if EML is supported. (yes, the table already says all that, but putting it in words in the comment column makes it more clear that the two rows for "supports stateless encoder/decoder" are intentional).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #58

Cl **134** *SC* **134.7.3** *P* **57** *L* **18** # 68

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *PICS*

The FEC sublayer doesn't have any awareness of EMS (since the EMS functions are in the gRS), and in fact the behavior of a FEC sublayer that supports EMS vs one that does not, but happens to use the full error marking method, would be indistinguishable. As such, having a feature of "Supports EMS packet or link metadata", with no reference to any subclause, is awkward

SuggestedRemedy

Change the Feature to "PHY supports EMS packet or link metadata", and add a reference to 195.2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #60.

Cl **134** *SC* **134.7.4.2** *P* **57** *L* **45** # 69

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *(bucket)*

The intent is that the FEC must support at least one of the two error marking options - so the group number in the status should be the same for RF6 and RF7.

SuggestedRemedy

in RF7, change the status from O.2 to O.1

Response *Response Status* **C**

ACCEPT.

Cl **161** *SC* **161.7.3** *P* **61** *L* **18** # 70

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *PICS*

The FEC sublayer doesn't have any awareness of EMS (since the EMS functions are in the gRS), and in fact the behavior of a FEC sublayer that supports EMS vs one that does not, but happens to use the full error marking method, would be indistinguishable. As such, having a feature of "Supports EMS packet or link metadata", with no reference to any subclause, is awkward

SuggestedRemedy

Change the Feature to "PHY supports EMS packet or link metadata", and add a reference to 195.2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #60.

Cl **172** *SC* **172.3.1** *P* **63** *L* **12** # 71

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

The editorial instruction is referring to the wrong table

SuggestedRemedy

Change Table 176-6 to Table 172-1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The "MDIO/PCS status variable mapping" table is Table 172-6 in 802.3df. The editing instruction is correct. It is the table numbering that needs to be fixed.

In 172.3.1, change the number of the table titled "MDIO/PCS status variable mapping" from Table 172-1 to Table 172-6.

Cl **172** *SC* **172.3.1** *P* **63** *L* **20** # 72

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **A** *(bucket)*

Two formatting problems: right border of the right-most cell in the second row should be consistent with the rest of the table, and the newly inserted row should be shown as inserted (with underlines).

SuggestedRemedy

Fix the formatting

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.7.3** *P* **64** *L* **17** # 73

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *PICS*

The PCS itself doesn't support EMS, or have any awareness of whether metadata is being used; as 172.5a explains, the PCS just needs to be configured in a certain way if the gRS (and thus the PHY as a whole) is supporting EMS.

SuggestedRemedy

Change the Feature to "PHY supports EMS link metadata", and make a similar change for the EMP row.

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #56.

Cl **175** *SC* **175.9.3** *P* **68** *L* **17** # 74

Huber, Thomas Nokia

Comment Type **E** *Comment Status* **R** *PICS*

The PCS itself doesn't support EMS, or have any awareness of whether metadata is being used; as 175.6a explains, the PCS just needs to be configured in a certain way if the gRS (and thus the PHY as a whole) is supporting EMS.

SuggestedRemedy

Change the Feature to "PHY supports EMS link metadata", and make a similar change for the EMP row.

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #56.

Cl **175** *SC* **175.9.4.1** *P* **68** *L* **36** # 75

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *PICS*

The structure of this table isn't quite right. In the table in 802.3dj, TF1 and TF2 determine whether the state diagram or stateless encoder is used, based on the answer to item *SE. TF3 (uses stateless encoder) has the status SE:M. In that context, adding SEM as yet another item that can make the stateless encoder mandatory seems awkward.

SuggestedRemedy

Delete the new item SEM. Bring TF1 and TF2 into the table. Change the status of TF2 to "SE + EML: M"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #62.

Cl **175** *SC* **175.9.4.3** *P* **69** *L* **15** # 76

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *PICS*

The structure of this table isn't quite right. In the table in 802.3dj, RF13 and RF14 determine whether the state diagram or stateless encoder is used, based on the answer to item *SD. RF14 (uses stateless decoder) has the status SD:M. In that context, adding SDM as yet another item that can make the stateless encoder mandatory seems awkward.

SuggestedRemedy

Delete the new item SDM. Bring RF13 and RF14 into the table. Change the status of RF14 to "SD + EML: M"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #62.

Cl **195** *SC* **195.3.4.2.1** *P* **72** *L* **48** # 77

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *Rx Frame Error*

"The data conveyed by EMS_PM.indication might not be valid for use by the EMS client if the MAC client detects a packet framing error or FCS error in the received packet.". The text implies that a frame with a bad FCS could be an indication of a corrupted preamble, but that is not really the case. The set of octets covered by the FCS does not include the preamble - so the status of the FCS says nothing at all about the integrity of the preamble octets, assuming that packet alignment is correct. A packet framing error would mean the metadata delivered may not have been in the preamble of a packet at all, so that indeed would be suspect. A bad FCS could of course be an indication of incorrect packet alignment also, so maybe that is what is intended.

SuggestedRemedy

Rewrite the text to focus purely on framing errors:
"The data conveyed by EMS_PM.indication might not be valid for use by the EMS client if the MAC clients detects a packet framing error in the received packet."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #13.

Cl **195** *SC* **195.3.5.1.1** *P* **73** *L* **27** # 78

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *O code in Link Metadata*

The control order set includes a 4-bit O code, which is not part of the metadata but rather part of the encoding in the PCS (just like the control block type is not part of the metadata). It is architecturally awkward to expect the EMS client to be aware of this PCS encoding detail and create a 7-octet string that includes the correct bit pattern for the O code.

SuggestedRemedy

Describe the link_metadata parameter as 52 bits:

"The link_metadata parameter contains the 52 bits to be transmitted in the control ordered set."

Response *Response Status* **C**

REJECT.

The value of the O code for a control ordered set can take a value from 0x1 to 0xF, and the value must be provided by the EMS client. The EMS Client knows the O code value for the requested ordered set transmission. The link_metadata parameter of EMS_LM.request(link_metadata) primitive is required to contain the O code value; therefore, it is appropriate to describe the link_metadata parameter as a seven octet value.

The CRG reviewed slides 8-10 of the presentation at:
https://www.ieee802.org/3/dt/public/26_11/huber_3dt_01_2611.pdf

Since the intention is to support multiple O code values for link metadata, there is no change to the draft.

Cl **195** *SC* **195.3.5.2** *P* **73** *L* **41** # 79

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *O code in Link Metadata*

As noted wrt the request primitive, there are only 52 bits of metadata, not 7 octets, becase of the O code.

SuggestedRemedy

Change "This primitive defines the transfer of the seven data octets of a received control ordered set from the gRS to the EMS client"
to
"This primitive defines the transfer of the 52 bits of metadata of a received control ordered set from the gRS to the EMS client"

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #78.

Cl **195** *SC* **195.3.5.2.1** *P* **73** *L* **50** # 80

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *O code in Link Metadata*

As noted wrt the request primitive, there are only 52 bits of metadata, not 7 octets, becase of the O code.

SuggestedRemedy

Change "The link_metadata parameter contains the seven data octets received in the control ordered set."
to
"The link_metadata parameter contains the 52 bits received in the control ordered set."

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #78.

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **10** # 81

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *Link Metadata Idle Effect*

The last sentence about the impact of inserting LM ordered sets mid-packet is not quite right. To maintain the data rate of the MAC, it is a firm requirement that an Idle control block be removed for every LM ordered set that is inserted, so that aspect is neither application-dependent nor beyond the scope of the standard. Whether the requirement is satisfied using the Deficit Idle Counter or via some other process is implementation-dependent.

SuggestedRemedy

Replace "The impact of control ordered set insertion on the Deficit Idle Count (DIC) (see 81.3.1.4) is application- dependent and beyond the scope of this standard."
with
"To compensate for the insertion of the control ordered set, an Idle control block must be deleted. The details of how this is accomplished, and the impact it has on the Deficit Idle Counter (DIC) (see 81.3.1.4), are implementation-dependent."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved using the response to comment #19

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **35** # 82

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *O code in Link Metadata*

Since the O code is part of the encoding and not part of the metadata, a bit more detail is needed to describe the mapping if other comments to change the link_metadata parameter to a 52-bit string are adopted.

SuggestedRemedy

Replace "The gRS shall use the link_metadata parameter of the EMS_LM.request primitive as the source of the seven octets of the control ordered set transmitted on lanes 1 to 7 of the xMII. The least significant four bits transmitted on lane 4, D4<3:0>, contain the 4-bit O code of the ordered set. The same format is used by sequence ordered sets. Valid O code values for each type of ordered set are defined in Table 82–1."
with
"The gRS shall use the link_metadata parameter of the EMS_LM.request primitive as the source of the seven octets of the control ordered set transmitted on lanes 1 to 7 of the xMII. D1-D3 are taken from bits 0-23 of the link_metadata parameter. D4<0:3> contain the 4-bit O code of the ordered set. D4<4:7> and D5-D7 are taken from bits 24-51 of the link_metadata parameter."

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #78.

Cl **195** *SC* **195.4.2.2** *P* **77** *L* **46** # 83

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *O code in Link Metadata*

Need to align with the concept that the link_metadata is 52 bits rather than 7 octets.

SuggestedRemedy

Replace "The link_metadata parameter of the EMS_LM.indication primitive shall be set to the value of the seven data octets of the control ordered set received on lanes 1 to 7 of the xMII receive signals."
with
"The link_metadata parameter of the EMS_LM.indication primitive shall be set to the value of the 52 data bits of the control ordered set received on lanes 1 to 7 of the xMII receive signals. Bits 0-23 are taken from D1-D3. Bits 24-52 are taken from D4<4:7> and D5-D7."

Response *Response Status* **C**

REJECT.

Resolved using the response to comment #78.

Cl **195** *SC* **195.5** *P* **78** *L* **7** # 84

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *TimeSync*

Insertion of link metadata, and corresponding removal of Idle control blocks, can impact the accuracy of TimeSync / PTP since the location of the PTP packet can change. It may be helpful to have some explanation of this.

SuggestedRemedy

Add a new subclause 195.5 (before the PICS) titled "Interaction with TimeSync Services" explaining the potential impacts that use of link metadata can have on TimeSync services.

Response *Response Status* **C**

REJECT.

The comment suggests to add a new subclause to explain the metadata insertion impact on the Timesync functions, but does not give any information on what the impacts are. More information is needed to be able to add this information to the draft. A future contribution is suggested to explain any issues and how the draft should be updated.

Cl **82** *SC* **82.2.1** *P* **32** *L* **18** # 85

Shrikhande, Kapil Upscale AI

Comment Type **E** *Comment Status* **R** *BER monitor*

It will be nice if the sentence 'The ability to disable the BER monitor process is required to support EMS (…)' comes towards the beginning of the paragraph, so that the reader knows why they should care about disabling the BER mon.

SuggestedRemedy

Take the last sentence of 82.2.1 and place it earlier in the parapgrah, as follows : "When the receive channel is in normal mode, the 100GBASE-R PCS may provide the ability to disable the BER monitor process. The ability to disable the BER monitor process is required to support EMS (see 82.5a)."......

Response *Response Status* **C**

REJECT.

Moving this sentense would break up the connection between the two sentences before and after where it is suggested to be placed. The ability to disable the BER monitor is an independent feature by itself. This sentense is just a reminder that it must be disabled to support EMS. If other features also require it to be disabled in the future, it will be easier to add those notes to this one at the end of the paragraph.

[Editor's note: the specific wording of this sentense is the subject of comment #51].

Cl **82** *SC* **82.7.3** *P* **40** *L* **20** # 86

Shrikhande, Kapil Upscale AI

Comment Type **ER** *Comment Status* **A** *(bucket)*

Spelling error

SuggestedRemedy

Change "Etherent" to "Ethernet"

Response *Response Status* **C**

ACCEPT.

Cl **195** *SC* **195.1** *P* **70** *L* **8** # 87

Shrikhande, Kapil Upscale AI

Comment Type **E** *Comment Status* **R** *(bucket)*

Could use a comma in the first sentence

SuggestedRemedy

add a comma in the first sentence after "packet", as follows "Metadata is information about the data contained within a packet, or about the Ethernet link and the data it is communicating."

Response *Response Status* **C**

REJECT.

The sentence is correct without the comma because it is not joining two independent clauses. It is a two-item list with the form, "Metadata is information [about A] or [about B]."

Cl **195** *SC* **195.4.1.2** *P* **76** *L* **8** # 88

Shrikhande, Kapil Upscale AI

Comment Type **E** *Comment Status* **A** *(bucket)*

Shouldn’t sixty-four be 64 ?

SuggestedRemedy

Replace sixty-four by 64. If you agree, there is another instance on pg. 77 line 32.

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.3.1** *P* **32** *L* **28** # 89

Nicholl, Shawn AMD

Comment Type **E** *Comment Status* **A** *(bucket)*

Currently says "The most significant four bits ... is labeled D'4."

SuggestedRemedy

"The most significant four bits ... are labeled D'4."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 82.2.3.1, fix the verb tense in the following sentence
from:
"The most significant four bits ... is labeled D'4."
to:
"The most significant four bits ... are labeled D'4."

Cl **82** *SC* **82.2.19.3** *P* **36** *L* **48** # 90

Nicholl, Shawn AMD

Comment Type **E** *Comment Status* **A** *(bucket)*

Currently says "... paragraph of 182.2.19.3 ..."

SuggestedRemedy

It should say 82.2.19.3 (typo).

Response *Response Status* **C**

ACCEPT.

Cl **133** *SC* **133.5.4.8** *P* **54** *L* **36** # 91

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **A** *(bucket)*

The editing instruction reads "Change the table in 133.4.8 as follows" but the Table of Contents lists the PICS State diagrams section as 133.5.4.8, and the analogous section in Clause 82 is referenced as 82.7.4.8. The instruction appears to reference the wrong subclause number (133.4.8 instead of 133.5.4.8).

SuggestedRemedy

Change the editing instruction from "Change the table in 133.4.8" to "Change the table in 133.5.4.8".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There is a typo in the editing instruction (a missing digit).

Change the editing instruction in 133.5.4.8
from: "Change the table in 133.4.8 ..."
to: "Change the table in 133.5.4.8 ..."

[Editor's note: corrected the page number of the submitted comment from page 53 to page 54]

Cl **161** *SC* **161.7.4.2** *P* **61** *L* **27** # 92

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

Editing instruction reads "subsequent items (some unchanged rows, are not shown)" — the comma before "are" is extraneous. All other 30+ editing instructions in this draft use "rows not shown" without the comma.

SuggestedRemedy

Remove the comma: change "some unchanged rows, are not shown" to "some unchanged rows not shown".

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.7.4.2** *P* **64** *L* **3** # 93

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

Editing instruction reads "Change the table in 172.7.4.2 (as amened by IEEE Std 802.3dj-20xx)" — "amened" is a typo for "amended".

SuggestedRemedy

Replace "amened" with "amended".

Response *Response Status* **C**

ACCEPT.

Cl **174** *SC* **174.2** *P* **66** *L* **8** # 94

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **A** *(bucket)*

Editing instruction reads "Insert 174.2.14 after 173.2.13 as follows" but the surrounding context is Clause 174 ("174. Introduction to 1.6Tb/s networks" / "174.2 Summary of 1.6 Terabit Ethernet architecture"). The predecessor clause should be 174.2.13, not 173.2.13.

SuggestedRemedy

Change "Insert 174.2.14 after 173.2.13" to "Insert 174.2.14 after 174.2.13".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy..

[Editor's note: corrected the page number of the submitted comment from page 65 to page 66]

Cl **174** *SC* **174.2.14** *P* **66** *L* **10** # 95

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

Section title "174.2.14 Ethernet Metadata Services (EMS)" uses title case for "Metadata Services" while all other EMS subsections (80.2.5a, 82.5a, 116.2.5a, 119.5a, 131.2.5a, 133.3a, 169.2.11, 172.5a, 175.6a) consistently use lowercase: "Ethernet metadata services".

SuggestedRemedy

Change "174.2.14 Ethernet Metadata Services (EMS)" to "174.2.14 Ethernet metadata services (EMS)".

Response *Response Status* **C**

ACCEPT.

Cl **175** *SC* **175.6a** *P* **67** *L* **12** # 96

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

Two occurrences of "metatdata" (should be "metadata") in 175.6a: (1) "If EMS link metatdata is supported" (line 12) and (2) "If EMS link metatdata or packet metadata are supported" (line 17).

SuggestedRemedy

Replace both instances of "metatdata" with "metadata".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy..

[Editor's note: corrected the page number of the submitted comment from page 66 to page 67]

Cl **175** *SC* **175.6a** *P* **67** *L* **14** # 97

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **A** *(bucket)*

"The PCS shell use the stateless 64B/66B encoder defined in 119.2.4.1.2..." — the normative modal verb "shall" is misspelled as "shell". This is a binding requirement in an IEEE standard.

SuggestedRemedy

Replace "shell" with "shall".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy..

[Editor's note: corrected the page number of the submitted comment from page 66 to page 67]

Cl **175** *SC* **175.9.3** *P* **68** *L* **6** # 98

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

Editing instruction in 175.9.3 reads "some unchanged row not shown" (singular "row"). Same error appears in 175.9.4.1 (page 67, line 27) and in Table 119-5 (page 48, line 9). All other editing instructions in this draft use the plural "rows".

SuggestedRemedy

Change "unchanged row not shown" to "unchanged rows not shown" in 175.9.3, 175.9.4.1, and Table 119-5.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy..

[Editor's note: corrected the page number of the submitted comment from page 67 to page 68]
[Editor's note: CC 119]

Cl **A** *SC* **A** *P* **81** *L* **0** # 99

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

Running header on page 80 reads "IEEE P802.3dt Ethernet Metadata Services 2026Task Force" — the year "2026" is incorrectly concatenated with "Task Force", resulting in "2026Task".

SuggestedRemedy

Correct the running header to "IEEE P802.3dt Ethernet Metadata Services Task Force 10 September 2026".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment appears to be related to the the header on page 81 in Annex A; not the header on page 80 in clause 195.

The header on page 81 in Annex A needs to be fixed as described in the comment and suggested remedy.

Change the header from:
"IEEE P802.3dt Ethernet Metadata Services 2026Task Force"
to:
"IEEE P802.3dt Ethernet Metadata Services Task Force"

[Editor's note: Changed the referenced clause from 195 to Annex A and page number from 80 to 81].

Cl **FM** *SC* **FM** *P* **1** *L* **3** # 100

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

The abstract uses "50Gb/s" (no space between value and unit). IEEE 802.3 convention requires a space. The same no-space form also appears in attributes aEMSLinkMetadataTx (30.17.1.11, p.22 line 41) and aEMSLinkMetadataRx (30.17.1.12, p.22 line 52).

SuggestedRemedy

Replace "50Gb/s" with "50 Gb/s" in the abstract and in the APPROPRIATE SYNTAX statements of 30.17.1.11 and 30.17.1.12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved with the response to comment #28.

Cl **FM** *SC* **FM** *P* **12** *L* **0** # 101

Bruckman, Leon Nvidia

Comment Type **ER** *Comment Status* **A** *(bucket)*

The running header on pages 12-16 reads "IEEE P802.3dt Ethernet Metadavo Services Task Force". "Metadavo" should be "Metadata". This typo appears on five consecutive pages.

SuggestedRemedy

Replace "Metadavo" with "Metadata" in the running header on pages 12-16.

Response *Response Status* **C**

ACCEPT.

Cl **FM** *SC* **FM** *P* **12** *L* **16** # 102

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **R** *(bucket)*

The Table of Contents entry for 82.2.3.9 reads "Oordered set (/O/)" (double capital-O). This appears to be amendment change-markup (strikethrough + underscored text) that was unintentionally rendered in the ToC instead of showing the final clean section title.

SuggestedRemedy

Replace "Oordered set (/O/)" with "Ordered set (/O/)" in the Table of Contents entry for 82.2.3.9.

Response *Response Status* **C**

REJECT.

The table of contents is auto-generated. The "Oo" in "Oordered set /O/" heading is a byproduct of the editing intructions to fix the heading of 82.2.3.9 to capitalize the the first word of the heading "Ordered" which is in lowercase in the base standard. The editing instructions in the body of the draft show the capital "O" with underline, and the small "o" with a strike-through which represents a replacement of the lowercase "o" with the uppercase "O". This change could be left to the management or revision projects, but since P802.3dt is making changes to this subclasue, this simple correction is also added.

When the 802.3dt amendment is incorportated in to the baseline standard, the double "Oo" will no longer exist, and the table of contents will be generated correctly.

Cl **30** *SC* **30.17.1.9** *P* **22** *L* **22** # 103

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **A** *(bucket)*

Management attributes aEMSPacketMetadataRx (30.17.1.9) and aEMSPacketMetadataErrorRx (30.17.1.10) reference a "packet_status" parameter of EMS_PM.indication with enumerated values OK, ERROR_FRAME, and ERROR_PREAMBLE. However, Clause 195.3.4.2 defines EMS_PM.indication with only one parameter: packet_metadata. The "packet_status" parameter and its enumerated values (OK, ERROR_FRAME, ERROR_PREAMBLE) are not defined anywhere in this draft.

SuggestedRemedy

Either: (a) add a second parameter "packet_status" to EMS_PM.indication in 195.3.4.2 with values OK, ERROR_FRAME, and ERROR_PREAMBLE and define the conditions for each value; or (b) rewrite 30.17.1.9 and 30.17.1.10 to count frames using only information derivable from the packet_metadata parameter, removing all reference to packet_status.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This parameter was removed from clause 195 in an earlier version of the draft. This management attribute in Clause 30 should also be removed to reflect that change.

Implement option (b) of the suggested remedy to remove references to the "packet_status" parameter. Implement with editorial license.

Cl **30** *SC* **30.17.1.13** *P* **23** *L* **10** # 104

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

The BEHAVIOUR text reads: "...that interrupted packet transmission.This corresponds to EMS_LM.request primitive was transmitted during packet transmission...". Two problems: (1) missing space after the period; (2) "This corresponds to EMS_LM.request primitive was transmitted" is grammatically incorrect.

SuggestedRemedy

Replace with: "...that interrupted packet transmission. This counter is incremented when an EMS_LM.request primitive is transmitted during packet transmission causing a 64-bit-time suspension of the MAC's PLS_DATA.request service (see 195.4.1.2)."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The suggested remedy improves the text and readbility.

In 30.17.1.13, change the last sentence,
from:
" This corresponds to EMS_LM.request primitive was transmitted during packet transmission causing a 64-bit-time suspension of the MAC's PLS_DATA.request service (see 195.4.1.2). This counter is a subset of aEMSLinkMetadataTx.;"
to:
"This counter is incremented when an EMS_LM.request primitive is asserted during packet transmission causing a 64-bit-time suspension of the MAC's PLS_DATA.request service (see 195.4.1.2).;"

Implement with editorial license.

Cl **133** *SC* **133.3a** *P* **52** *L* **27** # 105

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **R** *50G FEC bypass*

Clause 82.5a (100GBASE-R) includes the requirement "The RS-FEC shall not enable FEC bypass correction mode, see 91.5.3.3." The equivalent clause 133.3a (50GBASE-R) does not contain an analogous requirement for Clause 134 RS-FEC. If Clause 134 RS-FEC supports FEC bypass correction mode, this is a missing normative requirement.

SuggestedRemedy

If Clause 134 RS-FEC supports FEC bypass correction mode, add: "The RS-FEC shall not enable FEC bypass correction mode, see 134.5.3.3." to the requirement list in 133.3a. If Clause 134 does not support this mode, add an informative note explaining the omission.

Response *Response Status* **C**

REJECT.

In subclause 134.1.1, the RS-FEC for 50 GbE is defined to be "identical to the RS-FEC for 100GBASE-R PHYs specified in Clause 91", with several exceptions. Item (h) in the list of exceptions states "The optional FEC bypass correction feature (see 91.5.3.3) is not supported."

Since this 50 GbE RS-FEC is defined to not support FEC correction bypass, it is not necessary for the EMS requirements to say it should not be enabled. No change is needed.

[Editor's note: corrected the page number of the submitted comment from page 51 to page 52]

Cl **133** *SC* **133.3a** *P* **52** *L* **30** # 106

Bruckman, Leon Nvidia

Comment Type **E** *Comment Status* **A** *(bucket)*

The bullet "The RS-FEC shall use the option to invalidate all associated 66-bit blocks (the full error marking method) when the RS-FEC decoder identifies uncorrected codeword errors (see 134.5.3.3)" is missing a terminating period. Compare with the corresponding bullet in 82.5a which ends with "(see 91.5.3.3 and 161.5.3.3)."

SuggestedRemedy

Add a period after "(see 134.5.3.3)" so the sentence ends: "...uncorrected codeword errors (see 134.5.3.3)."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy

[Editor's note: corrected the page number of the submitted comment from page 51 to page 52]