Cl **00** *SC* *P* *L* # **952**

Thompson, Geoff Nortel

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

What is being proposed in many places throughout this draft is not a peer network. To introduce such a foreign concept into a document where the implicit and explicit notion of peer relationships is so thoroughly infused throughout the existing document is likely to cause (a) significant confusion and (b) significant errors.

SuggestedRemedy

Move non-peer proposals to a new and separate document that can thoroughly, explicitly and unambigiously embrace the concept of Ethernet Services over asymetrical infrastructure.

Proposed Response *Response Status* **U**

REJECT.

The suggested remedy is ambiguous. What are "the non-peer proposals"? What is the "new and separate document"?

The draft in its current form satisfies the PAR and 5 Criteria for the project, which call for an amendment to IEEE Std 802.3, formatted as a set of clauses. The suggested remedy would not satisfy the PAR and 5 Criteria.

While there are asymetric physical layer specifications in the draft, the services provided to the MAC Client are provided in the same fashion as the base standard. The peer relationship between MAC Clients described in the base standard is preserved.

Previous projects introduced physical layers with asymetric behavior and characteristics.

For further information regarding document restructuring, see the file:

http://www.ieee802.org/3/efm/public/sep03/frazier_1_0903.pdf

Cl **00** *SC* *P* *L* # **951**

Thompson, Geoff Nortel

Comment Type **TR** *Comment Status* **A** *reassigned*

I have a problem with the use of the term "loopback" for the diagnostic return path being proposed for the OAM sublayer. The potential for confusion of this new path with the existing half-duplex DO to DI loopback path and its associated term of "loopback" is great. The term "loopback" has been an accepted label for this function at least since the drafting of FOIRL (ref: 9.9.2.1) in 1987.

SuggestedRemedy

Pick another terminology.

Proposed Response *Response Status* **U**

ACCEPT.

The term "loopback", as used within Clause 57, is used in reference to a remote loopback of frames. Occasionally, the word "loopback" is improperly used without being preceded by the word "remote". See for example Figure 57-3 at line 20 on page 138. This figure title should be changed to read "OAM remote loopback". If the term "OAM remote loopback" is used consistently, this should provide an adequate differentiation from the loopback defined in earlier clauses.

Note that this problem was actually introduced in 802.3ae,

see for example Figure 45-2.

Cl **00** *SC* *P* *L* # **837**

Brand, Richard — Nortel Networks

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

Fundamental structural issue.
With the addition of a minimum of at least 562 pages of D 2.0 of EFM to the existing 802.3 document, the IEEE 802.3 document will become overly large. At this point, I find it extremely time consuming to scan the existing 802.3 document for consistency with the new draft sections. With so much bulk, we run an increased risk of approving a document that may not be up to our past level of quality.
The material that is generated by future Task Forces will only exacerbate this situation.

SuggestedRemedy

Move EFM into a new separate 802.3 document that addresses an Ethernet for service providers and/or access networks.

Proposed Response *Response Status* **U**

REJECT.

The draft in its current form satisfies the PAR and 5 Criteria for the project, which call for an amendment to IEEE Std 802.3, formatted as a set of clauses. The suggested remedy would not satisfy the PAR and 5 Criteria.

The page count for this draft is not extraordinary in comparison to other recent projects in 802.3. As an example, IEEE Draft P802.3ae/D5.0 had a page count of 540 pages when it was approved by the sponsor ballot group and the IEEE-SA Standards Board.

It is expected that the IEEE publications staff will elect to publish EFM as the fifth volume of a future edition of IEEE Std 802.3, which will make it easy for the document reader to select the relevant specification.

For further information regarding document restructuring, see the file:

http://www.ieee802.org/3/efm/public/sep03/frazier_1_0903.pdf

Cl **00** *SC* *P* *L* # **1167**

Parsons, Glenn — Nortel Networks

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

Amalgamation of these numerous seemingly unrelated clauses into the 802.3 standard is unrealistic. That is, using 'Ethernet' to bind all these clauses together stretches the meaning of Ethernet beyond what was originally intended and also restricts how much can be changed to add new functionality.

SuggestedRemedy

Rework this draft to be a stand-alone standard for 'access' or 'carrier' Ethernet. This would primarily affect the ammendments to clauses of 802.3. This draft would then, for example, have its own clause 4 with 'obsolete' material removed and new functions added. The existing 802.3 standard could then be termed as 'legacy' or 'enterprise' Ethernet.

Proposed Response *Response Status* **U**

REJECT.

The draft in its current form satisfies the PAR and 5 Criteria for the project, which call for an amendment to IEEE Std 802.3, formatted as a set of clauses. The suggested remedy would not satisfy the PAR and 5 Criteria.

Numerous prior projects performed amendments to the base standard. The scope of the changes described in the draft is consistent with past practice. With regard to the specific example given in the suggested remedy, the combination of physical layers described in the draft makes full use of the behavior and interfaces described in Clause 4, therefore nothing in Clause 4 can be considered "obsolete".

For further information regarding document restructuring, see the file:

http://www.ieee802.org/3/efm/public/sep03/frazier_1_0903.pdf

Cl **00** *SC* *P* *L* **1** # **596**

Grow, Robert — Intel

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

Per recent changes, we should begin including the front matter in the draft by Sponsor Ballot.

SuggestedRemedy

This is classified as a TR to assure it is implemented prior to Sponsor Ballot. The 802.3ah Editor-in-Chief will receive an appropriately edited copy of the front matter proposed for 802.3aj publication from the WG Chair at Ancona.

Proposed Response *Response Status* **U**

ACCEPT.

Will include when the source file is provided by the 802.3 WG Chair.

Cl **00** *SC* *P* **24** *L* **51** # **562**

Booth, Brad Intel

Comment Type **TR** *Comment Status* **A** *reassigned*

The Unidirectional OAM Enable bit use is not only required for OAM but is also required for an OLT to operate correctly.

SuggestedRemedy

Change throughout the specification the name of Unidirectional OAM Enable to Forced Transmit. Change mr_unidirectional_oam_enable to mr_forced_tx.

Change in Table 22-7 and 22.2.4.1.12.
Change in 24.2.3.2; strike OAMPDU in 24.2.4.2 on page 31, line 44; change in 24.3.4.5 and in Figure 24-16.
Change in 36.2.5.1.3; 36.2.5.2.1.
Change in 46.3.4; 46.3.4.2; 46.3.4.3.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Refer to resolution of 1053.

Cl **00** *SC* **0** *P* **1** *L* **1** # **436**

James, David JGG

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

A uniform notation for register, fields, state-machine names, functions, and constants is needed. Following is recommended:
thisResetRegister -- lower case, run-together, italics
thatField -- lower case, run-together, italics
THIS_CONSTANT -- upper case with underscore word separators
THAT_ENUMERATED_VALUE
ThisFunction() -- Start caps, run-together, italics
ThisStateMachine -- Start caps, run-together
that_parameter -- service primitive parameter, underscore separators

SuggestedRemedy

1) Accept this convention or _clearly_ define your own
(spaces in names are not allowed)
2) Describe this in some notation clause, if possible, or simply in the draft foreward (if not possible).
3) The Chief Editor should enforce this convention.

Proposed Response *Response Status* **U**

REJECT.

Cl **00** *SC* **45.2.1** *P* **81** *L* **23** # **1258**

Thaler, Pat Agilent

Comment Type **TR** *Comment Status* **A** *done*

The existing registers need to be dealt with. Registers 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, and 1.6 are defined as general registers. Therefore, they will apply to 10PASS-TS and 10PASS-TL devices. Text must be added to the existing subclauses to clarify how they are applied to the new PMDs.

SuggestedRemedy

Provide the necessary information.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Add text as suggested:

1.0 -- speed selection bits 13 & 6: add little table in each bit field:

13 6
----
1 1 -- bits 5:2 select speed
0 x -- Unspecified
x 0 -- Unspecified

keep the same language as found in 45.3.1.1.3 - 802.3ae

-- bits 5:2, add one row in table for 10PASS-TS and 2BASE-TL (speed variable, with a pointer to the PMA/PMD select registers for each PMA/PMD) (use the 00001 codepoint)

1.1 -- this register applies to 10B/2P. Mention that local fault information is elaborated on for 10PASS-TS and 2BASE-TL with pointer to these registers

1.2:3 -- this register applies unchanged to 10P/2B

1.4 -- add two rows to the table refering to 10PASS-TS and 2BASE-TL

1.5:6 -- remove individual tables and text for registers 5 and 6 in each individual MMD. Add a global table and text right after Table 45-1, with explanitory text. Change all references in Clause 45 from the individual reg 5,6 tables and text to the global table. Also, add the rows corresponding to the tone table and Link Partner PMA/PMD MMDs to the global table.

Furthermore:

Remove bits 15,14 and 1 from Table 45-3 and the associated text. This, along with comment 327 removes this register completely.

Remove bits 15:13 from Table 45-4 and the associated text.

Cl **00** *SC* **45.2.1.14** *P* **85** *L* **5** # **1260**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

This comment applies to all counters that span 2 registers. A mechanism needs to be defined to ensure that the two counters are read with consistant values. Otherwise, the upper counter could roll between the reading of the two values and the manager would get an incorrect value for the two register quantity.

Also, these are each 2 registers, not 1. A register is one 16-bit addressable entity. Change the text to match that.

SuggestedRemedy

Define the mechanism. One method is to say that the most significant counter should be read first. When the most significant counter is read, the value in the least significant counter is held in a latch and the latched value rather than the current value of the counter is returned on a read of the least signficant register.

Also, why aren't these counters clear on read and hold at all FFs? Is the assumption that they can't roll. If so, what is the time calculated for a 32 bit roll over?

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

As per the comment, change text for all "multi-word" registers to show that they are indeed separate 16-bit registers.

The mechanism for reading 32-bit counters is already defined globally for Clause 45 (replacing, as a service to humanity, the individual descriptions on a per register basis). See 45.2 amendments in 802.3ah Draft 2.0 (page 80, line 46).

Add text so that when the Most sig. 16 bits are read, the value of the lower 16 is latched, and the register contents are cleared to all zeros. This creates "clear on read" counters.

remove current edits to the WIS MMD 32-bit counters and add an additional note "NOTE - These counters do not follow the behavior described in 45.2"

Cl **01** *SC* **1.5** *P* **13** *L* **33** # **400**

James, David — JGG

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

Define VDSL.

SuggestedRemedy

1) Add term for VDSL
2) Spell out that term when used below:

VTU-O VDSL transceiver unit - CO side (10PASS-TS-O)
^^^^

VTU-R VDSL transceiver unit - CPE side (10PASS-TS-R)
^^^^

Proposed Response *Response Status* **U**

REJECT.

The abbreviations have been removed from the draft.

Cl **04** *SC* **4.2.3.2.2** *P* **16** *L* **9** # **956**

Thompson, Geoff — Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

The further proposed expansion of this text makes it increasingly difficult to predict the behavior of a MAC in terms of its ability to sink data.

SuggestedRemedy

Move 4.2.3.2.2 out of the "legacy" Ethernet standard and into a new parallel 802.3 family standard for "Carrier Grade" applications.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Clause 04 changes removed in response to comment #337

Cl **04** *SC* **4.2.7.2** *P* **16** *L* **15** # **957**

Thompson, Geoff — Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Proposed Carrier Grade parameters mixed into "Legacy" text

SuggestedRemedy

Move appropriate proposed parameters out of the "legacy" Ethernet standard and into a new parallel 802.3 family standard for "Carrier Grade" applications. A small number of existing parameters may also need to be put into "Carrier Grade".

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Clause 04 changes removed in response to comment #337

Cl **04** *SC* **4.2.8** *P* **17** *L* **1** # **958**

Thompson, Geoff Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Text not compatible with "Legacy Ethernet" and will make it increasingly difficult to understand the simple nature of the legacy MAC for those who wish to implement legacy applications.

SuggestedRemedy

Move to parallel "Carrier Grade" standard

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Clause 04 changes removed in response to comment #337

Cl **04** *SC* **4.4.2** *P* **18** *L* **43** # **959**

Thompson, Geoff Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Text not compatible with "Legacy Ethernet". Bad idea for reasons previously given.

SuggestedRemedy

Move to parallel "Carrier Grade" standard

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Clause 04 changes removed in response to comment #337

Cl **04** *SC* **4.4.2** *P* **18** *L* **43** # **960**

Thompson, Geoff Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Delete "ifstretch" as option in Legacy.

SuggestedRemedy

Insert into Carrier Grade
Make additional changes to make this change complete including moving the WIS over too.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Clause 04 changes removed in response to comment #337

Cl **22** *SC* **22.2.4** *P* **23** *L* **34** # **403**

James, David JGG

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

The register name and description hare hopelessly merged, confusing this reading and following uses of register names.

SuggestedRemedy

1) Split the "Register name" into two columns, one for name and one for descrption.
2) Use run-together no-space words for register names, such as:
pseControlRegister or
PseControlRegister or
pse_control_register
(listed in my order of preference)
3) Adopt a uniform convention for register names throughout the draft.

Proposed Response *Response Status* **U**

REJECT.

This is an existing table that is having some lines added to it. It would be out of scope to make such a change as you're suggesting. Each register is described in the text. The table is not the proper location for a description.

Cl **22** *SC* **22.2.4.1** *P* **24** *L* **1** # **963**

Thompson, Geoff Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Leave Table 22-7 in Legacy as prime reference

SuggestedRemedy

Carrier Grade refers to Legacy cl 6 master reference, or there is a block reserved in Legacy for CG & the details are in CG.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See resolution to comment #952

Cl **22** *SC* **22.2.4.1.12** *P* **24** *L* **51** # **964**

Thompson, Geoff Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Delete as option in Legacy

SuggestedRemedy

Insert into Carrier Grade

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See resolution to comment #952

Cl **22** *SC* **22.2.4.2** *P* **26** *L* **3** # **965**

Thompson, Geoff — Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Leave Table 22-8 in Legacy as prime reference

SuggestedRemedy

Carrier Grade refers to Legacy cl 6 master reference, or there is a block reserved in Legacy for CG & the details are in CG.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See resolution to comment #952

Cl **22** *SC* **22.2.4.2.8** *P* **27** *L* **3** # **966**

Thompson, Geoff — Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

Delete as option in Legacy

SuggestedRemedy

Insert into Carrier Grade

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See resolution to comment #952

Cl **24** *SC* **2.2.1.7** *P* **31** *L* **6** # **333**

Grow, Robert — Intel

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

Counter should be defined in receive state diagram, not in isolation here. As defined, interoperability problems are likely. For example, it isn't clear what role alignment or link_status has, nor if it counts inter-frame, only code groups within a frame, or something in between (when RX_DV is asserted). The term "normal mode" not defined for the PCS.

SuggestedRemedy

Change counter definition to a variable in 24.2.3 and add to receive state diagram. I would recommend defining a constant of invalid, variable of coding_violation, and in the Figure 24-10 add the variable. The clause 45 counter then defines the counter size and behaviour in terms of the state diagram. It also should be clear this is an optional capability (independent of previously mandatory functions (probably needs its own major option in the PICS).

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #1065

Cl **24** *SC* **24.2.2.1.7** *P* **31** *L* **7** # **69**

Dawe, Piers — Agilent

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

This new function, PCS Management Counter, seems to be written in such a way that it would apply to all 100BASE-X PCSs with MDIO or equivalent. This would be a retrospective requirement on existing non-EFM 100BASE-X PCSs which presumably is not our intention.

SuggestedRemedy

Make it clear that this function is optional.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #1065 - the counter is removed and only a Clause 30 attribute remains

Cl **24** *SC* **All** *P* *L* # **838**

Brand, Richard — Nortel Networks

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

These new additions do not align with the objectives listed in 24.1.2 and no reference is made to cl 58 requirements

SuggestedRemedy

Separate the documents per comment 6.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See resolution to comment #952

Cl **24** *SC* **All** *P* **31** *L* **1** # **968**

Thompson, Geoff — Nortel

Comment Type **TR** *Comment Status* **A** *CarrierGrade*

There is no justification for the inclusion of this material in clause 24 as it is unnecessary to satify the scope and objectives of 24.1 nor has any text been proposed to the introductory material of cl 24 to provide for the inclusion of a new 4B/5B PMD such as that being proposed in cl 58.

SuggestedRemedy

Move to parallel Carrier Grade standard

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See resolution to comment #952

Cl **30** *SC* **30.3.1.20** *P* **45** *L* **44** # **971**

Thompson, Geoff Nortel

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

Remove change. It is unnecessary as:
there are no new "modes" proposed for 1.4 that I find
A PON needs this counter because it is a "A mode of operation ... in which DTEs contend for access to a shared medium. (ref 1.4.139)

SuggestedRemedy

Remove change

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

As described in subclause 61.1.4.1.1 'Summary of MAC-PHY Rate Matching specification', the 2BASE-TL/10PASS-TS PCS matches the MAC's rate of data transmission to the transmission data rate of the medium, if slower, through the use of deference function as defined in 4.2.3.2.1.

This Rate Matching function can cause excessive deferrals which will result in the excessive deferral counter being incremented as reported in the aFramesWithExcessDeferral attribute. Hence as with full duplex operation, the contents are also undefined when operating with a 2BASE-TL or 10PASS-TS PHY.

Based on accepting that references to any new MAC mode should be removed (comment #972) the last sentence of 30.3.1.1.20 should be changed to read 'The contents of this attribute are undefined for MAC entities operating in full duplex mode and also when connected to a PHY utilizing the MAC-PHY Rate Matching defined in 61.1.4.1.1.;'

Note: Commenter thinks this is okay but wants this to be review in detail during the re-circulation.

Cl **30** *SC* **30.3.5** *P* **48** *L* **27** # **974**

Thompson, Geoff Nortel

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

No provision for subclause in preceeding material in this clause, e.g. 30.2.2.1, 30.2.3

SuggestedRemedy

Remove all of 30.3.5

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Subclause 30.2.2.1 and 30.2.3 were not updated as these don't show the existing instance of oMACControlFunctionEntity, the oPAUSEEntity object. See subclause 30.3.4 'PAUSE entity managed object class'.

On further consideration this doesn't seem correct and subclause 30.2.2.1 and 30.2.3 will be updated to include the oMPCP object as well as the oPAUSEEntity object however subclause 30.3.5 will not be removed.

Cl **30** *SC* **30.5.1.1.13** *P* **55** *L* **37** # **976**

Thompson, Geoff Nortel

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

This counter is redundant to the existing counter defined in 30.3.2.1.5, aSymbolErrorDuringCarrier. Further, it is difficult to read and implement as it operates at (almost) data bit rate. Operating at this speed and its resultant potential for large counts with low meaning is contrary to the established philosophy of 802.3 Layer Management.

SuggestedRemedy

Remove proposed counter and use the existing one to capture the required information.

Proposed Response *Response Status* **U**

REJECT.

The aPCSCodingViolation counter was added in support of the OAM Link Monitoring objective to provide a more accurate measure of the link error rate.

This counter is not a duplicate of aSymbolErrorDuringCarrier since the aSymbolErrorDuringCarrier counter will only increment once regardless of the number of symbol errors during a packet, the aPCSCodingViolation will be incremented once for each symbol error during a packet.

In respect to the increment rate it is no faster than the current subclause 30.5.1.1.11 aIdleErrorCount which is supported by both 100BASE-T2 and 1000BASE-T and can therefore increment at symbol rate for these PHYs as well.

Y: 7
N: 0
A: 0

Cl **30** *SC* **30.5.1.1.2** *P* **55** *L* **24** # **975**

Thompson, Geoff Nortel

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

Defines ends of an asymmetrical network rather than peer.

SuggestedRemedy

Move asymmetrical proposals to a new and separate document that can thoroughly, explicitly and unambigiously embrace the concept of Ethernet Services over asymetrical infrastructure.

Proposed Response *Response Status* **U**

REJECT.
See comments #952, #837 & #1167.

For further information regarding document restructuring, see the file:

http://www.ieee802.org/3/efm/public/sep03/frazier_1_0903.pdf

Cl **30** *SC* **Table 30-1b** *P* **42** *L* **22** # **417**

James, David JGG

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

Table should not have a clear bottom row; that looks funny.
In some cases, this is due to starting with a buggy IEEE table format.

SuggestedRemedy

Change to get bottom-of-row "very thin" line, here and throughout.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

It is not clear what the correct style is here since the existing published base standard IEEE Std 802.3-2002 on page 91 Table 23-4 uses this format. Will confirm with IEEE staff editor what the correct style to be used here is.

Cl **36** *SC* **36.2.4.19** *P* **77** *L* **6** # **334**

Grow, Robert Intel

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

Counter should be defined in receive state diagram, not in isolation here. As defined, interoperability problems are likely. For example, it isn't clear how this counter relates to invalid code-groups defined in 36.2.4.6. Are the seven reserved valid code points of Table 36-2 excluded from the count, or only the five used in Table 36-3? Is comma alignment required? The term "normal mode" is used in mulitple ways in Clause 36 (e.g., for the TBI, not loopback), its use here is too imprecise.

SuggestedRemedy

Change counter definition to a variable in 36.2.5.1 and add to receive state diagram. I would recommend defining a constant of invalid, variable of coding_violation, and in the Figure 36-7 add the variable. The clause 45 counter then defines the counter size and behaviour in terms of the state diagram. It also should be clear this is an optional capability (independent of previously mandatory functions (probably needs its own major option in the PICS).

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See reseponse to comment #1075

Cl **36** *SC* **36.2.4.19** *P* **77** *L* **6** # **71**

Dawe, Piers Agilent

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

This new function, PCS Management Counter, seems to be written in such a way that it would apply to all 1000BASE-X PCSs with MDIO or equivalent. This would be a retrospective requirement on existing non-EFM 1000BASE-X PCSs which presumably is not our intention.

SuggestedRemedy

Make it clear that this function is optional.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #1075 - the counter is removed and only a Clause 30 attribute remains

Cl **36** *SC* **36.2.5.1.3** *P* **77** *L* **23** # **1226**

Thaler, Pat Agilent

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

This is being inserted without any context. Reference the location of the description of unidirectional OAM capability and explanation of when it is appropriate. Also, the first usage of OAM in the clause should be expanded to.

The consequences of setting the variable TRUE are not made apparent to the reader. For example, it should state explicitly that setting the variable TRUE disables auto-negotiation.

The choice between full duplex and half duplex also needs to be covered when autonegotiation is disabled.

There may be additional places where unidirectional operation requires some alteration of behavior.

SuggestedRemedy

Provide a suitable reference. Provide information here on when this variable should not be set TRUE. In many cases such as operation with standard bridges, we rely on knowing that the link is either bidirectional or not there at all. It is only in environments designed to tolerate unidirectional operation that this variable should be set TRUE.

Since you disable Auto-Negotiation in this mode, you should also say how the duplex mode is set. For subscriber access networks, it should be full-duplex as the distance requirements of half-duplex are not likely to be met. Also, unidirectional operation only makes sense for full duplex. If you were half duplex and your receive link was down, you could be transmitting when your partner is transmitting and your transmission would be discarded as a collision. Therefore, the unidirectional variable should also force full-duplex operation.

Also, this should be reflected in the Auto-Negotiation chapter.
Note that you could force xmit to equal data in the Auto-Negotiation chapter by disabling AutoNegotionion (mr_an_enable = FALSE) and using a unidirectional variable to override all the terms except power_on=TRUE in the global transiton to AN_ENABLE.
I think this is tidier than saying that xmit sometimes gets its value from Clause 37 and sometimes doesn't.
This also works for the issue of full/half duplex. Clause 37 is where the determination of duplex mode is made.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Make the following as part of the introductory text for the "changes to Clause 36" portion of the new Clause 66 as well as part of the text for the P2MP support of unidirectional enable in Clause 65. Separate the functions (OAM and P2MP) as appropriate for the 2 clauses.

"The 1000BASE-X PCS is capable of unidirectional operation in order to support Operations, Administration and Management (OAM) or Point to Multi-Point (P2MP) for a subscriber access network. However, this mode should only be enabled under very limited circumstances. Before enabling this mode, the MAC should be operating in full-duplex mode and Auto-Negotiation should be disabled. In addition, the OAM sublayer above the MAC (see Clause 57) must be enabled on both ends of the link or this PCS must reside within an Optical Line Terminal (OLT) in a 1000BASE-PX network (see Clause 64). Failure to follow these restrictions results in an incompatibility with the assumptions of the bridge protocol."

Leave the changes to the XMIT variable only as part of the new Clause 66 - no "changes to Clause 37" required.

Cl **45** *SC* *P* **83** *L* **17** # **440**

James, David JGG

Comment Type **TR** *Comment Status* **R** *done*

The column title conflicts with the enumerated value name.

SuggestedRemedy

In rows after title, change:
R/W ==> RW
This is also consistent with enumerated value names of all caps.

Proposed Response *Response Status* **U**

REJECT.

R/W has been inherited from C22 and 802.3ae-2002 C45.

Cl **45** *SC* **45** *P* **80** *L* **4** # **620**

Grow, Robert Intel

Comment Type **TR** *Comment Status* **A** *done*

The Working Group chair considers the assignment of registers as substantive, and will require WG recirculation prior to progressing the draft to Sponsor Ballot.

SuggestedRemedy

Assign the numbers before the "last" recirculation.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Include register assignments in the initial Sponsor Ballot draft.

The WG Chair agrees with the response, but chooses not to sign off at this time so that the comment may serve as a reminder to the editor to perform this task.

Cl **45** *SC* **45** *P* **80** *L* **8** # **1256**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **R** *done*

We didn't withhold register addresses on the registers in the initial clause 45. It seems pointless to do so now since, if we are consistent with the rest of the clause, the registers will be numbered in order as they appear in the table and the order of the subclauses will be the same as the order in the table. To do otherwise would be unfriendly to the reader. Unless the plan is to scramble the registers in the table and their corresponding subclauses before sponsor ballot, one can therefore determine the register addresses by looking at the order in the table.

We have made mistakes in register numbering before and we need to have the numbers inserted so they can be checked and rechecked.

SuggestedRemedy

Assign the addresses.

Proposed Response *Response Status* **U**

REJECT.

See the response to comment #620.

These register addresses will be assigned in the initial Sponsor Ballot draft.

Cl **45** *SC* **45.2** *P* **80** *L* **28** # **569**

Booth, Brad — Intel

Comment Type **TR** *Comment Status* **R** *done*

The 10PASS-TS and R-PMA/PMD are not separately manageable devices, but are instead part of the PMA/PMD manageable devices.

SuggestedRemedy

Roll the 10PASS-T tone table and R-PMA/PMD registers into the PMA/PMD section of the clause. Hint: put the tone table after the R-PMA/PMD. Delete the edit on pg 80, line 31. Move edit on pg 80, line 36 to be a note for Table 45-2. Delete edits from Table 45-1. Add R-PMA/PMD registers to Table 45-2 starting at 1.52. Add tone table registers to Table 45-2 starting at 1.64. Renumber 45.2.99 to be 45.2.1.51. Renumber 45.2.98 to be 45.2.1.52. Add reserved bits to Table 45-2 in the gaps.

Proposed Response *Response Status* **U**

REJECT.

Vote in the OAM STF Meeting:
Reject: 6
Opposed: 0
Abstain: 2

Even though the tone table and R-PMA/PMD are not separately managable, placing them in their own MMDs makes a lot of sense.

For the R-PMA/PMD registers, this allows the register addresses for the remote to match with those in the local. Also, since the parameters being accessed actually _do_ exist in a separately manageable device, use of a separate MMD is appropriate. See also the response to comment 1227.

The tone table is a huge block of registers that may actually grow in future versions of the standard as MCM technology improves. Placing the tone table into it's own MMD gives it room. Further, placing the tone table in the middle of the PMA/PMD registers consumes a large block, after which any future PMA/PMD registers would need to reside. Growing the tone table may then involve splitting it into two MMDs anyway. Also, keeping this unique functionality in it's own MMD makes more sense than mixing it with registers for generic functionality. With this in mind, it seems to make more sense to give the tone table its own MMD.

Cl **45** *SC* **45.2** *P* **80** *L* **34** # **1227**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

R-PMA/PMD is a confusing name. This is especially true since 10GBASE-R is a name of a 10 Gig PHY so it looks like a name for the PMA/PMD used with that PHY family.

Also far too many references are made to this new concept before it is explained what a remote PMA/PMD is.

SuggestedRemedy

Change the name to something else such as Remote-PMA/PMD

Add a figure and explanation of the concept to 45.1 or 45.2.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

R-PMA/PMD becomes Link Partner PMA/PMD.

The individual MMDs are not described specifically in 45.2 Rather than explain the Link Partner PMA/PMD twice, add a cross ref in 45.2 to the explanation in 45.2.99.

Add a figure to 45.2.99. The figure depicts the MMD stack as in Figure 45-1 with the remote MMD stack next to it. Show that the Link Partner PMA/PMD MMD sits parallel to the PMA/PMD MMD.

Cl **45** *SC* **45.2.1** *P* **81** *L* **27** # **1257**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

This replaces a row covering 32 752 registers with rows for less than 25 registers. What happened to the rest of the registers?

This comment also applies to 45.2.3 page 104 ine 5.

SuggestedRemedy

Add a row to the table for the reserved registers.

Proposed Response *Response Status* **U**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **81** *L* **37** # **572**

Booth, Brad — Intel

Comment Type **TR** *Comment Status* **R** *done*

Number the registers.

SuggestedRemedy

Numbering for the registers should start at 1.32 and increment from there. This will not overlap on the 10G register space that goes to 1.15, plus permit other 10G registers to fit in more smoothly if required.

Proposed Response *Response Status* **U**

REJECT.

See response to comment 620

Cl **45** *SC* **45.2.1.12.1** *P* **84** *L* **53** # **1259**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

A write that sets the PMD to an unadvertised type is meaning less and should not be allowed to succeed.

SuggestedRemedy

A PMD may ignore... should be
"A PMD shall ignore"

Proposed Response *Response Status* **U**

ACCEPT.

Cl **45** *SC* **45.2.1.23** *P* **89** *L* **49** # **1262**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

This appears to be two registers not 1.

Comment also applies to 45.2.1.20, 45.2.1.26, 45.2.1.27 andother places.

SuggestedRemedy

Change the text so that one register address is one register in all of Clause 45. A 32-bit quantity is two registers.

Proposed Response *Response Status* **U**

ACCEPT.

Cl **45** *SC* **45.2.1.27** *P* **90** *L* **52** # **1263**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

There is no reason to pack the values this way and we avoided doing this in creating the original register definitions. There are two instances here of a less than 16 bit value crossing registers.

Also, note that there is a typo in PSD level as the register value begins 2.x rather than 1.x.

SuggestedRemedy

Redefine so that a whole value is in a single register unless the value requires more than 16 bits.

Also fix the typo on PSD level.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Cl **45** *SC* **45.2.2.16** *P* **98** *L* **12** # **1264**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

Note that these section numbers are not right. The referenced sections are 45.2.2.14 and 45.2.2.15.

The primary issue is that these changes are not correct. WIS used a valid method to define counters that span two registers. There is no reason to change the existing text and the change creates the problem that the two reads may not return consitent values.

Also, these are not in scope for .3ah.

SuggestedRemedy

Delete the changes to 45.2.2

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Fix the typo.

Please see response to comment 1260. Also, see 45.2 in Draft 2.0, page 80, line 46.

Cl **45** *SC* **45.2.3** *P* **104** *L* **14** # **574**

Booth, Brad — Intel

Comment Type **TR** *Comment Status* **R** *done*

Number the registers.

SuggestedRemedy

Start the numbering at 3.64.

Proposed Response *Response Status* **U**

REJECT.

See response to 620.

Cl **45** *SC* **45.2.3** *P* **81** *L* **23** # **1267**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

The existing registers need to be dealt with. Registers 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.14, and 3.15 are defined as general registers. Therefore, they will apply to 10PASS-T and 10PASS-T devices. Text must be added to the existing subclauses to clarify how they are applied to the new PCS's.

SuggestedRemedy

Provide the necessary information.

Proposed Response *Response Status* **U**

ACCEPT.

See 1084

Cl **45** *SC* **45.2.98** *P* **99** *L* **1** # **1265**

Thaler, Pat — Agilent

Comment Type **TR** *Comment Status* **A** *done*

This clause defines device 6 so it should be inserted after DTE XS. Such a change is also much less disruptive. Other clauses reference existing clause 45 subclauses so the suggested renumbering would ripple all through the standard.

SuggestedRemedy

This subclause should be 45.2.6 Similarly 45.2.99 should be 45.2.7.

Proposed Response *Response Status* **U**

ACCEPT.

Make the appropriate changes to insert the MMDs in subclauses 45.2.6 and 45.2.7

Cl **45** *SC* **45.2.98** *P* **99** *L* **17** # **1266**

Thaler, Pat Agilent

Comment Type **TR** *Comment Status* **A** *done*

Need to say that the rest of the registers are reserved.

SuggestedRemedy

Add the statement.

Proposed Response *Response Status* **U**

ACCEPT.

Cl **46** *SC* **46** *P* **124** *L* **10** # **1230**

Thaler, Pat Agilent

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

There is nothing to be gained by transmitting when receiving Remote Fault. Your link partner can't receive the transmission.

SuggestedRemedy

Remove transmission when receiving Remote Fault or explain its use.

Proposed Response *Response Status* **U**

REJECT.

To have uniform OAM Link Fault signaling, the OAM sublayer will interpret the Clause 46 link fault status=Remote Fault as the value FAIL. Under this condition, the OAM sublayer will transmit link fault OAMPDUs. These need to be transmitted.

Cl **46** *SC* **46** *P* **124** *L* **10** # **1229**

Thaler, Pat Agilent

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

This is being inserted without any context. Reference the location of the description of unidirectional OAM capability and explanation of when it is appropriate. Also, the first usage of OAM in the clause should be expanded to.

The consequences of setting the variable TRUE are not made apparent to the reader. For example, it should state explicitly that setting the variable TRUE disables auto-negotiation.

SuggestedRemedy

Provide a suitable reference. Provide information here on when this variable should not be set TRUE. In many cases such as operation with standard bridges, we rely on knowing that the link is either bidirectional or not there at all. It is only in environments designed to tolerate unidirectional operation that this variable should be set TRUE.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Make the following as part of the introductory text for the "changes to Clause 46" portion of the new Clause 66.

The 10Gb/s RS is capable of unidirectional operation in order to support Operations, Administration and Management (OAM) for a subscriber access network. However, this mode should only be enabled when the OAM sublayer above the MAC (see Clause 57) is enabled on both ends of the link. Failure to follow this restriction results in an incompatibility with the assumptions of the bridge protocol.

Cl **46** *SC* **46.3.4.2** *P* **124** *L* # **1228**

Thaler, Pat Agilent

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

This change effectively disables detection of remote fault when unidirectonal_oam_enable is true because it doesn't take into account the behavior of the Link Fault Signalling state machine. The existing Link Fault Signalling state machine cancels a sequence ordered set if it doesn't see one for 127 columns. Also, to prevent false detection due to noise, it requires 3 sequence ordered sets before it will detect. If there are packets, it detect the sets intermittently or not at all.

SuggestedRemedy

Take out undirectional operation for 10 Gig or propose an alternate Link Fault Signalling state machine that will when unidirection operation is enabled so that Remote Fault may be detected when intersperced with packts.

Proposed Response *Response Status* **U**

REJECT.

With the response to comment 57001 that limits the frequency of OAMPDUs reporting Remote Fault to once per second, the following description is valid.

If the RS is receiving Remote Fault, the only frames that it will be interrupted with are those that also report the Link Fault. These packets are currently only 64 octets and not long enough to force the Link fault signaling state diagram to receive 127 columns without an Sequence ordered set. This includes when both ends of the link have a XAUI extension of the XGMII. With the response to comment 57001 the frequency of these packets is limited to once per second.

In the interest of supporting a common mechanism across all physical layers to support the announcement of Link Fault, this should be retained.

Cl **56** *SC* **56.1.2** *P* **169** *L* **44** # **835**

Brand, Richard Nortel Networks

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

Both this paragraph and Fig 56-2 above it are misleading in that they do not detail that P2MP is NOT a peer to peer relationship between the OLT and the ONU. Cl 2 clearly states peer to peer so cl 56 needs to point out the difference in this overview.

SuggestedRemedy

Add text to define that P2MP is an exception to the peer to peer relationship.

Proposed Response *Response Status* **U**

REJECT.
P2MP as described in the draft does in fact provide a peer to
peer relationship at the MAC Client interface, therefore it would be incorrect to define that it is an exception.

Cl **56** *SC* **56.1.4** *P* **171** *L* **50** # **840**

Brand, Richard Nortel Networks

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

Although one of the objectives of 802.3ah is to define OAM for subscriber access networks, the wording used here is not correct.

SuggestedRemedy

Change text (line 51) to delete "subscriber access networks to Ethernet" and replace with "point to point and emulated point to point to IEEE 802.3 links." as per 57.1.5.1
or
create new document specific to SP networks

Proposed Response *Response Status* **U**

REJECT.

Refer to responses to 837 and 952.

For further information regarding document restructuring, see the file:

http://www.ieee802.org/3/efm/public/sep03/frazier_1_0903.pdf

Cl **57** *SC* *P* **200** *L* **17** # **468**

James, David JGG

Comment Type **TR** *Comment Status* **A** *RAC*

Illegal and ill-advised OUI usage. All new identifier uses based on the OUI are required to use the EUI-64 unique identifier format. Relying on the owner of the OUI to properly administer Data/Pad values uniquely does not (in practice, speaking an as IEEE/RAC member) work.

SuggestedRemedy

Change illustration on right to include OUI plus 5-byte extension, forming an EUI-64 value.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #1155.

Cl **57** *SC* **57** *P* **174** *L* **09** # **980**

Thompson, Geoff Nortel

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

What set of documented requirements is being satisfied by OAM?
The only justification that I can find is the vague "The OAM described in this clause provides data link layer mechanisms that complement applications that may reside in higher layers." (emphasis added).
There is no reference to any particular application, set of applications, documented set of requirements for such applications or protocol/interface to any such thing as an "OAM client". There is no definition of an OAM Client or what standard defines the requirements, interfaces or interoperability parameters for such a client. If such a client is speculated for the future, then there is not even documentation of a commitment for such a project by a standards group.

SuggestedRemedy

Delete OAM for lack of a defined standards based
interface
customer
set of requirements
Or provide appropriate justification/references/information

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Adequate justification has been provided as evidenced by the liaison from ITU-T SG 13 indicating their willingness to adopt the OAM client interface and endorsement of the functions provided by the OAM sublayer.

OAM STF will continue responding to liaison/communication statements to seek feedback on OAM. These will be sent to T1, MEF and 802.1.

- - -

Per the commenter's suggestion to provide appropriate justification, references and information, the following is provided:

The recent ITU-T liaison contains the following excerpts, which indicate their endorsement and intended use of OAM as currently defined and architected.

Under "Requirements for Maintenance Entities" (Section 9):

A requirement is "ETY link connection OAM based on IEEE 802.3ah" (see P15, L7 or so).

So as to whether other organizations have reviewed it, find it useful, and will use it, I think that ITU making it a REQUIREMENT in their document should calm that fear.

Under "General requirements for Ethernet OAM Functions " (Section 8):

Some requirements, but not the full set, and why these are satisfied by 802.3ah OAM include:
- (#1) on demand and continuous connectivity checking (OAM Information TLVs and Variable Requests satisfy this)
- (#3) defect notification (OAM critical link events and TLV-based link events satisfy this). They also list defect correction as a requirement, but we're not in the topology maintenance business.
- (#4) customers don't detect own problems (event notification from CPE-CO satisfy this)
- (#5) detecting the following anomolies: loss of connectivity, lost frames, errored frames (events or status for all of these) - also ask for topology problems, but thats not our business
- (#6) Ethernet OAM on same path as Ethernet data (e.g. do in data flow, not preamble, like we're doing)
- (#8) OAM functions simple and auto configuring (OAM discovery helps address this)
- (#9) OAM optional (all management optional in 802.3)
- (#10) backward compatible (e.g. frames not preamble)
- (#14) connectivity checking not dependent on customer traffic (e.g. OAM running anyway)

Note that they have other requirements not applicable to us (topology, layering, etc.), but we fit very well into these requirements.

Finally, in "Required OAM functions", they list many that we help satisfy:
- continuous connectivity checking
- loopback
- discovery
- performance monitoring

And some that are out of our scope
- alarm suppression
- path trace
- survivability (protection switching)

But there are none that are within our scope that we do not perform. It doesn't seem like we're missing anything.

Cl **57** *SC* **57.4.3.6** *P* **200** *L* **15** # **1156**

Parsons, Glenn Nortel Networks

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

To be consistent with the rest of the OAM clause, the Organization specific OAMPDU should use the 'vendor identifier' (that itself should be EUI64 per another comment) as the first part of its data instead of the OUI.

SuggestedRemedy

Replace OUI with EUI64 or vendor identifier (that is defined as a subset of EUI64)

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #1155.

Cl **57** *SC* **57.5.2.2** *P* **203** *L* **19** # **1155**

Parsons, Glenn — Nortel Networks

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

The Vendor Identifier described in table 57-10 should be aligned with the EUI64 identifier. IEEE/RAC now requires that new applications use EUI64. Their review would likely recommend the same thing. That is, it should be 64 bits.

SuggestedRemedy

Define the Vendor Identifier as a subset of EUI64 with a 24 bit device identifier and a 16 bit version identifier.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Clause 57 is defining a vendor specific protocol identifier (in a manner similar to SNAP) and not a globally unique identifier. Hence, neither the usage of the EUI-48/64 nor any other EUI is appropriate.

In addition, according to "Guidelines for EUI64: 64-bit Global Identifiers," no more than one EUI-64 value shall be contained within each component that is manufactured. This restriction would prevent an OAM-enabled DTE from speaking two or more separate organization specific protocols.

Rather than the suggested remedy, the following changes will be made:
Split Table 57-10 into two. One table will contain just the OUI. The second table will contain a 32-bit vendor specific information field.

Add note to Table 57-10 and other uses of OUI within Clause 57: "Organizations that have previously received OUIs from the IEEE Registration Authority should use one of their allocated OUIs consistently as the company identifier."

Cl **57** *SC* **57.5.2.3** *P* **203** *L* **51** # **469**

James, David — JGG

Comment Type **TR** *Comment Status* **A** *RAC*

Illegal and ill-advised OUI usage. All new identifier uses based on the OUI are required to use the EUI-64 unique identifier format. Relying on the owner of the OUI to properly administer Data/Pad values uniquely does not (in practice, speaking an as IEEE/RAC member) work.

SuggestedRemedy

Change (c,d) to:

c) organizationEui. A three-octet organizationally unique identifier (OUI) followed by 5 bytes administered by that organization. The concatenation of these fields forms an EUI-64, as defined by the IEEE/RAC.

d) organizationSpecific. Data bytes whose format and meaning are dependent on the organizationEui.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to comment #1155.

Cl **58** *SC* *P* **220** *L* # **851**

Meir Bartur — Optical Zonu

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

Does not include single wavelength option

SuggestedRemedy

Include single wavelength option

Proposed Response *Response Status* **U**

REJECT.

The dual wavelength proposal was adopted as baseline for the 100M bidi PMD. The single wavelength proposal was not adopted. This baseline was adopted at the Edinburgh Interim in May 2002, after the issue being discussed at several meetings.

Cl **58** *SC* **58.10.4** *P* **251** *L* **16** # **999**

Thompson, Geoff — Nortel

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

There is no specified standardized MDI.
It is very much a key element of the success of any Ethernet Standard to specify a single interoperable MDI for each cabling interface. The lack of such a specification is a major shortcoming of 10 GBE. We should not make the same mistake for EFM. If EFM was able to suceed in coming up with a single code for copper then choosing a connector should be well within the ability of the group.

SuggestedRemedy

Specify a single (standards based) connector type for connecting to single mode fiber or at least a single connector type for each PMD type. Change the business about specifying the performance at the end of TP2 to be part of the test set-up instead of the interoperability test point.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
The MDI is properly specified (see subclause 58.10.4) and the explicit choice of a connector is neither necessary nor helpful to best meet our objectives in a timely manner.

Commenter's wish for a chosen connector relates to something a consumer might buy, rather than connectors in the CO.

Change to the right IEC reference for fiber optic connector performance (mechanical and optical) for all three clauses. Should be -1 not -1-1.

Cl **59** *SC* *P* **257** *L* # **852**

Meir Bartur — Optical Zonu

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

Does not include single wavelength option

SuggestedRemedy

Include single wavelength option

Proposed Response *Response Status* **U**

REJECT.

Adoption of a two-wavelength solution has been discussed in detail and approved on the basis that it is a cost-effective and robust solution that meets our Objectives. Accordingly, the baseline proposals were selected in May 2002 with overwhelming majority.

Cl **60** *SC* *P* **288** *L* **Table 60-1** # **853**

Meir Bartur — Optical Zonu

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

Min Ch. Loss 5dB is too low (1x4 splitter is 7dB - and that is the min in IYU which is also too high IMHO)

SuggestedRemedy

Change to 10 dB

Proposed Response *Response Status* **U**

REJECT. This has been stable since at least D1.1. Committee should see technical arguments before making any change. Is the issue about APD? (pin?) overload vs. tolerancing the loss of the optical plant? Would need to change either Tx max or Rx max in step.

What would the MINIMUM loss of a 1x4 splitter be? Could it be as low as 5 dB if splitting were not even?

Should we follow ITU-T's 7 dB? Why? Attenuation range of ITU-T G.982 is 15 dB.

To make a change we would need a technical presentation discussing costs of overload against costs of measuring and tolerancing path losses and stocking finer quanta of attenuators in network construction. It may be that Ethernet puts more emphasis on simple installation ("plug and play").

Cl **60** *SC* *P* **302** *L* **49** # **493**

James, David — JGG

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

Spaces in variable names cause confusion.

SuggestedRemedy

Change all variable names to be runTogetherWords.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
This reviewer is not confused by the spaces, and prefers the readability. These variables are not state variables used in a state machine.

Insert subscript 10 after log. Put UI in brackets (twice).

Cl **60** *SC* **60.1.2** *P* **289** *L* **8** # **1002**

Thompson, Geoff Nortel

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

P2MP violates 802.3 layering as the laser control takes place in the new "MULTI-POINT MAC CONTROL" sublayer above the MAC in the ONU, the actual switching function takes place in the PHY. There is no provision in the existing 802.3 MAC or the GMII to pass this signal between those sublayers.

SuggestedRemedy

Create a separate standard within 802.3 for EPON that frees EPON from the backward compatibility constaints of legacy Ethernet and allows for the standard to be structured and written appropriately. Rewrite so that the media access control actually takes place in an entirely new (non-CSMA/CD) TDMA MAC.
A new non CSMA/CD GMI-like interface could then be freely specified with no impact on the existing 802.3 Standard.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Referred to P2MP group. See response to comment number 1119.

Cl **60** *SC* **60.1.2** *P* **289** *L* **8** # **1003**

Thompson, Geoff Nortel

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

P2MP has violated layering and good standards description practice by specifying the MAC function in 2 separate layers with a significant portion of the function being specified in the PHY.
The 2 layers need to communicate with each other where there is no path for doing so.
The difference between this somewhat bizarre method of specification that is contorted to try to fit into the existing Ethernet spec will be an ongoing problem because it does not match normal system partitioning. There will be a natural desire during implementation to put MAC functions in a MAC and PHY functions in the PHY. The fact that the actual design spec must be interpreted fro its current rather strange form is an invitation to interoperability/compatibility problems.

SuggestedRemedy

Create a separate standard within 802.3 for EPON that frees EPON from the backward compatibility constaints of legacy Ethernet and allows for the standard to be structured and written appropriately. Rewrite so that the media access control actually takes place in an entirely new (non-CSMA/CD) TDMA MAC.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Referred to P2MP group. See response to comment number 1119.

The commenter does not here propose a change to the Clause 60-specific material, but to other clauses and to a diagram which is kept consistent with Figure 65-1.

Cl **60** *SC* **Table 60-5** *P* **294** *L* **38** # **855**

Meir Bartur Optical Zonu

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

Average launch power (min) -1dBm for the ONU is too high. FSAN is -2dBm

SuggestedRemedy

Change to -2dBm

Proposed Response *Response Status* **U**

REJECT.

This has been -1 since D1.414, and a lower transmit power would mean a more demanding sensitivity. Committee should see technical arguments, bearing receiver sensitivity in mind, before making any change.

Cl **60** *SC* **Table 60-5** *P* **294** *L* **39** # **856**

Meir Bartur Optical Zonu

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

Average launch power of OFF transmitter (max) for the OLT -39 dBm is astrange requirement - not neccesary

SuggestedRemedy

Remove

Proposed Response *Response Status* **U**

REJECT.
This item is included for consistency with other continuously operating optical transmitters within 802.3. It stops the receiver seeing an unintended signal from an "off" OLT and does not seem hard to meet for a continuous-type transmitter.

Cl **60** *SC* **Table 60-5** *P* **294** *L* **41** # **857**

Meir Bartur Optical Zonu

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

Extinction ratio (min) 6dB (4/1) is too low

SuggestedRemedy

Change to 10 like ITU

Proposed Response *Response Status* **U**

REJECT.

This has been stable since D1.1, and was chosen to be cost effective for direct modulation. Committee should see technical arguments before making any change.

If SONET used 8.2 a long time ago, 10 would be out of line.

Cl **60** *SC* **Table 60-5** *P* **295** *L* **12,13** # **858**

Meir Bartur Optical Zonu

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

Ton Toff 512nSec each IS TOO MUCH

SuggestedRemedy

Change to 50nSec

Proposed Response *Response Status* **U**

REJECT.

This item was been debated at length and has been fairly stable since D1.3 (600 ns), and was chosen to allow cost effective designs. Committee should see technical arguments before making any change.

Cl **61** *SC* *P* **341** *L* **19** # **504**

James, David JGG

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

Greek letters should not be included in titles, subclause, figure, or tables. The text in the TOC, LOF, or LOT will be incorrect and fixes will be error prone.

SuggestedRemedy

Change symbols, perhaps to:
gamma, alpha, beta.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
The "alpha(beta)"-interface and "gamma"-interface are well-known fundamental concepts in the xDSL world. We've deliberately chosen to keep these concepts and their original notation in our draft to make the relation with existing xDSL standards clear to the reader. The IEEE Editorial Staff will be asked to advise as to the proper course of action.

The commenter is unsatisified with this resonse, but responded that the following remedy would be acceptable to him:

"The WG editors will work with the IEEE Editorial Staff and the commenter to determine how these characters can be formatted so that they will be automatically incorporated into the TOC without manual intervention."

Cl **61** *SC* **61.1** *P* **320** *L* **34** # **1008**

Thompson, Geoff Nortel

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

This paragraph is implementation fluff not necessary to the specification.

SuggestedRemedy

Delete lines 33-36

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
As 61.1 is an overview section (see subclause heading), it may contain some information that is not strictly necessary to the specification.
The sentence "In this case [...] establish a link." is indeed implementation fluff and shall be removed.
The sentence "The CO and CPE [...] physical device." becomes the last sentence of the fifth paragraph.

Cl **61** *SC* **61.1.1** *P* **320** *L* **45** # **1009**

Thompson, Geoff Nortel

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

I don't think the reference to 100BASE-T4 adds value without more explanation than is offered here. If suport for code bonding of multiple pairs is in here it should be mentioned also.

SuggestedRemedy

Delete reference to 100BASE-T4.
Redo so that it actually just a "scope"
E.g. specifys a PHY from MII to MDI that is based on blah, blah. It includes DSP coding stolen from blah blah and common initialization mechanisms used by both PHYs

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Replace subclause by following text:
"This clause defines the Physical Coding Sublayer (PCS) for 2BASE-TL and 10PASS-TS, which has similarities to other 802.3 PCS types but also differs since new sublayers are added within
the PCS sublayer to accommodate the operation of Ethernet over access network copper channels. This clause also defines the common startup and handshaking mechanism used by both PHYs."

Cl **61** *SC* **61.2.3.3** *P* **343** *L* # **864**

Kimpe, Marc — Adtran

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

Per our interpretation of the spec, it appears that due to the configuration of the scrambler and CRC it is possible to deliver bad frames with good CRC's.

The specific case in theory is as follows:

The scrambler scrambles the frame payload data. The CRC then calculates a CRC on the scrambled data. The transmitter then sends the scrambled data along with the CRC where it may be subjected to bits errors.

At the receiver, if a bit error occurs near the end of a frame, that frame will likely be discarded due to a CRC mismatch. This is good. The data from that frame is then sent to the scrambler. The scrambler will propagate errors into the first payload bits of the next frame.

The CRC on the next frame will be computed and will be a correct CRC since the scrambled bits are OK. The data of the second frame is then sent to the scrambler where it is corrupted due to error propagation from the first frame. The second frame will likely be delivered with the propagated errors from the scrambler in it's first bits but with a correct CRC check.

SuggestedRemedy

If this is correct then perhaps the CRC should be on the non-scrambled data. We propose to scramble everything in each codeword except the sync byte. (This might be simpler to explain in the spec and also might make sync detection possible if the TC is used in systems in the future without byte synchronization.)

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
Comments #293(T), #267(T), #820(TR), #1210(TR), #1182(TR) and #1183(TR) suggest removing the scrambler.
Comments #864(TR), #799(T), #800(T) and #1237(T) address issues related to the scrambler.

Proposed action:
- Accept comment #1237
- Remove scrambler/descrambler
- Resolution of comments #293, #267, #820, #1210, #1182, #1183, #864, #799 and #800 immediately follows

Cl **62B** *SC* **62B.3** *P* **541** *L* # **1241**

Sorbara, Massimo — GlobespanVirata, Inc.

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

The transceiver compliant with the definitions in clauses 62 and 62B cannot physically meet the bit rate objectives in test cases#10 and #21 in table 62B-1. We recommend that test cases #10 and #21 be deleted from the specification.

SuggestedRemedy

We recommend that test cases #10 and #21 be deleted from the specification.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
See: #1245.

Cl **62B** *SC* **62B.3** *P* **541** *L* **9** # **882**

Barrass, Hugh — Cisco Systems

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

Users should expect a high degree of interchangeability between compliant devices. In order to achieve this it is important that required performance levels are near to the maximum achievable within the standard. This will ensure the minimum of variation from on device to another without unduly constraining implementation.

Many of the distances specified in Table 62B-1 are significantly below the levels achieved by devices tested by T1E1.4 or capacity simulations. The required distances must be increased to more challenging levels as shown in the remedy.

Additionally, the distances specified for notched profiles and very high rate profiles must be shown to be near the theoretical limit for the test scenario.

Furthermore, given that a number of implementations are available which already comply with the PMA/PMD specification, it is expected that physical device testing should be performed according to this Clause prior to Sponsor Ballot.

SuggestedRemedy

Change the distances of the tests in Table 62B-1 as follows:

Test number : Change distance to

1	1100
2	750
3	1000
4	600
5	750
13	350
15	900
17	1000
18	1200
19	1400

Proposed Response *Response Status* **U**

REJECT.

The Olympic test results, the testing method, and testing parameters were designed as technology evaluation and as such should be treated only as guidelines. The reaches indicated in the table are sufficient to indicate basic functionality and performance.

Following changes have been made in resolution of comment #1245:

Tests 2 and 6: use profile 18
Change data rate on 10 and 21 to 100/35.
Tests 11: remove entry
Test 12: change noise to AWGN
Test 14: change loop length to 650m
Test 15, 17, 26, 28 : remove UPBO
Test 18: change loop length to 750m and use profile 4
Test 17: use profile 4
Tests 28, 29: use profile 4

The Chair is directed by the group to ensure that simulation data is made available to support these values and to rebutt the proposed values in comment #882.

Cl **64** *SC* **64.3.3.2** *P* **452** *L* **45** # **1012**

Thompson, Geoff — Nortel

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

Point to Point emulation is an out of scope function that is only required for bridging.
As closely as I can tell, from the carrier point of view, it is not part of their requirements.
Carriers want a non-peer network that does not support direct ONU to ONU communication on a peer basis.

SuggestedRemedy

Split P2P Emulation from EFM as a separate PAR for joint development with 802.1 to be formulated as a separate amendment to 802.1D (similar to 802.11 & 802.12) in clause 6.5 distinct from 6.5.1. Further have PON as a separate (Carrier oriented) 802.3 standard that is more fully oriented to the market requirements of carriers.

Proposed Response *Response Status* **U**

REJECT.
Splitting the P2P emulation as an 802.1 project is not possible as the function is located wholey inside the RS layer between the MAC and the PHY, a location that is not exposed to an 802.1 project.

In regards to dividing the 802.3 standard, see 952.

Cl **64** *SC* **all** *P* *L* # **843**

Brand, Richard — Nortel Networks

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

The concept of point to point emulation is foreign to 802.3 and was introduced to allow compliance with 802.1D bridging

SuggestedRemedy

Move this section to new document and as a part of the revised PAR, remove requirement to comply with 802.1

Proposed Response *Response Status* **U**

REJECT.

Compliance to 802.1D is a requirement of our PAR and of the LMSC policies and procedures.
In regards to dividing the 802.3 standard, see reponse to comment 952.

Cl **64** *SC* **Figure 64-28** *P* **479** *L* **16** # **1014**

Tae-Whan Yoo ETRI

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

All of the message fields in GATE MPCPDU except "Number of grants/Flags" are in even number of octets. It is, therefore, inconvenient to interpret the messages below the "Number of grants/Flags" in GATE MPCPDU when the logic is implemented to process in other than 8 bits, say 16 bits or 32 bits.

SuggestedRemedy

It is recommneded to add one octet after "Number of grant/Flags" for two purposes:
1) To enable the messages after "Flags" to be interpreted in the unit of even octets.
2) To provide a reserved field for future application.

Proposed Response *Response Status* **U**

REJECT.
All parameters are specified using the required number of bits.
A compact form is required for the message.

Vote on comment
Approve response (reject comment)
Yes: 8
No: 1
Abstain: 3

Cl **64** *SC* **Figure 64-30** *P* **481** *L* **14** # **1015**

Tae-Whan Yoo ETRI

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

All of the message fields in REPORT MPCPDU except "Number of queue sets" and "Report bitmap" are in even number of octets. It is, therefore, inconvenient to interpret the messages below the "Number of queue sets" and "Report bitmap" in REPORT MPCPDU when the logic is implemented to process in other than 8 bits, say 16 bits or 32 bits.

SuggestedRemedy

It is recommneded to add one octet after "Number of queue sets" and another single octet after "Report bitmap" for two purposes:
1) To enable the messages to be interpreted in the unit of even octets.
2) To provide a reserved field for future application.

Proposed Response *Response Status* **U**

REJECT.
All parameters are specified using the required number of bits.
A compact form is required for the message, where there is a shortage of space.

Vote on comment
Approve response (reject comment)
Yes: 9
No: 1
Abstain: 3