Cl **00** *SC* **0** *P* **0** *L* **0** # **491**

Beck, Michael — Alcatel

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

All instances of "10PASS-TS" have been replaced by "10PASS-T". This change was probably made to remove the inconsistency in earlier drafts between the name used in Clause 56 and the name used in Clause 62. However, there is now an inconsistency between "10PASS-T" and "2BASE-TL".

SuggestedRemedy

Replace "10PASS-T" with "10PASS-TS" throughout the document.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

2BASE-TL is unique to distinguish this PMD from 2BASE-T. There is no requirement on 10PASS-T is unique.

If the commenter would still like to change the naming scheme he is encouraged to get a consensus from the STF. This can then be recommended to the TF.

Cl **00** *SC* **Introduction** *P* **3** *L* **21** # **843**

Daines, Kevin — World Wide Packets

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

Any objection with throwing my middle name in there?

SuggestedRemedy

Change "Kevin Daines" to read "Kevin Q Daines"

Please note, there is no period. Just "Q"!

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.3** *P* *L* # **788**

Squire, Matt — Hatteras Networks

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

At what point do we start adding to the normative references in 1.3? We have many copper specifications to reference.

SuggestedRemedy

Add references for at least:

G991.2
G993.1
G994.1
ANSI T1.417

And ping the copper guys for the rest.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

We will be adding clause 1 to the draft before WG Ballot. Until then the commenter is encouraged to add these references to the appropoariate editorial preamble in each clause.

Cl **04** *SC* **4.4.2** *P* **13** *L* **1** # **549**

Tom Mathey — Independent

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

No table number or title.

SuggestedRemedy

Add table number and title to both of the tables in 4.4.2

Proposed Response *Response Status* **C**

REJECT.

Clause 4 doesn't use table numbers or titles in the other tables in this section. I see no reason to make this table look different from the others.

Cl **04** *SC* **4.4.2** *P* **13** *L* **7** # **548**

Tom Mathey Independent

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

When FEC is used, the packet is chopped into groups of 239 bytes and 16 byes are added for each group. When the last group is less than 239 bytes, 16 bytes are still added. As the math in clause 4 has now become difficult to follow, please verify that the text on page 10 of "ifsStretchMultiplier = ... ; {In bits, determines the number of bits of interFrameSpacing extention that are required for every ifsStretchRatio bits in a frame" includes a calculation for adding 16 parity bytes for this last fraction of the frame.

SuggestedRemedy

Discuss

Proposed Response *Response Status* **C**

REJECT.

This is what the variable ifsStretchCarry is used for. In WAN it is a 1, meaning any extra bits should be carried over to the next interframe gap. In FEC it is a 0, meaning any extra bits are used in this current interframe gap. See the IF/THEN statement on page 12 line 18.

Cl **22** *SC* **22.2.4.1.12** *P* **017** *L* **26** # **837**

Daines, Kevin World Wide Packets

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

The corresponding PICS entry is not testable at the PHY. The text in 22.2.4.1.12 should be changed per suggested remedy. Also, Item MF41 should be removed and the editor's note on lines 27-28 on page 19 should be removed.

SuggestedRemedy

Change "Bit 0.1 shall only be set when an OAM sublayer entity exists and is enabled."
to read:
"Bit 0.1 should only be set when an OAM sublayer entity exists and is enabled."

Remove MF41 on page 19. Delete lines 27-28 on page 19.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.2.4.2.12** *P* **019** *L* **15** # **550**

Tom Mathey Independent

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

Incorrect reference.

SuggestedRemedy

Change subclase reference in lines 15 to 23 from 22.2.4.3.12 to 22.2.4.1.12.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.7.3.4** *P* **019** *L* **12** # **844**

Daines, Kevin World Wide Packets

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

Why are the PICS table columns in 802.3u/802.3ab different from 802.3x/802.3z/802.3ad/802.3ae? Specifically, the Value/Comment column is in a different location.

Should EFM do anything about this? If not, which style should EFM follow? Does it matter? Does anyone care?

SuggestedRemedy

Merely pointing it out. Doubt I'd spent the energy harmonizing PICS tables across the standard...

Proposed Response *Response Status* **C**

REJECT.

Cl **24** *SC* **24** *P* **022** *L* **01** # **1011**

Thatcher, Jonathan WWP

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

The following comment added against C60 and repeated here for notification.

Optical testing incomplete (2 of 2 for C60; also for C 24)

After completing part 1 of these 2, it is essential to get together with the logic folk (C24) to figure out how to:

1. Ensure that the system can create the test patterns required for each test. Even if the patterns are called out in 60, the logic folk won't know to look there for logic test requirements unless some change in made elsewhere.
2. Ensure that the system can count the errors indicated. In short, the OAM functions being added will not be "optional" for this PMDs.
3. Can operate the link in a mode that supports these tests. The PHY must be able to send test frames when the link is not up (no Rx) for tests in Part 1 of the comment that are not asynchronous.
4. For those that are synchonous, it must be verified that the four partners are doing what is desired.

SuggestedRemedy

Meet with PMD people. Discuss and evaluate capabilities for C24, and requirements for C60.

Proposed Response *Response Status* **Z**

WITHDRAWN.

This sounds like the right thing to do. Awaiting test pattern recommendations from optics group. Expect to carry this comment forward until proposal arrives.

Cl **24** *SC* **24.2.2.1.7** *P* **022** *L* **15** # **551**

Tom Mathey Independent

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

Incorrect reference.

SuggestedRemedy

Change reference from 13.15:0 to that used in Clause 45, mislabeled Table 22-9 on p 57.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Agree this needs to be reconciled. Cooperation with the Clause 45 editor is required.

Clean this up in Clause 36 as well.

Cl **30** *SC* **30** *P* **026** *L* **01** # **547**

Tom Mathey Independent

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

When the variable ifsStretchMode was add to the unnamed table in clause 4.4.2 Allowable implementations, then 30.3.1.1.34 aRateControlStatus was added to the management variables. Now that we have more than one ifsStretchMode value along with additional variables, perhaps we need to control the variables.

SuggestedRemedy

Discuss adding variables ifsStretchConstant, ifsStretchCarry, ifsStretchIncludeIFS, and ifsStretchMultiplier as managed objects.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OAM STF discussed this briefly and decided to add these variables. Further review of these variables will happen on D1.4.

Cl **30** *SC* **30.11** *P* **040** *L* **06** # **891**

Gerhardt, Floyd Cisco Systems

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

Many of the Cross References within this section are incorrect.

SuggestedRemedy

30.11.1.1.7 should reference 57.4.2.1
30.11.1.1.8 should reference 57.4.2.1
30.11.1.1.11 through 30.11.1.1.23 should reference Table 57-5

Proposed Response *Response Status* **C**

ACCEPT.

See comment #852 and #857.

Cl **30** *SC* **30.11** *P* **45** *L* **18** # **99200**
Matt, Squire Hatteras Networks

Comment Type **T** *Comment Status* **A** *D1.2 #491*
Suggest new element to cover remote configuration.

SuggestedRemedy
Add objects to cover: OAM_configuration, OAM_PDU_configuration, extension, and remote MAC address.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Delete sub-clause 30.11.2.
Delete oRemote from Fig 30-3, Fig 30-4.

Add attributes for suggested remedy in 30.11.1.

Editor will elaborate.

- - -
This comment was incorrectly added to the D1.3 comment database. Closed in a previous database.

Cl **30** *SC* **30.11.1** *P* **040** *L* **10** # **848**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
This Editor's note is old. It should have been removed as part of the editing for D1.3. The accepted rememdy for one of the loopback comments reviewed in Vancouver should have deleted this.

SuggestedRemedy
Delete this old editor's note.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1** *P* **041** *L* **21** # **786**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **A**
Need to introduce additional OAM attributes:

SuggestedRemedy
aOAMRemoteState. This string of 4 octets corresponds to the state field in the most recently received Information OAMPDU. The first bit correponds to Stable bit in the State field, the 2nd and 3rd bits correspond to the Action bits in the State field, and bits 16-31 correspond to the loopback timer in the State field.

aOAMRemoteVendorIdEnterpriseNumber. This corresponds to the Entrprise_Idnetifier in the most recent Information OAMPDU Vendor Id field.

aOAMRemoteVendorIdDeviceNumber. This corresponds to the Device_Identifier in the most recent Information OAMPDU Vendor Id Field.

aOAMRemoteVendorIdVersion. This corresponds to the Version_Identifier in the most recent Information OAMPDU Vendor Id Field.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

aOAMRemoteState will be harmonized with expected changes in this field. Also, reserved bits aren't called out in attributes.

aOAMRemoteVendorIDEnterpriseNumber will be harmonized with comment suggesting allowing OUI or Enterprise Number.

See comment #658. OUI will be used.

Cl **30** *SC* **30.11.1.1.11** *P* **043** *L* **09** # **857**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong cross-ref.

SuggestedRemedy
Change "57-3" to "57-5".

(14) total occurrences in 30.11.1.1.*

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.11** *P* **043** *L* **09** # **552**

Tom Mathey Independent

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

Incorrect reference.

SuggestedRemedy

Change reference from Table 57-3 to 57-5; here and in numerous other places.

Proposed Response *Response Status* **C**

ACCEPT.

See comment #857.

Cl **30** *SC* **30.11.1.1.15** *P* **044** *L* **04** # **840**

Daines, Kevin World Wide Packets

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

With the addition of the sequence field within Event Notifications OAMPDUs, is a sequence attribute needed?

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following response is lifted from the OAM Editor's Feb 18th e-mail to the reflector. This is a different approach than the original comment.

30.11.1.1.x aOAMUniqueEventNotificationRx

BEHAVIOUR DEFINED AS:
A count of the OAMPDUs received that contain the Event Notification code specified in CROSS REF Table 57-7. This counter is incremented on reception of a valid frame, with (1) destinationField equal to the reserved multicast address for Slow_Protocols specified in CROSS REF Table 43B-1, (2) lengthOrType field value equal to the reserved Type for Slow_Protocols as specified in CROSS REF Table 43B-2, (3) a Slow_Protocols subtype value equal to the subtype reserved for OAM as specified in CROSS REF Table 43B-3, (4) the OAM code equals the Event Notification code, (5) the Sequence field is not equal to the Sequence field of the last received Event Notification OAMPDU.;

30.11.1.1.x aOAMDuplicateEventNotificationRx

BEHAVIOUR DEFINED AS:
A count of the OAMPDUs received that contain the Event Notification code specified in CROSS REF Table 57-7. This counter is incremented on reception of a valid frame, with (1) destinationField equal to the reserved multicast address for Slow_Protocols specified in CROSS REF Table 43B-1, (2) lengthOrType field value equal to the reserved Type for Slow_Protocols as specified in CROSS REF Table 43B-2, (3) a Slow_Protocols subtype value equal to the subtype reserved for OAM as specified in CROSS REF Table 43B-3, (4) the OAM code equals the Event Notification code, (5) the Sequence field is equal to the Sequence field of the last received Event Notification OAMPDU.;

Cl **30** *SC* **30.11.1.1.22** *P* **045** *L* **49** # **858**

Daines, Kevin World Wide Packets

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

aOAMVendorSpecificTx needs to be split into two: aOAMVendorSpecificIANATx and aOAMVendorSpecificOUITx.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **C**

ACCEPT.

- - -

With the change as of D1.414 to only use the OUI, half of this comment is no longer valid.

Cl **30** *SC* **30.11.1.1.23** *P* **046** *L* **07** # **859**

Daines, Kevin World Wide Packets

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

aOAMVendorSpecificRx needs to be split into two: aOAMVendorSpecificIANARx and aOAMVendorSpecificOUIRx.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **C**

ACCEPT.

- - -

With the change as of D1.414 to only use the OUI, half of this comment is no longer valid.

Cl **30** *SC* **30.11.1.1.25** *P* **046** *L* **29** # **787**

Squire, Matt Hatteras Networks

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

A general question/comment is how should we handle vendor specific things (TLVs, Events, PDUs) with respect to Clause 30? We could have an attribute for the most recent vendor specific Event Notification TLVs, for example. But then there's also extensions in the PDU types, so how do we handle them?

SuggestedRemedy

I'm not tied to this, but I'd suggest we have an attribute for the latest OAMPDU of undefined codepoint, and another attribute for all of the vendor specific Event TLVs from the most recent Event Notification.

Proposed Response *Response Status* **C**

REJECT.

Given the slow rate at which Clause 30 attributes may be polled by higher layers, it is not recommended that the contents of OAMPDUs be placed in Clause 30 attributes.

Cl **30** *SC* **30.11.1.1.3** *P* **040** *L* **54** # **850**

Daines, Kevin World Wide Packets

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

Cross-reference incorrect.

SuggestedRemedy

Change "57.2" to "57.2.6".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.11.1.1.3** *P* **040** *L* **54** # **849**

Daines, Kevin World Wide Packets

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

Grammar

SuggestedRemedy

Change "OAM entity sublayer" to "OAM sublayer entity".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.11.1.1.4** *P* **041** *L* **13** # **851**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar

SuggestedRemedy
Change "OAMPDUs" to "OAMPDU".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.4** *P* **041** *L* **20** # **838**
Daines, Kevin World Wide Packets

Comment Type **T** *Comment Status* **A**
Per comment re: 57.2.5.2.2, this editor's note can be removed.

SuggestedRemedy
Remove Editor's note found on lines 20-22.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.5** *P* **041** *L* **31** # **852**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong cross-ref.

SuggestedRemedy
Change "57.4.3.1" to "Table 57-7".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.6** *P* **041** *L* **51** # **853**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong cross-ref.

SuggestedRemedy
Change "57.4.3.1" to "Table 57-8".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.7** *P* **042** *L* **14** # **854**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong cross-ref.

SuggestedRemedy
Change "57.6.2.1" to "Table 57-4".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.8** *P* **042** *L* **25** # **855**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong cross-ref.

SuggestedRemedy
Change "57.6.2.1" to "Table 57-4".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.11.1.1.9** *P* **042** *L* **35** # **856**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong cross-ref.

SuggestedRemedy
Change "43B2" to "43B.2".

(15) total occurrences within 30.11.1.1.*

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.13** *P* **052** *L* **01** # **959**
Simon, Scott Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A**
Management objects need to be added for 10PASS-T and 2BASE-TL

SuggestedRemedy
See the spreadsheet simon_copper_objects.xls with a list of suggested objects and initial attempts at descriptions. The editor of Clause 30 should consult with members of the Cu STF to help finalize the objects.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See response to comment #919.

The Clause 30 Editor took simon_copper_objects.pdf and created law_oam_2_0303.pdf. This document contains the agreed upon Clause 30 attributes as discussed during an OAM/Copper joint STF meeting. A Copper Management ad hoc will submit cross-references and comment numbers to help complete this document.

Cl **30** *SC* **30.13** *P* **052** *L* **01** # **916**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
Objects need to be added for copper

SuggestedRemedy
Editor needs to coordinate this Clause with the profiles described in Annex 62A and 63A.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See response to comment #649.

Cl **30** *SC* **30.2.2.1** *P* **029** *L* **01** # **845**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar

SuggestedRemedy
Change "containment tree shown" to "containment trees shown".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.2.2.1** *P* **029** *L* **05** # **846**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar

SuggestedRemedy
Change "containment tree shown" to "containment trees shown".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.2.3** *P* **029** *L* **32** # **847**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar

SuggestedRemedy
Change "These figures shows the names" to "These figures show the names"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.3.2.1.2** *P* **033** *L* **39** # **784**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **A**
Can eliminate 2PASS-TL.

SuggestedRemedy
Ditto on p34 line 20, p35 line 34.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **30** *SC* **30.3.3.2** *P* **039** *L* **01** # **646**
Maislos, Ariel Passave

Comment Type **T** *Comment Status* **A**
Modify 30.3.3.2 aMACControlFunctionsSupported to support additional opcodes

SuggestedRemedy
Add: GATE, REPORT, REGISTER_REQ, REGISTER, REGISTER_ACK as possible values in the sequence.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

The suggested values will be added as enumerations.

Cl **30** *SC* **30.3.5** *P* **039** *L* **06** # **648**

Maislos, Ariel Passave

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

Rename attribute to be consistant with aPAUSEMACCtrlFramesTransmitted

SuggestedRemedy

At Editor's discretion:
Rename 30.3.5.1 aMPCPFramesTransmitted aMPCPMACCtrlFramesTransmitted
Rename 30.3.5.2 aMPCPFramesReceived aMPCPMACCtrlFramesReceived

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.3.5** *P* **040** *L* **30** # **649**

Maislos, Ariel Passave

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

Add additional attributes as required by Clause 64

SuggestedRemedy

Add attributes as specified in maislos_cmts_2_0303.pdf empowering editor to modify suggested text to use appropriate syntax

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The Clause 30 Editor took maislos_cmts_2_0303.pdf and created law_oam_1_0303.pdf. This document contains the agreed upon Clause 30 attributes as discussed during an OAM/P2MP joint STF meeting.

During the review, it was determined that the object 30.12.1 oOMPMuxing could be removed from the entity relationship Figure 30-3.

Cl **30** *SC* **30.5.1.1.4** *P* **037** *L* **18** # **785**

Squire, Matt Hatteras Networks

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

Need details for new EFM PHYs adn aMediaAvailable.

SuggestedRemedy

Suggest:
For EFM copper PHYs (2BASE-T and 10XXX-TL), this is equivalent to the PMD having at least one PMI in its aggregation group that is operational. For EFM optical PHYs (LIST), the enumerations match the link integrity state diagrams.

(at least I think they should).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31A** *SC* *P* *L* # **647**

Maislos, Ariel Passave

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

Comment actually for 31A
Add additional opcodes

SuggestedRemedy

Replace text of 31A with supplied text in maislos_1.pdf

Proposed Response *Response Status* **C**

ACCEPT.

Cl **36** *SC* **36** *P* **054** *L* **01** # **1010**
Thatcher, Jonathan WWP

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

The following comment added against C59 and repeated here for notification.

Optical testing incomplete (2 of 2 for C59; also for C 36)

After completing part 1 of these 2, it is essential to get together with the logic folk (C36) to figure out how to:

1. Ensure that the system can create the test patterns required for each test. Some test patterns are currently in an informative annex (36A). Even if the patterns are called out in 59, the logic folk won't know to look there for logic test requirements unless some change in made elsewhere.
2. Ensure that the system can count the errors indicated. In short, the OAM functions being added will not be "optional" for this PMDs.
3. Can operate the link in a mode that supports these tests. The PHY must be able to send test frames when the link is not up (no Rx) for tests in Part 1 of the comment that are not asynchronous.
4. For those that are synchonous, it must be verified that the four partners are doing what is desired.

SuggestedRemedy

Meet with PMD people. Discuss and evaluate capabilities for C36, and requirements for C59.

Proposed Response *Response Status* **Z**

WITHDRAWN.

Why do these patterns need to be any different than those already described in Annex 36A? Awaiting test pattern recommendations from optics group. Expect to carry this comment forward until proposal arrives.

Cl **36** *SC* **36.2.5.1.3** *P* **054** *L* **33** # **553**
Tom Mathey Independent

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

Text got garbeled.

SuggestedRemedy

In the definition for xmit, the first sentence seems to have a copy/paste error as the sentence is quite incomplete.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In the first sentence, replace "FALSE, defined" with "FALSE, xmit is defined"

Cl **45** *SC* *P* *L* # **961**
Simon, Scott Cisco Systems, Inc.

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

The SCM registers are confusing and possibly conflicting with each other. A coherent scheme for controling the NT modem from the LT and expressing NT status at the LT needs to be put together.

SuggestedRemedy

The editor should work with the members of the Cu STF to create an appropriate scheme. See proposal simon_copper_LTNT.pdf

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clean up the overview for C45 treatment of LT and NT registers.

Cl **45** *SC* *P* *L* # **960**
Simon, Scott Cisco Systems, Inc.

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

VDSL indicator bits are still not mentioned in the register

SuggestedRemedy

The editor should work with Cu STF members to write registers that express and control the indicator bits as appropriate.

See simon_copper_IB.pdf for a proposal

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See response to Comment 355 for the proposal

Cl **45** *SC* *P* **56** *L* # **958**
Simon, Scott Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A**
A register bit to set the modem to be an NT or LT is needed

SuggestedRemedy
Create such a register bit

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **22.2.4.1.12** *P* **56** *L* **41** # **555**
Tom Mathey Independent

Comment Type **E** *Comment Status* **A**
Incorrect sub-clause numbering. Clause and table are labeled "22" in a clause 45 area.

SuggestedRemedy
Change from use of clause 22 numbering to clause 45 numbering.
Chane reference to Table 22-9 to a clause 45 table, also at the table itself on page 57 line 22.
Table should have a "clear on read" indication.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45** *P* **211** *L* **1** # **570**
Tom Mathey Independent

Comment Type **T** *Comment Status* **R**
Barryís presentation on sheet #3 had the "preamble reconstructed at receiver". However, text to support this is not yet in the draft.

SuggestedRemedy
This comment is to make sure that the text is added.

Proposed Response *Response Status* **C**
REJECT. Wrong clause #. This is a comment against Clause 61.

Cl **45** *SC* **45** *P* **56** *L* **1** # **554**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
When clause 45 was developed in 802.3ae, register 1.7:15:0 was assigned for type of physical layer. This task force is adding a whole bunch of new physical layers without any means of determining their type.

SuggestedRemedy
Add bits to 1.7:15:0 for assignment of new physical layers.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Pending discussion with OAM gurus, the editor will create identifying register bits in the appropriate place.

Cl **45** *SC* **45.2.6.1** *P* **58** *L* **12** # **797**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **A**
Its unclear which registers are per-PMI and which are per-PMD. In Clause 61, it looked like the aggregate/available registers were PMD. Here, it looks like they're per-PMI. And the discovery register is per-PMI as well?

SuggestedRemedy
Clarify the granularity of the registers (per-PMI, per-PMD, etc.).

Proposed Response *Response Status* **C**
ACCEPT.

Add text to clarify that the aggregate/available registers are shared across all agregateable MMDs at the PCS level. The discovery registers are unique to each PMI.

Cl **45** *SC* **45.2.6.1** *P* **58** *L* **12** # **794**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Is the PMI available register in C45 the same as the PMD available register in C61?

SuggestedRemedy
Use consistent terminology.

Proposed Response *Response Status* **C**
ACCEPT. Yes, this is the same register. C61 is wrong.

Cl **45** *SC* **45.2.6.1** *P* **58** *L* **14** # **795**

Squire, Matt — Hatteras Networks

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

What does it mean for a PMI to not support aggregation? Isn't aggregation a requirement? Would we include an EFM fragmentation header if it doesn't support aggregation?

SuggestedRemedy

Make aggregation a required ability.

Proposed Response *Response Status* **C**

REJECT.

Clause 61 is a more appropriate place for this comment.

The STF agreed that the ag header would always be sent if provisioned for aggregation

The choice of implementing agregatable PMIs in a system (that is, allowing one MII to hook up to multiple PMIs) is out of scope, although the discovery hooks have been defined so that a system may know when aggregation is supported by the peer device.

Cl **45** *SC* **45.2.6.1** *P* **58** *L* **14** # **796**

Squire, Matt — Hatteras Networks

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

We say the NT register is optionall "writable." I think thats only "remotely" writeable (i.e. it could be written by management locally)? I have a similar comment on C61.

SuggestedRemedy

Clarify meaning of writable.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See the proposal from comment 961

Cl **45** *SC* **45.2.6.1** *P* **58** *L* **35** # **557**

Tom Mathey — Independent

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

Missing letter

SuggestedRemedy

Add letter I to PM in text "PM [p = 32:17] available".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.6.5** *P* **60** *L* **40** # **956**

Simon, Scott — Cisco Systems, Inc.

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

The Aggregation Discovery Example really belongs in it's own Annex

SuggestedRemedy

Create Annex 61A and move the text

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text will be removed from Clause 45 and placed in a new Informative Annex 61A "EFM-Cu Examples" if approved by the TF, or into a subclause of Clause 61otherwise.

Cl **45** *SC* **45.2.6.5** *P* **62** *L* **28** # **558**

Tom Mathey — Independent

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

The text "LT system writes remote PMI_Discovery_Register" implies that there is some method for the LT to access the remote partner prior to link becoming enabled. However, the text here, and also nowhere else in the draft that is obvious, provides not a clue as to how this is performed.

SuggestedRemedy

Provide a clue.
Provide a clause 45 register to initiate such a link partner read, along with a bit to indicate that the read is complete. Provide a set of registers, perhaps 32 sets, where the contents of the link partners PMI_Discovery_Register can be stored such that the values can be passed on to STA. Provide a description of how clause 45 registers map to the clue. Provide a reference to the defining presentation which provided the overview and architecture of this clue.

Proposed Response *Response Status* **C**

REJECT.

Register 3.49 does everything that the remedy requests.

More detail on how this register is used at system startup will be found in Annex 61A if we decide to create it.

At the moment, 61.2.2.6.4 provides the clue requested.

Cl **45** *SC* **45.2.6.6** *P* **63** *L* **23** # **559**

Tom Mathey Independent

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

The text "The PAF RX error register is a 16 bit counter that contains the number of fragments that have been received across the gamma interface with RxErr asserted." seems strange as the gamma interface, as shown in Barryís presentation, is above the PAF layer.

SuggestedRemedy

Perhaps what is meant is fragments which have been received from the 64/65 byte PCS. Similar text is present in several other places.

Proposed Response *Response Status* **C**

REJECT.

The comment is correct that the gamma in Barry's preso is above the PAF function. However, according to the STF agreement, the PAF function is actually above the gamma. In this case, the text is correct.

Cl **45** *SC* **45.2.6.6** *P* **63** *L* **33** # **560**

Tom Mathey Independent

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

Since the PAF is optional and sits above the PCS, and the PCS must be accessed via registers 3.x.y, how can the PAF have an address assignment that is 1.x.y?

SuggestedRemedy

Perhaps the PAF should be assigned its own register set, #6. The next abailable number higher than the DTE XGXS. Otherwise, the PAF should be accessed by access to register set 3.x.y. Here and numerous other places.

Proposed Response *Response Status* **C**

REJECT.

Regardless to where we place the gamma layer, the PAF has always been a part of the PCS.

See response to Comment #572

Cl **45** *SC* **45.3.1.2** *P* **65** *L* **51** # **561**

Tom Mathey Independent

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

Subclause title is "NT". Text on line 54 is "only for LT", Table 45-22 title is "NT, table contents are "NT: undefined".

SuggestedRemedy

Tar and feather, here and numerous other places.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The intention is that NT registers only exist on the LT port type because the LT port controls the NT port and therefore the NT does not have this register. In this case, the NT PMA Control register is used by the LT STA to control the PMA on the NT.

From the NT STA perspective, the STA would use the standard PMA Control Register (read-only on an NT, because the control of this register belongs to the LT STA) to check on the status of the PHY.

All of this needs to be clarified and homogenized across the entire clause. See the preso associated with comment 961

The editor will clean up the R/W table inconsistencies.

Cl **45** *SC* **45.3.1.3** *P* **66** *L* **35** # **344**

Barnea, Eyal Metalink

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

The counter should count the number of corrected octets and not the number of corrected PMA frames.(As in T1.424)

SuggestedRemedy

Change the first sentence to:
"The FEC correctable Error register is a 32 bit counter that contains the number of correted octets that have been corrected by the FEC mechanism"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"number of corrected FEC codewords"

Cl **45** *SC* **45.3.1.4** *P* **67** *L* **1** # **957**

Simon, Scott — Cisco Systems, Inc.

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

The register should record RS blocks with uncorrectable errors, not the number of uncorrectable errors received.

SuggestedRemedy

Change the register definition to match the VDSL MIB vdslChanUncorrectBlks object

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.3.1.4** *P* **67** *L* **3** # **345**

Barnea, Eyal — Metalink

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

The counter should count uncorrectable FEC blocks and not PMA frames.
(as in with T1.424)

SuggestedRemedy

Change the first sentence to:
"The FEC Uncorrectable Errors register is a 32 bit register taht contains the number of FEC blocks that could not be corrected by the FEC mechanism"

Proposed Response *Response Status* **C**

ACCEPT. see resolution of comment 957.

Cl **45** *SC* **45.4.1** *P* *L* # **355**

Barnea, Eyal — Metalink

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

The are no register defined for the SCM IB.

SuggestedRemedy

See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

TPS-TC and NTR IBs are out of scope, but we should change their definitions to "reserved and out of scope" with a reference to the T1 source.

Cl **45** *SC* **45.4.1** *P* *L* # **353**

Barnea, Eyal — Metalink

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

Interleaver depth and block size shuld be added to the STP registers

SuggestedRemedy

See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

NT register is read only

Cl **45** *SC* **45.4.1** *P* *L* # **356**

Barnea, Eyal — Metalink

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

The are no register in the draft for elctrical length register and the Nt electrical length register

SuggestedRemedy

See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changing the units to meters.

Cl **45** *SC* **45.4.1** *P* *L* # **354**

Barnea, Eyal — Metalink

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

Add NT interleaver register

SuggestedRemedy

See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.4.1** *P* *L* # **349**
Barnea, Eyal Metalink

Comment Type **T** *Comment Status* **A**
Add RX attenuation regsiter to the subcluase

SuggestedRemedy
See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.4.1** *P* **68** *L* # **350**
Barnea, Eyal Metalink

Comment Type **T** *Comment Status* **R**
There are several sets of STP for a SCM. Three of them can be changed during operation: Those are: I_STP (Idle STP), CR_STP (Current STP) and WS_STP(Warm-Start STP). The current register defintion does not reflect this.

SuggestedRemedy
1. Add the following text before 45.4.1.2

Subclauses 45.4.1.2 to 45.4.1.12 describe registers for different sets of STP.
Different addresses are used for the different sets of STP.
For the I_STP , k=0. For CR_STP , k=1. For WS_STP, k=2.

2. Change the resister bits in 45.4.1.2 to 45.4.1.12 such that for 16 bit register the register bits are 1.x+k.15:0, for 32 bits register the register bits are 1.x+2k.15:0 and 1.x+1+2k.15:0

Proposed Response *Response Status* **Z**
WITHDRAWN.

The STA can keep track of the current state of the PHY and set the STP registers accordingly. This mechanism is in accordance to the PHY control baseline that states that the STA makes the decisions about what parameters to load and when.

Cl **45** *SC* **45.4.1.11** *P* **77** *L* **16** # **351**
Barnea, Eyal Metalink

Comment Type **T** *Comment Status* **A**
The register doesn't reflect all bands.
The bit definition should be extended to 16 bits

SuggestedRemedy
See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Agreed that the bit definition should be extened to 16 bits.

Replace the registers in Table 45-34 and 45-35 with the suggested text.

Cl **45** *SC* **45.4.1.12** *P* **77** *L* **40** # **352**
Barnea, Eyal Metalink

Comment Type **T** *Comment Status* **A**
The register doesn't reflect all bands.
The bit definition should be extended to 16 bits

SuggestedRemedy
See attached text in barnea_cmts_0303.pdf

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

These tables replace the appropriate ones in C45.

Cl **45** *SC* **45.4.1.19** *P* **81** *L* **35** # **348**
Barnea, Eyal Metalink

Comment Type **T** *Comment Status* **A**
There is no RX power level register in T1.424

SuggestedRemedy
Delete the subcluase

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **45.5** *P* **82** *L* **22** # **917**

Barrass, Hugh — Cisco Systems

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

Subclause title should refer to Clause 62 not Clause 61

SuggestedRemedy

Change 61 to 62

Proposed Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.5.1** *P* **82** *L* # **962**

Simon, Scott — Cisco Systems, Inc.

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

MCM modems do not operate by setting the SNR margin on a tone-by-tone basis.

SuggestedRemedy

Remove the register bits that set and activate the SNR margin on a tone-by-tone basis.

Create registers that correspond to the VDSL MIB objects that control minSNRmargin and maxSNRmargin

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Don't do the remedy, instead:

Add min and max SNR margin to the Table 45-45 to replace the SNR margin bits.

Cl **45** *SC* **45.6** *P* **85** *L* **54** # **798**

Squire, Matt — Hatteras Networks

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

We need to start a section for 2BASE-TL.

SuggestedRemedy

Suggested registers include (definitions in G991.2, section referenced):

PHY counters:
1) CRC Anomaly register (See G991.2 Section 9.2.1)
2) Segment Anomaly register (See G991.2 Section 9.2.2)
3) Loss of Sync Defect register (See G991.2 Section 9.2.3)
4) Loss of segment defect register (See G991.2 Section 9.2.4)
5) SNR Margin defect (9.2.5)
6) Loss of sync word defect (9.2.6)
7) Code Violation register (9.3.1)
8) Errord seconds register (9.3.2)
9) severely errored seconds register (9.3.3)
10) LOSW seconds register (9.3.4)
11) UA seconds (9.3.5)

Other
1) SHDSL version number
2) Loop attenuation threshold (9.5.5.7.5)
3) SNR margin threshold (9.5.5.7.5)
4) Power backoff status

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Using the suggested registers as a coarse basis and working with 2BASE-TL representatives from the STF, and taking into account resolved comments from Clause 63, the editor will take a first stab at adding some registers for 2BASE-TL.

Cl **45** *SC* **45.6** *P* **86** *L* **1** # **918**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
Section needs to be added for Clause 63 (SHDSL) registers

SuggestedRemedy
Editor should collect all of the control functions in Clause 63 and turn them into register definitions.

Proposed Response *Response Status* **C**
ACCEPT.

See response to Comment 798

Cl **45** *SC* **Table 45-10** *P* **57** *L* **29** # **556**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
The clause 22 register 1.7 is adding a bit for OAM unidirectional. Clause 45 should do the same such that phyís which could be clause 45 only capable do not need to add clause 22 capability just to access register 1.7

SuggestedRemedy
Replicate or reference text from clause 22 register 1.7 in a 3.44.x register bit.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add editor's note to the top of clause 45 in big bold letters:

Clause 22 register functionality may be required for EFM PHYs. We need to investigate whether supporting a subset of Clause 22 registers is required for EFM-Cu, or if some of the C22 functions need to be brought over into C45.

In particular, check out the advertisement and applicabilty of PAUSE.

Cl **45** *SC* **Table 45-21** *P* *L* # **346**
Barnea, Eyal Metalink

Comment Type **T** *Comment Status* **A**
Interleaver depth and Interleaver block size are part of the STP (for SCM modems) . Therefore the setting of those should be part of the STp setting in subclause 45.4

SuggestedRemedy
Delete the Interleaver depth and Interleaver block size from the table

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remove the interleaver bits table 45-21 for SCM.

Add an editors note that a solution for MCM interleaver settings is forthcoming.

Cl **45** *SC* **Table 45-43** *P* **82** *L* **5** # **347**
Barnea, Eyal Metalink

Comment Type **E** *Comment Status* **A**
The SNR value should be S/4

SuggestedRemedy
Change S/2 to S/4 in the description

Proposed Response *Response Status* **C**
ACCEPT.

Cl **45** *SC* **Table 45-45** *P* **82** *L* # **963**
Simon, Scott Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A**
The TX PSD level bits do not have units in their description.

SuggestedRemedy
Add the appropriate units.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **56** *SC* **56.1** *P* **90** *L* **49** # **487**

Beck, Michael Alcatel

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

SHDSL doesn't mean "Symmetric High speed Digital Subscriber Loop".

SuggestedRemedy

Replace "Symmetric High speed Digital Subscriber Loop" with "Single-Pair High-Speed Digital Subscriber Line"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **56.1.2** *P* **89** *L* **42** # **452**

Yoshimura, Minoru NEC

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

"Point to Point Emulation Sublayer" described in 56.1.2 and figure 56-2 should be removed. This sublayer does not exist in figure 64-2 and figure 65-1.

SuggestedRemedy

Remove the term "Emulation Sublayer".from clause 56.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The P2PE sub-layer is part of the RS and described in clause 65. If necessary, clause 56 will be harmonized with clause 65.t

Cl **56** *SC* **56.1.4** *P* **90** *L* **20** # **562**

Tom Mathey Independent

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

Copy/Paste.

SuggestedRemedy

The text "plus the 1000BASE-PX10-D (PON Upstream laser 10 km)" should be 1000BASE-PX10-U to reflect upstream behavior.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **56.4** *P* **92** *L* **5** # **488**

Beck, Michael Alcatel

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

Empty subsection.

SuggestedRemedy

Add text: The relation of 2BASE-TL and 10PASS-T to other standards can be found in 61.1.3.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **Figure 56-2** *P* **89** *L* **9** # **860**

Daines, Kevin World Wide Packets

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

Figure is not self-consistent. MPCP sublayer label should be fixed.

SuggestedRemedy

Change "MULTI-POINT MAC CONTROL (MPCP)" to read: "MPCP-MULTI-POINT MAC CONTROL"

Note: The dash between MPCP and MULTI should be Big dash (Em dash) while the dash between MULTI and POINT should be Little dash (En dash).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **56** *SC* **Table 56-1** *P* **91** *L* **6** # **563**

Tom Mathey Independent

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

My impression of 100BASE-LX10 is that it is not specific to ONU/OLT applications, and in fact can not be used since ONU/OLT is restricted to 1000BASE applications, ie. 1 Gig. This probably applies to the first 4 phyís listed in the table.

SuggestedRemedy

Remove text "ONU/OLT" in column titled "location" for first 4 phyís.

Proposed Response *Response Status* **C**

REJECT.

The text is intended to indicate that this phy is symmetric for both ends of the link. It is prefered to have some affirmative text indicating that rather than nothing.

If the commenter would still like to change the text he is encouraged to think of a better shorthand to replace those cells with in the table

Cl **57** *SC* **57** *P* **093** *L* **01** # **5700**

Kevin Daines

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

It has been recently pointed by the 802.3 Chair that OAM for 10 GbE should be considered within the scope of EFM. Based on this assumption, the appropriate changes to 802.3ae clauses should be made to support OAM for 10 GbE.

SuggestedRemedy

TBD: Will be provided at the meeting.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Adopt brown_oam_1_0303.pdf as the basis for changes to Clause 46. An Editor's Note will be added in 46.3.4 highlighting issues and concerns that need STF scrutiny.

Cl **57** *SC* **57** *P* **112** *L* **14** # **541**

Braga, Aldobino IOL

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

Should all references of 64 byte frames be replaced with minFrameSize?
clause 57.4.3.1 page 115 line 12 & 1
clause 57.4.2 page 112 line 1
clause 57.5.3 page 117 line 49, 51, 5

SuggestedRemedy

If minFrameSize makes more sence, use it instead of 64 bytes.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.1.2** *P* **094** *L* **25** # **767**

Squire, Matt Hatteras Networks

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

The references to other clauses are wrong after renumbering them last meeting.

SuggestedRemedy

Match to correct clause numbers.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The correct cross references will be included in D1.4.

Cl **57** *SC* **57.2.1** *P* **096** *L* **31** # **861**

Daines, Kevin World Wide Packets

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

Grammar (mostly)

SuggestedRemedy

Change "OAMPDU. This" to "OAMPDUs and vendor specific events. These"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.3** *P* **096** *L* **38** # **360**

Kawaguchi, Kazuho Oki Electric Industry c

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

It looks that both the OAM client layer and the Control block in OAM sub-layer can construct and transmit Information OAMPDUs .
Which layer constructs and transmits Information OAMPDUs ?
If the OAM client layer construct and transmit Information OAMPDUs, it is inconsistent with description of 57.3.2.2 .
On the other hand ,if the Control block in OAM construct and transmit Information OAMPDUs, some variables of OAM_CTRL.request should be added .I think the variables of OAM_CTRL.request are necessary in order to indicate some contents of Information OAMPDU TLV ,for example Maximum_PDU_Size .

SuggestedRemedy

I suppose that the Control block in OAM construct and transmit Information OAMPDUs. Therefore, some variables of OAM_CTRL.request need to be added , Maximum_PDU_Size ,Version_Identifier,Device_Identifier, Enterprise_Identifier.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Commenter raises a good point. In order for the OAM Control block to send out Information OAMPDUs once a second it will need to know the contents of the OAM_Information TLV fields.

These parameters will be added to the OAM_CTL.request service primitive.

Cl **57** *SC* **57.2.4** *P* **097** *L* **36** # **457**
Ho, Julian Vitesse Semiconducto

Comment Type **E** *Comment Status* **A**
Insert the word 'sublayer'

SuggestedRemedy
"Similarly, the OAM sublayer"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.2.4** *P* **097** *L* **37** # **458**
Ho, Julian Vitesse Semiconducto

Comment Type **E** *Comment Status* **A**
Remove comma after 'same'. Also, remove ambiguity using 'this' instead of 'the', i.e. it either uses 'the' same internally and with the subordinate, or 'this' same interface as the MAC Client.

SuggestedRemedy
"subordinate sublayer, such as the MAC Control or MAC , using this same standard service interfaces."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Comma will be removed.

However, as the referenced text is the first paragraph under the sub-clause heading "Instances of the MAC service interface" the OAM Editor believes no ambiguity exists.

Cl **57** *SC* **57.2.4** *P* **097** *L* **41** # **983**
Thatcher, Jonathan WWP

Comment Type **E** *Comment Status* **A**
"do not comunicate through the OAM sublayer" is somewhat confusing.

SuggestedRemedy
Recommend changing to "are not acted upon by the OAM sublayer. MA_CONTROL.request primatives communicate with the MAC Control entity as though no OAM sublayer exists."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.2.4** *P* **097** *L* **46** # **459**
Ho, Julian Vitesse Semiconducto

Comment Type **E** *Comment Status* **R**
The sentence can be simplified.

SuggestedRemedy
"so it is clear as to which interface is being referred to."

Proposed Response *Response Status* **C**
REJECT.

As "to" is a preposition, it is grammatically improper to end a sentence with "to". :) The referenced sentence is lifted from Clause 43 and survived Working Group and Sponsor Ballots.

Cl **57** *SC* **57.2.4** *P* **097** *L* **47** # **862**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar

SuggestedRemedy
Change "five" to "four".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.2.4** *P* **097** *L* **50** # **984**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A**
The Parser does not have "internal clients."
The Mux does not have "internal clients."

It is confusing to use the word client to represent these sublayer functions.

SuggestedRemedy
Use some other word. Perhaps "other OAM sublayer functions"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.2.5.1** *P* **098** *L* **12** # **889**

Gerhardt, Floyd — Cisco Systems

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

When the local_oam_enable is disabled the interface will act as if it had no OAM sublayer. So, if there is a low cost, limited functionality implementation of 802.3ah and OAM will never be activated does it need to implemented?

SuggestedRemedy

Allow for the optional implementation of OAM sublayer, similar to the optional implementation of the MAC Control sublayer

Proposed Response *Response Status* **C**

REJECT.

OAM is optional both for EFM and legacy links. This fact is well established in 57.1.5.1. An eventual PICS entry will reflect this fact as well. However, if one implements OAM, in order to comply with the specification there are some required interfaces, OAMPDU field structures, etc. These will be denoted with "shalls" per IEEE Style Guide.

Cl **57** *SC* **57.2.5.2.2** *P* **098** *L* **33** # **985**

Thatcher, Jonathan — WWP

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

Remove "if present"

SuggestedRemedy

Per comment

Proposed Response *Response Status* **C**

ACCEPT.

See comment #839.

Cl **57** *SC* **57.2.5.2.2** *P* **098** *L* **33** # **839**

Daines, Kevin — World Wide Packets

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

To align OAMPDUs with the other two Slow Protocols (Clause 43's LACP and Marker), the source address parameter should be changed from optional to required. As such, the text "if present," should be deleted. This has a side benefit of fixing the attribute 30.11.1.1.4 aOAMLastMACAddress.

SuggestedRemedy

Remove ", if present," from line 33.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.5.3.2** *P* **099** *L* **05** # **768**

Squire, Matt — Hatteras Networks

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

I would think the indication should match the request parameters, and should pass up the source MAC.

SuggestedRemedy

Include source_address in the data indication primitive.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.5.3.3** *P* **099** *L* **19** # **986**

Thatcher, Jonathan — WWP

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

It is not clear if matching the DA is part of being "validly formed."

SuggestedRemedy

Discuss. Resolve as committe desires. If rejected, this comment is auto-withdrawn. :-)

Proposed Response *Response Status* **C**

REJECT.

OAMPDUs are distinguished by 3 fields:

1) DA = 01-80-c2-00-00-02
2) Type = 88-09
3) Subtype = 0x03

As such, a validly formed OAMPDU must have the correct DA. OAM Editor doesn't see an issue here.

Cl **57** *SC* **57.2.5.3.4** *P* **099** *L* **17** # **460**

Ho, Julian — Vitesse Semiconducto

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

Change 'to' to 'at'

SuggestedRemedy

"OAMPDU at the local"

Proposed Response *Response Status* **C**

REJECT.

OAM Editor has a slight preference for "to".

Cl **57** *SC* **57.2.5.4.2** *P* **099** *L* **35** # **987**

Thatcher, Jonathan WWP

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

The parser control and the mux control are not symmetric. There are a number of OAM_CTL.request primatives that may be unnecessary. At very least, these are unncecesarily confusing.

SuggestedRemedy

There are two methods possible for helping this. The first, recommended, uses only one "local_action" primative.

The second (being described first), uses a local_tx_action and a local_rx_action (the later replacing the existing local_action). In this case, the values for the primatives for local_tx_action (for the MUX) are identical to local_rx_action (for the parser) and include: LB, Forward, and Discard. There are a number of places where local_tx_action are inserted, including figure 57-5 to replace "local_unidirectional and local_link_status," which can be eliminated along with local_ok_to_tx, etc. It is also added to the Information OAM pdu state field (Fig 57-6) where action is replace with something descriptive ("local" becomes "remote"?) such as rx_action.

The preferred method is to have one local_action for both the MUX and the PARSER. This would have the values: LB, FORWARD, DISCARD. But, it may also need values: Tx_Forward (Rx_Discard implied) and Rx_Forward (Tx_Discard implied). I can't find a place where these are required. But, I can't prove that they are not.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per braga_oam_3_0303.pdf, local_action will be split into two: local_mux_action and local_parser_action.

local_parser_action (behaves the same as current local_action)
- FWD
- LB
- DISCARD

local_mux_action
- FWD
- DISCARD

Multiplexer and parser state diagrams will be amended to incorporate new action parameters. Service primitives will be amended.

Cl **57** *SC* **57.2.5.4.2** *P* **100** *L* **09** # **988**

Thatcher, Jonathan WWP

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

Whine on: I don't like the term "OAM link." Whine off

SuggestedRemedy

Almost anything else. OAM channel?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"channel" is defined in 1.4.63 (2002 version) so we can't use that term.

"OAM Link" can be replaced with language to the effect of "prevent the OAM Discovery process from re-starting" in most places. Other places will be reviewed.

Cl **57** *SC* **57.2.5.5.3** *P* **100** *L* **49** # **769**

Squire, Matt Hatteras Networks

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

We say the CTL.indication is used whenever we receive a valid OAMPDU. This is really (I think) to convey the flags field. But the flags field is also in the OAMPDU.indication. So we don't need to pass this up on every OAMPDU.

SuggestedRemedy

Change 2nd sentence of paragraph to:
"
The OAM_CTL.indication is used to indicate the value of the Flags field upon the arrival of a validly formed error-free OAMPDU that does not result in a OAMPDU.indication (e.g. a loopback control OAMPDU).
"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

OAM Editor agrees with the comment, but not the suggested remedy. Propose:

a) "The OAM_CTL.indication service primitive is used to indicate the Flags field has changed."

b) Amend associated text in 57.2.5.5.2 and 57.2.5.5.3

Rationale: Each received OAMPDU is sent to the OAM Client. The Flags field doesn't need to be sent separately every time a frame is received. It only needs to be sent when it changes. Also, 30.11.1.1.8 won't break since it is derived from the field in the received OAMPDU internal to the OAM sublayer entity.

Cl **57** *SC* **57.2.6** *P* **101** *L* **10** # **770**

Squire, Matt — Hatteras Networks

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

The table defines the correct operation for active/passive. However, the true intent of the active/passive was to stop an NT from controlling an LT. This table does not do that, as we don't say that a device with a passive peer should ignore/discard variable request, as an example.

SuggestedRemedy

Add an asterisk Yes answer under active for the following rows
- Reacts to OAM discovery init
- Send variable response
- Reacts to loopback commands (new row needed)

And define the asterisk to mean that the Yes is conditional on the peer device being Active (i.e. active devices don't do the above for a passive peer).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.6.2** *P* **101** *L* **34** # **863**

Daines, Kevin — World Wide Packets

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

Grammar

SuggestedRemedy

Remove the word "only".

Also, on line 36, re-order the two OAMPDUs, "shall not send Variable Request or Loopback Control OAMPDUs".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.7** *P* **101** *L* **43** # **864**

Daines, Kevin — World Wide Packets

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

Grammar

SuggestedRemedy

Change "A" to "The".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.7.2** *P* **101** *L* **49** # **865**

Daines, Kevin — World Wide Packets

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

Grammar.

SuggestedRemedy

Change "OAMPDU Flag field" to read "Flag field".

Also, on page 102, line 37, remove "OAM".

Also, on page 102, line 48, remote "OAM".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.7.2** *P* **101** *L* **53** # **771**

Squire, Matt — Hatteras Networks

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

Remove the non-critical events table as this duplicates the event definitions in later sections, and there's no reason to have both.

SuggestedRemedy

Remove table 57-3. Replace text in 57.2.7.2 with
"Non-critical events are defined by event TLVs in Section <REFERENCE>. Examples of non-critical events include errored symbol periods, errored frame seconds, etc. "

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.7.2** *P* **102** *L* **08** # **989**

Thatcher, Jonathan WWP

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

Need a flag to identify a critical event that is other than Link_Fault and Dying_Gasp

SuggestedRemedy

Add a "Critical Event" flag. This flag indicates that a vendor specific critical event has occured. Add also to Table 57-4.

Note: it may be the case that "non-critical events" are in fact critical (depending on the threshold setting). Change "non-critical" to simply "events?"

It would be ideal to have a mask that controls whether these other "events" LOGICAL OR to create the "Critical Even" or not. Other option, leave unspecified.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add "Event" flag per suggested remedy.

Change nomenclature:
Critical Link Event
(Dying Gasp flag,
Local Fault flag,
Link Event flag)

Link Event (errored symbol period event, errored frame period event, etc)

Cl **57** *SC* **57.2.7.3** *P* **102** *L* **41** # **866**

Daines, Kevin World Wide Packets

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

Local OAM event procedure should mention option of sending duplicate Event Notification OAMPDUs

SuggestedRemedy

At the end of bullet b), add the following text "Optionally, the OAM client may send duplicate Event Notification OAMPDUs to increase the likelihood of reception at the remote device on deteriorating links."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.7.4** *P* **102** *L* **48** # **772**

Squire, Matt Hatteras Networks

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

I'm still confused over the passing up of critical events. In a previous comment in 57.2.5.5.3, we say we always call the CTL.indication for valid OAMPDUs. I thougth we'd just do it for valid PDUs not otherwise indicated with the OAMPDU.indication. Here, we're saying that we do it for critical events, which I take to mean whenever the flags field from a peer changes. Which is the right way?

SuggestedRemedy

Suggest we use the CTL.indication whenever
a) we're not otherwise indicating the flags field to the OAM client in the OAMPDU.indication, and
b) the flags field has changed since the last valid OAMPDU.
And make this consistent in this section and 57.2.5.5.3.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

However, (a) in the suggested remedy is not valid as ALL received OAMPDUs are sent to the OAM client via the OAMPDU.indication primitive.

See proposed response to comment #769 which modified the definition of the OAM_CTL.indication service interface in a manner consistent with (b).

Cl **57** *SC* **57.2.7.4** *P* **102** *L* **54** # **867**

Daines, Kevin World Wide Packets

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

Remote OAM event procedure should mention option of receiving duplicate Event Notification OAMPDUs.

SuggestedRemedy

At the end of bullet b), add the following text "The OAM client discards any duplicate received Event Notification OAMPDUs."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.8** *P* **103** *L* **01** # **209**

Finn, Norman — Cisco Systems

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

Mention is made of several things that can go wrong with loopback mode. One serious condition is not mentioned. What happens if two active stations simultaneously try to put the other station into loopback mode? Aside from the obvious potential for a storm, how do the two stations back off gracefully without playing Tweedle-Dee and Tweedle-Dum forever?

SuggestedRemedy

Suggest you mention this possibility, and state that the request of the lower-numbered MAC address wins.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.8** *P* **103** *L* **02** # **462**

Ho, Julian — Vitesse Semiconducto

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

Change the purpose of loopback from testing link performance to fault localisation. Fault localisation was the initial objective of OAM remote loopback, as part of the maintenance objective, see daines_1_0702.pdf . Instead, for link monitoring, i.e. monitoring "the performance of a link," access to remote statistics is used, which is part of the administration objective.

SuggestedRemedy

"Loopback is used for fault localisation."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Fair point. How about "Loopback may be used for fault localization and testing the performance of a link."

Rationale: Implementations may be able to support very high frame-rate loopback modes, allowing BER testing.

Cl **57** *SC* **57.2.8** *P* **103** *L* **04** # **456**

Ho, Julian — Vitesse Semiconducto

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

Include definitions of local and remote devices and their relationship. This will help to resolve some confusion in regards to Ethernet over other transport networks.

SuggestedRemedy

"The remote and local devices are link partners." "Local device- this subclause is taken from the perspective of this device. Remote device- the link partner to the local device."

Proposed Response *Response Status* **C**

REJECT.

OAM, within the context of 802.3, is based upon a single link. As such, the link has one and only one local device and one and only one remote device. OAM Editor doesn't feel any ambiguity exists if read with this context.

The second paragraph under 57.1.1 is pretty explicit.

Cl **57** *SC* **57.2.8** *P* **103** *L* **04** # **463**

Ho, Julian — Vitesse Semiconducto

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

If loopback is to be used to test "the performance of a link", link performance should be explicitly characterised, e.g. loss, latency, bandwidth, e.t.c. With the current draft, some implementations of loopback may only allow a subset of these characteristics to be accurately measured.

SuggestedRemedy

Specify performance characteristics required to be measured in loopback.

Proposed Response *Response Status* **C**

REJECT.

OAM Editor doesn't feel this level of specification is required. This will be left up to implementations. What is required in the spec is how it works, how it commences, how it exits, etc. What results are gleaned and the interpretation of said results is beyond the scope of this clause/standard.

Cl **57** *SC* **57.2.8.1** *P* **103** *L* **35** # **96**

Braga, Aldobino UNH-IOL

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

Should specify that the local_action should be set to DISCARD via OAM_CTL.request primitive

SuggestedRemedy

To initiate remote loopback, the local MAC Client stops sending data frames to the remote device and the local OAM Client sets its local_action parameter to DISCARD via the OAM_CTL.request primitive.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.8.1** *P* **103** *L* **37** # **868**

Daines, Kevin World Wide Packets

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

Passing the loopback time has little value. Let's remove it from the OAM Loopback mechanism.

SuggestedRemedy

Page/Line: Change

---

1) 103/37: Change "non-zero loopback time" to "start loopback code".
2) 103/39: Delete "the non-zero loopback timer value and".
3) 104/1 : Delete sub-clause 57.2.8.3
4) 104/12: Change "zero loopback time" to "end loopback code".
5) 104/13: Change "zero loopback time" to "end loopback code".
6) 104/14: Delete "the zero loopback timer value and"
7) 104/16: Delete "zero loopback timer value and"
8) 104/19: Delete sub-clause 57.2.8.5
9) 105/6 : Change "non-zero loopback time" to "start loopback code"
10)105/9 : Delete "the non-zero loopback timer value and"
11)105/14: Delete "the loopback timer equal to zero and"
12)105/20: Delete "the zero loopback timer value and"
13)114/5 : Delete row 31:16
14)114/9 : Insert row for bit 3

Bit(s)=3
Name=In Remote Loopback
Description="1=Device is currently in remote loopback. 0=Device is not in remote loopback"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.8.2** *P* **103** *L* **46** # **192**

Martin, David Nortel Networks

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

Bullet (a) states that while in loopback mode "The local device transmits frames from the MAC Client…". At first this sounds contradictory to line 34 on page 103 above which states that "To initiate remote loopback, the local MAC Client stops sending data frames…".

SuggestedRemedy

Perhaps inserting the word "test" would clarify the intent that test frames rather than user data frames are sent by the MAC Client while the remote device is in loopback. So line 46 would read "The local device transmits test frames from the MAC Client…".

Proposed Response *Response Status* **C**

REJECT.

The OAM STF shied away from the term "test frame". The reason was that we're not defining test frames, the content of frames during loopback, etc.

Cl **57** *SC* **57.2.8.2** *P* **103** *L* **49** # **218**

Finn, Norman Cisco Systems

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

Are LACP packets reflected or eaten in loopback mode? Technically, they should be reflected, because they are not OAM packets. Practically speaking, LACP and OAM differ only in the sub-type field. It may be very difficult for existing hardware to do the right thing, here.

SuggestedRemedy

I'd say that non-OAM Slow Protocol packets SHOULD be reflected in loopback mode, and that a device which commands another to enter loopback mode must recognize that they MAY not be reflected.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add text re: loopback frames ". . . non-OAMPDUs including other Slow Protocol frames . . ."

Cl **57** *SC* **57.2.8.2** *P* **104** *L* **51** # **97**

Braga, Aldobino UNH-IOL

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

Says to keep Discovery Process alive

SuggestedRemedy

Suggest changing it to keep Discovery Process from restarting.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.8.3** *P* **104** *L* **05** # **98**

Braga, Aldobino UNH-IOL

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

Need to add OAM client sets local_action parameter to LB via OAM_CTL.request primitive.

This is necessary for the timer expiration case, because coming into this the local_action parameter will be set to DISCARD.

SuggestedRemedy

After receiving the Loopback Control OAMPDU, the remote OAM client sets the local_action parameter to LB via the OAM_CTL.requests primitive. The remote OAM clent then sends an Information OAMPDU with updated state information reflecting the new non-zero loopback timer value and its local_action set to LB.

Proposed Response *Response Status* **C**

REJECT.

57.2.8.3 is going away per #868.

Cl **57** *SC* **57.2.8.4** *P* **104** *L* **10** # **193**

Martin, David Nortel Networks

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

States that to exit loopback mode "…the local MAC client stops sending frames…". At first this sounds contradictory to line 34 on page 103 which states that "To initiate remote loopback, the local MAC Client stops sending data frames…".

SuggestedRemedy

Perhaps inserting the word "test" would clarify the intent that test frames rather than user data frames are sent by the MAC Client while the remote device is in loopback. So line 104 would read "…the local MAC client stops sending test frames …".

Proposed Response *Response Status* **C**

REJECT.

The OAM STF wrestled with "test frames" at the Vancouver in January 2003. The term "test frames" connotes some data pattern or set of fields. The truth is all frames other than OAMPDUs are looped back by OAM. There is no concept of test frames or test traffic.

Cl **57** *SC* **57.2.8.4** *P* **104** *L* **16** # **194**

Martin, David Nortel Networks

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

States that "…the OAM client sets its local_action parameter to FWD and resumes sending MAC Client frames." It isn't the OAM client that resumes sending MAC Client frames, rather it's the MAC client that resumes sending user data frames (rather than test frames) to the OAM sublayer and it's the Parser that resumes passing received MAC frames up to the MAC Client (rather than discarding them).

SuggestedRemedy

Suggest rewording line 16 to say "…the OAM client sets its local_action parameter to FWD. The Parser resumes passing received non-OAMPDUs up to the MAC Client and the MAC client resumes sending user data frames (rather than test frames) to the OAM sublayer."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #192. OAM STF in Vancouver avoided the term test frames.

Suggest rewording suggested remedy as follows to read "the OAM client sets its local_action parameter to FWD. The Parser resumes passing received non-OAMPDUs up to the MAC Client and the MAC Client resumes sending frames to the OAM sublayer."

Cl **57** *SC* **57.2.8.4** *P* **104** *L* **17** # **99**

Braga, Aldobino UNH-IOL

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

Local_action parameter should be set to FWD via the OAM_CTL.request primitive

SuggestedRemedy

After receiving an Information OAMPDU with a zero loopback time value and local_action set to FWD, the local OAM client sets its local_action parameter to FWD via the OAM_CTL.request primitive and resumes sending MAC Client frames.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept remedy with possible exception that language about loopback timer could get pulled.

Cl **57** *SC* **57.2.8.5** *P* **104** *L* **21** # **890**

Gerhardt, Floyd Cisco Systems

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

When the loopback_timer expires it appears that the remote OAM client can get stuck with its local_action set to DISCARD, if the local OAM does not elect to either resume or end the OAM loopback test.

SuggestedRemedy

Change the text on page 104 line 26 from 'the local OAM client may elect to either...' to 'the local OAM client shall either...'

Proposed Response *Response Status* **C**

REJECT.

Comment no longer applicable since loopback timer has been removed.

Cl **57** *SC* **57.2.8.7** *P* **104** *L* # **464**

Ho, Julian Vitesse Semiconducto

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

If loopback is to be used to test "the performance of a link", traffic on the return-leg of the loopback should replicate as near as possible to that transmitted by the local device. This seamless loopback mechanism is only implied in this subclause and should be explicitly stated. Otherwise, with the current draft, in some implementations of loopback the measurement of link performance may not be representitive of the link.

SuggestedRemedy

"In loopback mode, the non-OAMPDU traffic looped back to the local device should replicate as near as possible that transmitted by the local device, with the exception of frame loss due to unavoidable causes or the insertion/extraction of OAMPDUs." Then state the causes of frame loss already in this subclause, i.e. clock differences, asymmetric links e.t.c.

Proposed Response *Response Status* **C**

REJECT.

By "replicate as near as possible", does the commenter imply mirroring the transmission times, approximating latency, jitter, etc? If so, this is impossible for at least the following reasons:

a) No timestamp associated with frame reception is recorded by the sublayers subordinate to OAM. Hence, OAM has no ability to transmit loopback frames accordingly.

b) A given link may either be asymmetric (EFM copper) or be time domain multiplexed in the upstream direction (EFM P2MP). It would not be possible to replicate the reception of a set of frames.

Performance wasn't meant to imply latency and jitter.

Cl **57** *SC* **57.2.8.8** *P* **105** *L* **12** # **870**

Daines, Kevin World Wide Packets

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

With loopback timer being removed, this timing consideration can also be removed.

SuggestedRemedy

Removed middle timing consideration.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.2.8.8** *P* **105** *L* **19** # **871**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Duplicate bullets a & b breaks style guide.

SuggestedRemedy
Change 2nd a & b to c & d

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.1** *P* **105** *L* **41** # **773**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
The OAm type is already defined in 43B, no need to do it here.

SuggestedRemedy
Remove the "Value: Integer 3" from the OAM_subtype constant and reference Annex 43B.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **106** *L* **08** # **841**
Daines, Kevin World Wide Packets

Comment Type **T** *Comment Status* **A**
P802.3ae changed the MAC service specifications in Clause 2 to reconcile long-standing discrepancies with the relevant 802.1 standards. EFM should be using these new service specifications.

Specific to OAM, one parameter of the MA_DATA.indication primitive needs to change. "m_sdu" should read "mac_service_data_unit".

SuggestedRemedy
Change "ind_m_sdu" to "ind_mac_service_data_unit".

Also, on page 108, line 1, change "m_sdu" to "mac_service_data_unit"

Note: The "ind_" prefix, meaning "indication", is to differentiate from the companion parameter req_*, meaning "request".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **106** *L* **27** # **100**
Braga, Aldobino UNH-IOL

Comment Type **E** *Comment Status* **A**
DISCARD; parser discards non-OAMPDUs

SuggestedRemedy
DISCARD; parser discards received non-OAMPDUs

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **106** *L* **42** # **536**
Braga, Aldobino IOL

Comment Type **E** *Comment Status* **A**
local_lost_link_timer_done variable

Does not have a definition indicating why it is used.
Does not have defined values

SuggestedRemedy
This is used to indicate that the local_lost_link_timer has expired.
Values: TRUE; local_lost_link_timer has expired
False; local_lost_link_timer has not expire

Proposed Response *Response Status* **C**
ACCEPT.

See comment #872.

Cl **57** *SC* **57.3.1.2** *P* **106** *L* **42** # **872**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
local_lost_link_timer has no values section.

SuggestedRemedy
Add text:
Values: TRUE; timer has expired. FALSE; timer has not expired.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #536.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **03** # **195**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Typo.

SuggestedRemedy
Change "This is used to allows…" to "This is used to allow…"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **03** # **979**
Arnold, Brian Cisco Systems

Comment Type **E** *Comment Status* **A**
Typo "allows" -> "allow"

SuggestedRemedy
Typo "allows" -> "allow"

Proposed Response *Response Status* **C**
ACCEPT.

See comment #195.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **03** # **873**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar, additional explanatory text needed

SuggestedRemedy
Change "allows" to "allow".
After "TRUE" description, add "Active devices always set parameter to TRUE. Passive devices set parameter to TRUE during the Discovery process."

or words to this effect.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

1st part of comment is same as #195 and #979.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **04** # **537**
Braga, Aldobino IOL

Comment Type **E** *Comment Status* **A**
local_ok_to_tx variable

saying it allows the sending of Information OAMPDUs during the beginning of the Discovery process, is not really accurate.

SuggestedRemedy
It should say, "This is used to allow the sending of all OAMPDUs throughout the OAM Discovery process."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **12** # **874**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Missing text

SuggestedRemedy
Add "has seen and " after "OAM Client".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **15** # **534**
Braga, Aldobino IOL

Comment Type **E** *Comment Status* **A**
local_stable variable

Definition is vague: "A variable set by the Discovery Process"

SuggestedRemedy
This is used to indicate local OAM client acknowledgment of and satisfaction with remote OAM state information.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **23** # **196**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Typo.

SuggestedRemedy
Change "…when the link in the receive direction is not operation." to "…when the link in the receive direction is not operational."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **27** # **535**
Braga, Aldobino IOL

Comment Type **E** *Comment Status* **A**
remote_stable variable

Definition states what happens not what it is used for.

SuggestedRemedy
This is used to indicate remote OAM client acknowledgment of and satisfaction with local OAM state information.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **36** # **980**
Arnold, Brian Cisco Systems

Comment Type **E** *Comment Status* **A**
Typo: "...indicated OAM..." -> "...indicate the OAM..."

SuggestedRemedy
Typo: "...indicated OAM..." -> "...indicate the OAM..."

Proposed Response *Response Status* **C**
ACCEPT.

See comment #875 and #197.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **36** # **197**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Typo.

SuggestedRemedy
Change "This is used to indicated…" to "This is used to indicate the…"

Proposed Response *Response Status* **C**
ACCEPT.

See comment #875 and #979.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **36** # **875**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Grammar

SuggestedRemedy
Change "indicated" to "indicate".

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #980 and #197.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **36** # **461**
Ho, Julian Vitesse Semiconducto

Comment Type **E** *Comment Status* **A**
Grammar problem, "to indicated OAM".

SuggestedRemedy
"to indicate the OAM"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.1.2** *P* **107** *L* **43** # **842**

Daines, Kevin World Wide Packets

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

P802.3ae changed the MAC service specifications in Clause 2 to reconcile long-standing discrepancies with the relevant 802.1 standards. EFM should be using these new service specifications.

Specific to OAM, two parameters of the MA_DATA.request primitive need to change. First, "m_sdu" should read "mac_service_data_unit". Second, "service_class" has been removed and replaced with the optional "frame_check_sequence".

SuggestedRemedy

1) Change "req_m_sdu" to "req_mac_service_data_unit".
2) Change "req_service_class" to "req_frame_check_sequence".
3) On page 108, line 10: fix alias.

Note: The "req_" prefix, meaning "request", is to differentiate from the companion parameter ind_*, meaning "indication".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.3.1.3** *P* **108** *L* **10** # **564**

Tom Mathey Independent

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

P802.3ae deleted "service_class" from MA_DATA.request.

SuggestedRemedy

Check.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #842.

Cl **57** *SC* **57.3.1.4** *P* **108** *L* **23** # **1026**

Jonathan Thatcher WWP

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

Recommend that we replace the current max_rate_timer and min_rate_timer with a new mechanism for controlling the number of PDUs to be sent out in a second.

SuggestedRemedy

Per file thatcher_cmts_1_0303.pdf.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.3.1.4** *P* **108** *L* **29** # **538**

Braga, Aldobino IOL

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

max_rate_timer

"not greater than"

SuggestedRemedy

"no greater than"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.3.1.4** *P* **108** *L* **30** # **300**

Takashi, Ezawa Oki Electric Industry C

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

We propose that the tolerance definition of timers shall be deleted regarding max_rate_timer, min_rate_timer and local_lost_link_timer. We suppose that the definition of timers are necessary for detection of link fault. But there is enough margin between min_rate_timer and lost_link_timer. We think that there is no problem without definition of detailed tolerance. If it is necessary to define, we think that the tolerance value should be eased more.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See related comment #1026.

Cl **57** *SC* **57.3.2.1** *P* **109** *L* **09** # **540**

Braga, Aldobino IOL

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

Discovery Process State Machine

It's not a good idea to have empty states.

ACTIVE_SEND_LOCAL: should contain local_ok_to_tx <= TRUE.
PASSIVE_SEND_LOCAL: should contain local_ok_to_tx <= FALSE.
SEND_ANY: should contain something?

BUT what if we change the def of local_ok_to_tx.
so that it reads:
"This is used to allow the sending of OAMPDUs throughout the OAM Discovery process."
values: NONE; Sending of all OAMPDUs shall be prohibited
ANY; Sending of all OAMPDU shall not be prohibite
CTL; Sending of non-Information OAMPDUs shall be prohibite

Now we could have the following states:
ACTIVE_SEND_LOCAL: should contain local_ok_to_tx <= CTL.
PASSIVE_SEND_LOCAL: should contain local_ok_to_tx <= NONE.
SEND_ANY: should contain local_ok_to_tx <= ANY.

SuggestedRemedy

Change definition of local_ok_to_tx such that it contains one of three values.
Further add the setting of local_ok_to_tx to the following discovery process states:
ACTIVE_SEND_LOCAL:
PASSIVE_SEND_LOCAL:
SEND_ANY:

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

I like the direction here. The parameters "local_ok_to_tx" and "local_oam_mode" are in effect redundant. So, moving local_ok_to_tx into the Discovery process is probably a good thing.

Propose remedy be accepted with the following additions:

a) Add local_ok_to_tx <= CTL to SEND_LOCAL_REMOTE_1
b) Consider better name for "local_ok_to_tx"

Cl **57** *SC* **57.3.2.1** *P* **109** *L* **1** # **539**

Braga, Aldobino IOL

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

Discovery Process Diagram
no lost_link_timer variable

SuggestedRemedy

change to:
local_lost_link_timer

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.3.2.1** *P* **109** *L* **19** # **431**

Hirai, Hideyuki Sumitomo Electric

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

Figure 57-4:
Conditions for the transition from SEND_LOCAL_REMOTE_2 state to SEND_ANY state are insufficient.
According to Fig57-4, when a LOCAL device is in SEND_LOCAL_REMOTE_2 state and it is notified of STABLE state from the REMOTE device which is in SEND_LOCAL_REMOTE_2 state, the LOCAL device enters SEND_ANY state immediately.
At this time, the Remote device may be still in SEND_LOCAL_REMOTE_2 state, but the LOCAL device is able to send OAMPDUs which are not InformationOAMPDUs.
For example, the LOCAL may go on sending VariableRequestOAMPDU without sending InformationOAMPDUs, so the REMOTE is not able to enter SEND_ANY state.

SuggestedRemedy

To solve this problem, a new condition should be added to the current condition for the transition from SEND_LOCAL_REMOTE_2 state to SEND_ANY state.

The condition defined in the current draft:
remote_stable = STABLE

Proposed new condition:
(remote_stable = STABLE) + (receive OAMPDUs except for InformationOAMPDU)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #101. The suggested remedy for comment #101 causes a device to send an Information OAMPDU once it transitions into the SEND_LOCAL_REMOTE_2 state. This should solve the issue the commenter identified in this comment.

Cl **57** *SC* **57.3.2.1** *P* **109** *L* **35** # **101**
Braga, Aldobino UNH-IOL

Comment Type **T** *Comment Status* **A**
Once in SEND_LOCAL_REMOTE_2 state local OAM client should send Information OAMPDU with local and remote state information right away

SuggestedRemedy
Once in the SEND_LOCAL_REMOTE_2 state the local OAM client sends an Information OAMPDU with local and remote state information.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.2.1** *P* **109** *L* **39** # **876**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong text.

SuggestedRemedy
Remove "there is a link fault condition" from this sentence.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.2.1** *P* **109** *L* **42** # **102**
Braga, Aldobino UNH-IOL

Comment Type **T** *Comment Status* **A**
There isn't a blurb explaining the transition from the SEND_ANY to SEND_LOCAL_REMOTE_2 state

SuggestedRemedy
If at any time the settings on the local OAM client change resulting in management of the remote OAM client becoming unsatisfied with the settings, the state machine returns to the SEND_LOCAL_REMOTE_2 state.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.2.2** *P* **109** *L* **52** # **966**
Yokomoto, Tetsuya Japan

Comment Type **E** *Comment Status* **R**
It has written (the MAC's TransmitFrame function is simultaneous and is never interrupted).

SuggestedRemedy
I think that the IFG time after finishing transmission of MAC FRAME needs to be specified (when should OAMPDU be transmitted?).

Proposed Response *Response Status* **C**
REJECT.

The sublayers above the MAC have no notion of IFG. The MAC enforces IFG regardless of the timing of MAC_DATA.request service primitives.

Cl **57** *SC* **57.3.2.2** *P* **109** *L* **54** # **888**
Gerhardt, Floyd Cisco Systems

Comment Type **T** *Comment Status* **A**
While in the Discovery process but not yet in the SEND_ANY state the local_dying_gasp parameter should enable the immediate transmission of Information OAMPDU. Currently this information is only transmitted after the min_rate_timer or max_rate_timer expires.

SuggestedRemedy
Add the following text to c): OAM_CTL.request primitive with the local_dying_gasp parameter set enables the immediate transmission of Information OAMPDU with the Dying Gasp bit set in the Flags field.

Proposed Response *Response Status* **C**
ACCEPT.

Good point.

Cl **57** *SC* **57.3.2.2** *P* **110** *L* **07** # **991**
Thatcher, Jonathan WWP

Comment Type **TR** *Comment Status* **A**
Immediate transmission of queued OAMPDU should be sent with either Dying Gasp or link_fault.

SuggestedRemedy
Add "or link_fault"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.3.2.3** *P* **110** *L* **19** # **992**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R**
There is no reason why redundant OAMPDUs need to be forwarded.

SuggestedRemedy
Change the wording to "the first validly formed instance of an OAMPDU..."

Optionally add: "Note: the implementer may choose to forward all validly formed OAMPDUs to the OAM client."

Proposed Response *Response Status* **C**
REJECT.

Duplication and subsequent discarding of OAMPDUs is determined by the OAM client.

Cl **57** *SC* **57.3.3** *P* **110** *L* **40-42** # **800**
Seyoun LIM SAMSUNG ELECTRON

Comment Type **T** *Comment Status* **R**
In Figure 57-5 which is the Multiplexer state diagram, the conditions between WAIT_FOR_TX and CHECK_LINK_STATUS are only two case;

1. Data Frame from MAC client when it's not loopback mode
2. Data Frame looped back from Parser block when it's loopback mode

there is another condition to be added.
MAC client of OLT can send some test frames in the loopback mode to Multiplexer block.

SuggestedRemedy
My remedy is that "OAM:MADR*local_action=LB" should be added.

Proposed Response *Response Status* **C**
REJECT.

As of D1.3, an "OLT" which has put the ONU in remote loopback would have it's local_action set to DISCARD. As such, the condition OAM:MADR * local_action != LB is correct.

Cl **57** *SC* **57.3.3** *P* **110** *L* **41** # **453**
Yoshimura, Minoru NEC

Comment Type **E** *Comment Status* **A**
"Parser:MADI*local_action=LB" used in figure 57-5 should be "Parser:MADR*local_action=LB"

SuggestedRemedy
Correct according to comment.

Proposed Response *Response Status* **C**
ACCEPT.

See comment #542, #801.

Cl **57** *SC* **57.3.3** *P* **110** *L* **42** # **801**
Seyoun LIM SAMSUNG ELECTRON

Comment Type **E** *Comment Status* **A**
Parser:MADI*local_action=LB should be incorrect.

SuggestedRemedy
Change "Parser:MADI" to "Parser:MADR"

Proposed Response *Response Status* **C**
ACCEPT.

See comment #542, #453.

Cl **57** *SC* **57.3.3** *P* **110** *L* **45** # **454**
Yoshimura, Minoru NEC

Comment Type **T** *Comment Status* **A**
"Local_unidirectional" should not be used as the condition to transmit MAC client frames in Figure 57-5.
"Local_unidirectional" indicates the device is capable of sending "OAMPDUs" when the link in the receive direction is not operation. (Line22, page107)
According to this definition, "Local_unidirectional" does not relate to "MAC client frames".
If we use "Local_unidirectional" as the condition to transmit MAC client frames, the definition of this variable should be modified.

SuggestedRemedy
Modify the definition of "Local_unidirectional" or remove the variable from Figure 57-5.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #545. New text better describing the reasons for adding local_unidirectional to the equations will resolve this.

Cl **57** *SC* **57.3.3** *P* **110** *L* **46** # **544**
Braga, Aldobino IOL

Comment Type **T** *Comment Status* **A**
OAM - should have a switch on local_link_status and local_unidirectional values

SuggestedRemedy
add
local_link_status = FALSE * local_unidirectional = FALS
transitioning to discard

add
local_link_Status = OK + local_unidirectional = TRU
transitioning to generate MAC:MADR state

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #545. New text better describing the reasons for adding local_unidirectional to the equations will resolve this.

Cl **57** *SC* **57.3.3** *P* **110** *L* **46** # **543**
Braga, Aldobino IOL

Comment Type **T** *Comment Status* **R**
PARSER and MAC client data - should be switched only on local_link_status value only. Unidirectional operation is strictly for the use of OAM traffic.

SuggestedRemedy
local_unidirectional = FALSE + local_link_status = OK
should be changed to
local_link_status = OK

an

local_unidirectional = TRUE * local_link_status = FAIL
should be changed t
local_link_status = FAIL

Proposed Response *Response Status* **C**
REJECT.

See comment #545. New text better describing the reasons for adding local_unidirectional to the equations will resolve this.

Cl **57** *SC* **57.3.3** *P* **110** *L* **51** # **545**
Braga, Aldobino IOL

Comment Type **T** *Comment Status* **A**
The state machine could be trimmed and changed to reflect my earlier comments.

SuggestedRemedy
change the current state machine to the state machine reflected in braga_oam_2_0303.pdf

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See response to comment #987.

Cl **57** *SC* **57.3.3** *P* **110** *L* **51** # **542**
Braga, Aldobino IOL

Comment Type **T** *Comment Status* **A**
Line 42

Parser:MADI should be Parser:MADR

SuggestedRemedy
change Parser:MADI to Parser:MADR

Proposed Response *Response Status* **C**
ACCEPT.

Doh!

See comment #801, #453.

Cl **57** *SC* **57.3.4** *P* **111** *L* **16** # **546**
Braga, Aldobino IOL

Comment Type **T** *Comment Status* **A**
The Discard state in the Parser state machine is of no use.

SuggestedRemedy
change !RxOAMPDU * local_action = DISCARD
to ELSE and transition directly to WAIT_FOR_RX

remove DISCARD state

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.4.2** *P* **111** *L* **50** # **217**

Finn, Norman — Cisco Systems

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

Having different op-codes, each of which is allowed to carry a specific set of TLVs, introduces error conditions that need not exist. That is, any time that you have the same information in two places in a protocol packet, you have an opportunity for invalid, confusing, and non-interoperable interpretations of the packet by the receiver.

SuggestedRemedy

Either A) overlay the TLV number space so that each op-code's first TLV has code 1 (or 1), or B) get rid of the op-code, and allow any mixture of TLVs. Either way gets rid of a great many interoperability problems.

Proposed Response *Response Status* **C**

REJECT.

OAM Chair and Editor will follow-up with commenter and research other possible remedies.

Cl **57** *SC* **57.4.2** *P* **111** *L* **52** # **774**

Squire, Matt — Hatteras Networks

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

Whats a "basic" frame?

SuggestedRemedy

Delete "basic".

Proposed Response *Response Status* **C**

REJECT.

The term "basic frame" comes from 4.3.2 Services provided by the MAC. A basic frame is an untagged frame.

Cl **57** *SC* **57.4.2.2** *P* **113** *L* **20** # **658**

Parsons, Glenn — Nortel Networks

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

<Modified 2/27/03 by OAM Editor per e-mail from Glenn>

ITU-T SG13 Q3 is defining additional Ethernet link OAM functions that will be required for carrier networks in at least 2 documents (draft Rec. Y.17ethreq & Y.17ethoam). It is important that the ITU-T be assigned an OAMPDU codepoint in Table 57-5 to allow the universal identification of ITU-T Ethernet OAM frames.

SuggestedRemedy

<Modified 2/27/03 by OAM Editor per e-mail from Glenn>

In Table 57-5:

Insert a new row above 'FE' containing:

FD | ITU-T Specific | Reserved for ITU-T Definition
| Distinguished by ITU-T Recommendations on Ethernet OAM

Modify the row above to read:

05-FC | Reserved | Reserved for future use

Proposed Response *Response Status* **C**

REJECT.

After reviewing this comment with 802 Vice Chair, 802.3 WG Chair and 802.3 WG Vice Chair, the OAM STF was charged to reject this comment and also make two other changes to the current draft. Those changes are found in OAM STF comment #5701.

The reason for the changes is that the OUI should be sufficient for any vendor/organization and that there is no technical reason other means to distinguish vendors/organizations is needed.

Cl **57** *SC* **57.4.2.2** *P* **113** *L* **22** # **103**
Braga, Aldobino UNH-IOL

Comment Type **E** *Comment Status* **A**
Lack of consistency

SuggestedRemedy
A) IANA should be spelled out
or
B) OUI should be abbreviated

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

With comment #658 removing IANA, this comment is no longer applicable.

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **44** # **210**
Finn, Norman Cisco Systems

Comment Type **E** *Comment Status* **A**
Typo: "will" should be "with"

SuggestedRemedy
Fix typo.

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #877.

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **44** # **198**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Typo.

SuggestedRemedy
Change "…initially send Information PDUs will only the local…" to "…initially send Information PDUs with only the local…"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **44** # **877**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Wrong word.

SuggestedRemedy
Change "will" to "with".

Proposed Response *Response Status* **C**
ACCEPT.

See comment #210.

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **48** # **775**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
There's no easy way to easily see what a Info PDU looks like (ditto for other PDU types).

SuggestedRemedy
We should add a general diagram of what the OAM PDU looks like

```
------------------------
| common header (18B)
|------------------------
| Local OAM Info (nB)
------------------------
| Remote OAM Info (nB)
| <after peer discovered>
-------------------------
```

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **48** # **776**

Squire, Matt — Hatteras Networks

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

Is the remote OAM info TLV always there? What are the contents if we haven't talked to the peer? If its not always there, how does the reciever know if it should be expected?

In general, how do we know how to process TLVs (if there are any, or how many)?

SuggestedRemedy

1) In general, since most of our frames have TLVs, add a field to the common header for "Number of TLVs." Then the receiver knows how to parse the data field (if you don't know how many, you don't know when to end your loop).

2) Only send one TLV in the Info OAMPDU until you enter LOCAL_SEND_REMOTE_1.

3) Have a different TLV type (same format though) for local and remote OAM information TLV.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

With the TLV_type value of 0x0 being reserved, the OAM Client can parse the Data field of the OAMPDU until detecting a 0x0.

Brief description on TLV parsing will be added.

Accept remedies (2) and (3).

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **49** # **432**

Hirai, Hideyuki — Sumitomo Electric

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

In Draft1.2, the definition of InformationOAMPDU format with Local TLV and Remote TLV information was provided.
But in the current draft, the order of Local TLV and Remote TLV field is not defined.

SuggestedRemedy

Define the order of Local TLV and Remote TLV in InformationOAMPDU, or the type of Local TLV and Remote TLV should be defined separately.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

By popular demand, the figure will return.

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **52** # **211**

Finn, Norman — Cisco Systems

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

The "L" of the "TLV" should not include the code and the length. This is because it introduces an unnecessary failure condition and/or opportunity for bugs: the illegal Length values 0 and 1. It also reduces the maximum size of a TLV. Seems a bad tradeoff for avoiding the trivial arithmetic of adding an extra 2.

SuggestedRemedy

Change definition of OAM_Information_Length (and all other TLV lengths) to the number of bytes after the length, not including the type and length bytes, themselves.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Text covering the error cases will be included in new "Parsing TLV section".

Cl **57** *SC* **57.4.3.1** *P* **113** *L* **53** # **878**

Daines, Kevin — World Wide Packets

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

With removal of loopback timer, and subsequent shrinking of OAM_Information TLV, text needs to be udpated.

SuggestedRemedy

Change "22 (0x16)" to read "20 (0x14)" on line 53. On line 54, change "four-octet" to read "two-octet".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.4.3.1** *P* **113-115** *L* **48** # **503**

Lee Ho-Sook — ETRI (Electronics Tele

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

It would be better to add whole illustration of the informaton OAM PDU data fields as like the figure 55-9 of the previous draft version.

SuggestedRemedy

Please refer the figure 55-9 of the draft version 1.2

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.4.3.1** *P* **113-115** *L* **48** # **471**
Lee Ho-Sook ETRI (Electronics Tele

Comment Type **E** *Comment Status* **A**
It would be better to add whole illustration of the informaton OAM PDU data fields as like the figure 55-9 of the previous draft version.

SuggestedRemedy
Please refer the figure 55-9 of the draft version 1.2

Proposed Response *Response Status* **C**
ACCEPT.

Comment identical to #503 from same commenter.

Cl **57** *SC* **57.4.3.1** *P* **114** *L* **15** # **104**
Braga, Aldobino UNH-IOL

Comment Type **E** *Comment Status* **A**
DISCARD should say; indicates that the device is discarding non-OAMPDUs received from the subordinate sublayer

SuggestedRemedy
indicates that device is discarding non-OAMPDUs received from subordinate sublayer

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.4.3.1** *P* **114** *L* **25** # **213**
Finn, Norman Cisco Systems

Comment Type **TR** *Comment Status* **A**
What do you do if you receive a version field which is higher than you understand? What do you do if the TLV is too long? These are critical questions.

SuggestedRemedy
Too-long TLV or version number too high should be accepted. Receiver handles what he knows how to handle. This future-proofs the protocol. The alternative is to negotiation rev levels, typically requiring one to send muliple packets at multiple levels. 802.1 has the right answer, here.

Proposed Response *Response Status* **C**
ACCEPT.

Add text to this effect in the new "Parsing TLV section". Will need to cover too-long TLV and version mismatch.

Cl **57** *SC* **57.4.3.1** *P* **115** *L* **27-31** # **199**
Martin, David Nortel Networks

Comment Type **T** *Comment Status* **A**
If I understand this correctly, we are forcing every vendor to having an IANA private enterprise number in order to generate an Information PDU, due to the fact there is no null value that can be used in the Enterprise_Identifier field. Some vendors may not have an IANA number but do have an OUI number.

SuggestedRemedy
Suggest providing an equivalent OUI Vendor Identifier field following the IANA one. Such as:
23:0 OUI Enterprise_Identifier (3 bytes)
39:24 Device_Identifer
55:40 Version_Identifier

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Similar to comment #993.

See comment #658. The OUI will be replaced with the 802.1F oResourceTypeID which includes Mfg OUI, Mfg Name, Product Name and Product Version. This is deemed to be technically sufficient. This also prevents the TF and WG from defining criteria to award/reserve codepoints and other registration mechanisms.

Cl **57** *SC* **57.4.3.1** *P* **115** *L* **28** # **993**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R**
Question: Why isn't there an option to use an OUI instead of IANA in the Vendor ID field.

SuggestedRemedy
If this is not an oversight, comment widthdrawn.

Proposed Response *Response Status* **Z**
WITHDRAWN.

Redundant comment.

Cl **57** *SC* **57.4.3.1** *P* **115** *L* **34** # **216**

Finn, Norman — Cisco Systems

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

If proper use of versioning is done, that is, a receiver accepts higher versions than he understands and ignores the parts he doesn't understand, then there is no need for a "reserved" field.

SuggestedRemedy

Remove the Reserved field.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.4.3.2** *P* **115** *L* **34** # **778**

Squire, Matt — Hatteras Networks

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

Why do we have reserved bytes? Purpose? If none, delete.

SuggestedRemedy

Delete reserved bytes in OAM info TLV.

Proposed Response *Response Status* **C**

ACCEPT.

See comment #216.

Cl **57** *SC* **57.4.3.2** *P* **115** *L* **44** # **977**

Arnold, Brian — Cisco Systems

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

Would like to see part of the event sequence number usage spelled out to remove any chance of ambiguity.

If an implementation chooses to send duplicate EN OAMPDUs, but builds and enqueues them spaced out over time rather than back-to-back, it would be a little clearer to add a sentence to indicate that the duplicate EN OAMPDU carries an identical event sequence number as the original, rather than a new sequence number. Basically, some people not privy to the development of OAM may question what is the meaning of "new", as in "new event". Some say that depends upon whether you're the OAM client or whether you're the queue.

SuggestedRemedy

Suggest adding the following sentence starting in the middle of line 44:

"...a particular event. Duplicate Event Notification OAMPDUs must contain the Event Sequence number of the original Event Notification OAMPDU for that event, even though Event Notification OAMPDUs may be queued to transmit or transmitted with out-of-order Event Sequence numbers. Each new event..."

Or something along those lines.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Let's go with the suggested remedy of comment #780.

Cl **57** *SC* **57.4.3.2** *P* **115** *L* **44** # **780**

Squire, Matt — Hatteras Networks

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

I think the sequence number descriptions are wrong. The seq# gets bumped whenever a new PDU is formed/xmitted, not whenever a new event happens. e.g. what happens if the PDU has 2 events - which sequence number is that?

SuggestedRemedy

Change "Each new..." thru end to:

The OAM client increments the Event Sequence Number for each unique Event Notification OAMPDU formed by the OAM client. A particular Event Notification OAMPDU may be sent multiple times with the same sequence number. Any particular event can be signaled in only one unique Event Notification OAMPDU (though that PDU may be transmitted multiple times).

Upon receiving an Event Notification OAMPDU, the receiver compares the sequence number with the last received Event Sequence Number. If
currentEventSeqNum = lastEventSeqNum,
then the current event is a duplicate. If it is a duplicate, it is discarded by the OAM client and counted in XXXXX.

Event TLVs are defined in 57.5.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Amend the last portion of the remedy to remove discard counter.

Cl **57** *SC* **57.4.3.2** *P* **115** *L* **45** # **879**

Daines, Kevin — World Wide Packets

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

Capitalization.

SuggestedRemedy

Change "data" to "Data" in the following locations:

pg 115, line 45
pg 115, line 53
pg 116, line 4
pg 116, line 12

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.4.3.2** *P* **115** *L* **48** # **472**

Lee Ho-Sook — ETRI (Electronics Tele

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

It would be better to add whole illustration of the data fields of the event notification OAM PDU. (with the same format with the above comment.)
Additionally, event flag fields in subclause 57.4.2.1 must be moved to the content of subclause 57.4.3.2.
This subclause must describe detailed OAM events in its OAM PDU.
The event OAM PDU must have matched field with critical OAM events in table 57-2, and non-critical OAM events in table 57-3.
It would be better to describe the brief sketch of each event field, and to inform the size of each field and the total size of the event notification OAM PDU.

SuggestedRemedy

This subclause can be modfied in following way :
1) insert the figure of whole PDU format.
(as like the figure 55-9 of the draft version 1.2)
2) move the explanation about event flag fields in subclause 57.4.2.1 to the subclause 57.4.3.2.
3) add the explanation about non-critical event in subclause 57.2.7.2 to the subclause 57.4.3.2.
4) insert the flag field related with non-critical event to the event notification OAM PDU.
5) explain each field in itemized format.
(the size of each field, and detailed format must be described)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Identical to comment #504 from same commenter.

OAMPDU format is described in Figure 57-7. An example for each OAMPDU will be provided in next draft.

Cl **57** *SC* **57.4.3.2** *P* **115** *L* **48** # **504**

Lee Ho-Sook ETRI (Electronics Tele

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

It would be better to add whole illustration of the data fields of the event notification OAM PDU. (with the same format with the above comment.)
Additionally, event flag fields in subclause 57.4.2.1 must be moved to the content of subclause 57.4.3.2.
This subclause must describe detailed OAM events in its OAM PDU.
The event OAM PDU must have matched field with critical OAM events in table 57-2, and non-critical OAM events in table 57-3.
It would be better to describe the brief sketch of each event field, and to inform the size of each field and the total size of the event notification OAM PDU.

SuggestedRemedy

This subclause can be modfied in following way :
1) insert the figure of whole PDU format.
(as like the figure 55-9 of the draft version 1.2)
2) move the explanation about event flag fields in subclause 57.4.2.1 to the subclause 57.4.3.2.
3) add the explanation about non-critical event in subclause 57.2.7.2 to the subclause 57.4.3.2.
4) insert the flag field related with non-critical event to the event notification OAM PDU.
5) explain each field in itemized format.
(the size of each field, and detailed format must be described)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #472 from same commenter.

Cl **57** *SC* **57.4.3.3** *P* **115** *L* **54** # **777**

Squire, Matt Hatteras Networks

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

Variable requests shouldn't be processed from passive guys. Ditto for loopback request.

SuggestedRemedy

Add sentence "If the OAM client receives a variable request from a passive peer, the station responds with an "illegal request" error code as defined in Table 57-13."
<or should we ignore it>

Similar for 57.4.3.5.

Also, define "illegal request" in the error codes of 57-13.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add sentence in 57.4.3.3 and 57.4.3.5 defining behavior of active devices receiving illegal request from passive device.

Cl **57** *SC* **57.4.3.4** *P* **116** *L* **01** # **994**

Thatcher, Jonathan WWP

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

If the remote end is set up to send multiple Variable Response OAMPDUs (for redundancy), and the multiple is greater than the multiple for the local Variable Request OAMPDUs, then the local can, effectively, over run the remote by requesting more than the remote can handle.

SuggestedRemedy

At very least, there should be a note indicating caution. Better yet, there should be a field that indicates the repitition value so that the local end can "oh, behave."

Proposed Response *Response Status* **C**

REJECT.

This seems to fall into the realm of the responsibilities of the OAM Client. If a given OAM Client is sending 3x the Variable Responses for every received Variable Request, logic would dictate it can't handle 10 Variable Requests in a given second. Not sure if the spec needs to protect OAM Clients from themselves.

Cl **57** *SC* **57.4.3.4** *P* **116** *L* **07** # **433**

Hirai, Hideyuki — Sumitomo Electric

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

In the case of VariableResponse with Variable Erorr(0x04) of which variable type is Package or Object, how to allocate Variable Error Container to VariableResponse Data field is unclear.

SuggestedRemedy

There are two methods:
(1) Stuff Data field with variable containers (width+value) as much as possible,then stuff remaining data field with variable error(0x04) container.

(2) Stuff data field with a variable error(0x04) container only.

Method (2) should be defined, because (2) is simple.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The commenter raises a good point. However, his preference for suggested remedy (b) might not sit well with some OAM STF members.

OAM Editor proposes the following modified text:

"When returning a package or object and an error occurs, an implementation may either:

1) <suggested remedy (a)>
2) <suggested remedy (b)>"

This way, an implementation may provide as many variables as possible, but at the same time is required per the spec.

Cl **57** *SC* **57.4.3.5** *P* **116** *L* **09** # **869**

Daines, Kevin — World Wide Packets

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

Per comment to remove extraneous loopback time from loopback operation, this sub-clause needs to be re-worked.

SuggestedRemedy

1) Reword sub-clause to read: "The Loopback Control OAMPDU is used to control the remote device's loopback state. The Loopback Control OAMPDU data field shall contain one of the loopback codes found in Table 57-x. See 57.4 for a discussion of loopback operation. The remainder of the data field is unspecified."

2) Add table

table name = Loopback Command
Column #1 heading = Command
Column #2 heading = Description
Row #1 = "0" :: "Reserved, shall not be sent
Row #2 = "1" :: "Start Loopback"
Row #3 = "2" :: "End loopback"
Row #4 = "3-255" :: "Reserved, shall not be sent"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.4.3.5** *P* **116** *L* **10** # **298**

Takashi, Ezawa — Oki Electric Industry C

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

I believe that the Loopback Control OAMPDU data field contains only Loopback Time. There was the table of the data field in the Draft 1.2. Why was it deleted? I suggest that the definition of Loopback Control OAMPDU data field is shown in the table because of the clearization.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #869. The LC Data field will be re-worked assuming the loopback time is being removed for D1.4. Per comment, adequate description of the LC Data field will be provided.

Cl **57** *SC* **57.4.3.5** *P* **116** *L* **13** # **434**
Fujita, Toshihiko Hitachi Communication

Comment Type **E** *Comment Status* **A**
Correction of reference "See 57.4" is imperfect.

SuggestedRemedy
Change "See 57.4" to "See 57.2.8".

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #200.

Cl **57** *SC* **57.4.3.5** *P* **116** *L* **13** # **200**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Incorrect cross-reference.

SuggestedRemedy
Change "See 57.4 for a discussion…" to "See 57.2.8 for a discussion…".

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #434.

Cl **57** *SC* **57.4.3.5** *P* **116** *L* **21** # **880**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Font/size.

SuggestedRemedy
Change font to match start of paragraph in both 57.4.3.5 and 57.4.3.6.

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #201, #566, #779.

Cl **57** *SC* **57.4.3.6** *P* **116** *L* **20-22** # **201**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Font change.

SuggestedRemedy
"…32-bit IANA Private Enterprise….Data field is unspecified." is smaller.

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #880, #779, #566.

Cl **57** *SC* **57.4.3.6** *P* **116** *L* **22** # **779**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Whats with the font change? The end of the paragraph appears to use smaller fonts than the beginning. Ditto 57.4.3.7.

SuggestedRemedy
use consistent fonts.

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #880, #566, #201.

Cl **57** *SC* **57.4.3.7** *P* **116** *L* **28-29** # **202**
Martin, David Nortel Networks

Comment Type **E** *Comment Status* **A**
Font change.

SuggestedRemedy
"…24-bit Organizationally Unique….Data field is unspecified." is smaller.

Proposed Response *Response Status* **C**
ACCEPT.

Same as comment #880, #779, #566.

Cl **57** *SC* **57.43.6** *P* **116** *L* **22** # **566**
Tom Mathey Independent

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

SuggestedRemedy

Font size for all lines should be the same. Also in next paragraph.

Proposed Response *Response Status* **C**

ACCEPT.

Same as comment #880, #221, #779.

Cl **57** *SC* **57.5** *P* **116** *L* **32** # **990**
Thatcher, Jonathan WWP

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

If these events are sent when a threshold is exceeded, why is it that the number also is sent?

SuggestedRemedy

If it is the case that the number can change between the time the threshold is exceeded and the time that the PDU is sent, this should be made explicit.

If this is not the case, then why?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text describing the threshold will be changed from "exceeded" to "equal to or greater than". This will allow both usages models: 'periodic reports every window's worth of time' and 'generation of events when a threshold is exceeded.

The following clarification will be added to event description: Events are generated at the end of the event window rather than when a threshold is crossed.

Cl **57** *SC* **57.5** *P* **116** *L* **34** # **299**
Takashi, Ezawa Oki Electric Industry C

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

Because terminology of "TLV_type" is used in the other definitions, I suggest that the terminology of "Event TLV_type" shall be used instead of "Event Type".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"TLV_type" will be changed to "Event_TLV_type" and "Information_TLV_type" where appropriate.

Cl **57** *SC* **57.5** *P* **116** *L* **50** # **781**
Squire, Matt Hatteras Networks

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

Should clarify how compatibility is attained w/vendor specifics all sharing same 128 event type values.

SuggestedRemedy

Add sentence after table:
The vendor specific Event types are specific to the Vendor Identification exchanged in the Information OAMPDU. Thus, two vendors can each use the same value with a different meaning.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.5** *P* **116** *L* **52** # **978**

Arnold, Brian Cisco Systems

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

Event TLVs could theoretically be used to monitor and accumulate a continuum of error counts by setting the thresholds to zero (zero symbol errors, zero frames errors, etc.). If this is an intended usage of Event TLVs, then there could be an improvement made to support an OAM Client or MAC client in accurately building this continuum.

An implementation wishing to construct an accurate timeline of error events which exceed the set thresholds can only rely upon the time of error event notification OAMPDU receipt and/or the time period covered by the event itself, not the time of the OAMPDU's generation. This can lead to an incorrect reconstruction of the timeline, especially if OAMPDUs are lost, deferred, or arrive later due to initial loss then the arrival of a duplicate.

In order to accurately construct the timeline, it seems that the time reference of the builder/sender of the event notification OAMPDU could be included within the OAMPDU itself, such that the receiver can understand the time relationship between any two event notification OAMPDUs. This could also serve to remove ambiguity to allow the receiver to discern and report where there are gaps in time where no monitoring information is available.

This timestamp need not be very accurate nor complicated, and need only be as granular as the highest frequency of error event OAMPDU transmission (10 frames/sec). This proposal uses a timestamp that is incremented each 100msec.

SuggestedRemedy

A proposal to include this timebase information would alter these areas:

57.3.1.2 Variables

local_time_stamp

The parameter of the OAM_CTL.request primitive, as defined in 57.2.5.4.
This indicates the current value of the OAM client time reference.

Value: two-octet integer (cleared on initialization of OAM sublayer, incremented every 100ms).

ind_time_stamp

The parameter of the OAM_CTL.indication primitive contains the 2-octet value of the time reference field of the most recent event notification OAMPDU frame to have been received.

57.5 Event TLVs

Each of the event TLVs would also contain a two-octet field which represents the value of the local_time_stamp variable provided by the service primitive. The event TLVs' length fields would be altered to adjust for the added field.

30.11.1.1.xxxx OAM Attributes

For each of the error event objects, there could be an object that provides the time reference (timestamp) corresponding to the associated error event counters.

Proposed Response *Response Status* **C**

ACCEPT.

Floyd Gerhardt presented gerhardt_oam_1_0303.pdf during the OAM STF meetings as a means to describe the benefits of a timestamp.

Cl **57** *SC* **57.5** *P* **117** *L* **05** # **302**

Ken, Murakami Mitsubishi Electric

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

This comment relates to the comment #163 on D1.2.
Not only the threshold but also the window size of non-critical events should be parameters in the Clause 30 MIB.

SuggestedRemedy

The following MIB parameters should be specified.
- Errored_Symbol_Window of Errored symbol period: aOAMLocalErrSymPeriodWindow
- Errored_Frame_Window of Errored frame seconds: aOAMLocalErrFrameSecsWindow
- Errored_ Frame_Window of Errored frame period: aOAMLocalErrFramePeriodWindow
- Errored_Frame_Seconds_Window of Errored frame seconds summary: aOAMLocalErrFrameSecsSummaryWindow

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.5.1** *P* **117** *L* **08** # **995**

Thatcher, Jonathan WWP

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

One second and one minute are unnecessarily restrictive lower and upper bounds.

Note that the upper bound for gigabit is (2^32 * 8 / 1 Gb) = 30 seconds
Or 3 seconds for 10 Gig. or 0.3 seconds for 100 Gig....

SuggestedRemedy

Don't know exactly what we are attempting to accomplish. But, this is probably not doing it.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

With the window's upper bound defined as one minute, the size of the window should at least accommodate gigabit speeds. Current 32-bit counter is only adequate for ~34 seconds.

Window will be expanded to 64-bits.

Cl **57** *SC* **57.5.2** *P* **117** *L* **20** # **783**

Squire, Matt Hatteras Networks

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

Define frame error.

SuggestedRemedy

Define what constitutes a frame error (CRC? frame too big? frame too small? etc.).

Proposed Response *Response Status* **C**

ACCEPT.

The status receiveOK found in Figure 4-4b will be leveraged.

Cl **57** *SC* **57.5.4** *P* **118** *L* **14** # **782**

Squire, Matt Hatteras Networks

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

Define Errored Second.

SuggestedRemedy

Add sentence: An errored frame second is a one second interval wherein at least one frame error has occurred.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.5.4** *P* **118** *L* **21** # **301**

Ken, Murakami Mitsubishi Electric

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

It is described that the Errored_Frame_Seconds_Window is indicated in terms of seconds. However, in Table 57-3, it is described that this window is conveyed in 100ms intervals.

SuggestedRemedy

This inconsistency should be corrected.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text in 57.5.4 will be changed from "seconds" to "100ms intervals".

Cl **57** *SC* **57.5.4** *P* **118** *L* **25** # **621**

Martin, David Nortel Networks

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

Increase upper bound of Errored_Frame_Seconds_Window to 15 minutes to align with the minimum binning period typical of transmission equipment, to facilitate the OLT design.

SuggestedRemedy

Increase the Errored_Frame_Seconds_Window upper bound from 600 sec to 900 sec.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **57** *SC* **57.7.3** *P* **121** *L* **39** # **887**

Gerhardt, Floyd Cisco Systems

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

The 4th octet of the Data/Pad field has the incorrect value in the text next to the octet example.

SuggestedRemedy

value = 0x02 - MSB

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

And the "Eagle Eye" award goes to Floyd.

The octet pattern will be changed to "1000 0000".

Cl **57** *SC* **57.8** *P* **122** *L* **51** # **943**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
Subclause 57.8 should not be required for OAM.

SuggestedRemedy
Delete subclause 57.8

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.9** *P* **123** *L* **01** # **105**
Braga, Aldobino UNH-IOL

Comment Type **E** *Comment Status* **A**
replace PICS with PICS in document braga_oam_1_0303.pdf

SuggestedRemedy
replace PICS with PICS in document braga_oam_1_0303.pdf

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **57.9.3.2** *P* **125** *L* **21** # **881**
Daines, Kevin World Wide Packets

Comment Type **T** *Comment Status* **A**
With removal of loopback timer, several PICS changes are needed.

SuggestedRemedy
Change "non-zero loopback time" to "start loopback code" on lines 21 and 26.
Remove LTE1 and LTE2 altogether.
Change "loopback timer equal to zero" to "end loopback code" on lines 42 and 49.
Remove "loopback timer equal to zero and " from line 44.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **Figure 57-5** *P* **110** *L* **45** # **565**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
For the exit from state CHECK_LINK_STATUS to state TX_DATA, the check for local_unidirectional should be for "local_unidirectional=TRUE" rather than false.

For the exit from state CHECK_LINK_STATUS to state DISCARD, the check for local_unidirectional should be for "local_unidirectional=FALSE" rather than TRUE.

SuggestedRemedy
Verify and change as above.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment #545. New text better describing the reasons for adding local_unidirectional to the equations will resolve this.

Cl **57** *SC* **Table 57-5** *P* **113** *L* **8** # **5701**
OAM STF

Comment Type **T** *Comment Status* **A**
Two registration authorities should not be supported.

SuggestedRemedy
Remove IANA (0xFE) Vendor Specific OAMPDU Code.

Change 0xFF to 0xFE.

Leave 0xFF open as an "escape Code".

Remove Vendor Specific (now in 0xFE). Essentially, rename this OAMPDU as "OUI".

Change description column to read "Reserved for extensions distinguished by OUI".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **57** *SC* **Table 57-6** *P* **114** *L* **17** # **212**
Finn, Norman Cisco Systems

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

"Reserved and undefined" is vague, and can lead to future interoperability problems. "Must not be sent" is better on the transmission side. On the receive side, we must decide what to do. Do you ignore it? Is the packet invalid and ignored entirely? What?

SuggestedRemedy

Change "Reserved and undefined" to "Must not be sent". Ignore any packet received with this value set.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Edits will be made: "Shall not be sent" per style guide.

Cl **57** *SC* **Table 57-7** *P* **114** *L* **35** # **214**
Finn, Norman Cisco Systems

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

"Should"s must be "must"s. Same for table 57-8 and same for everywhere else. Otherwise, you will not have interoperability in the future. This is the spec for rev 1. Rev 2 may change these musts. But, unless they are MUSTs instead of SHOULDs, you can never make use of these bits in the future.

SuggestedRemedy

Reserved fields MUST be transmitted as 0, and MUST be ignored on receipt.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

From the 2000 edition of the IEEE Standards Style Manual, section 13.1:

"The use of the word must is deprecated and shall not be used when stating mandatory requirements;"

Suggested remedy will be amended per style manual.

Cl **57** *SC* **Table 57-9** *P* **115** *L* **18** # **215**
Finn, Norman Cisco Systems

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

Not at all clear what "Vendor Identifier" is for. What's it for??

SuggestedRemedy

Either explain the semantics of what the receiver is supposed to do with this field, or remove it from the document.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

An attribute is being added to Clause 30 to store the remote device's information TLV fields which includes the vendor/device/version identifiers.

Also, the vendor/device/version identifiers provides context and definition for the 0x80-0xFF Event TLV space.

Cl **58** *SC* *P* *L* # **485**
Murphy, Tom Infineon

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

Jitter discussions for Clause 58 await a decision on the clocking architecture of the PON system.

SuggestedRemedy

Need a decision of the larger group regarding EPON clock/timing structure

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Input on this topic is encouraged for upcoming meetings. This isssue was discussed in a combined session with the following points raised.

1) A loop timing system would require definition of a jitter transfer function. This would be the more 'efficient' approach

2) A free running ONU would require allocation in the protocol for phase difference between signals. For this system, the jitter figures up and downstream would be very similar (with the exception of allowances for upstream burst-mode considerations)

3) No feeling as to 'best approach'

Cl **58** *SC* **1.0** *P* **130** *L* **4** # **802**
John George OFS

Comment Type **E** *Comment Status* **A**
The overview should clearly state that this clause defines the PMDs for passive optical networks (PONs)

SuggestedRemedy
Change "over fibers " to "over passive optical networks (PONs)"

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **1.1** *P* **130** *L* **44** # **803**
John George OFS

Comment Type **E** *Comment Status* **A**
In Table 58.1, distances should be stated as minimums to meet objectives

SuggestedRemedy
Change "Nominal Distance" to "Minimum Distance"

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **1.3** *P* **131** *L* **26** # **804**
John George OFS

Comment Type **E** *Comment Status* **A**
PON acronym missing from terminology and conventions

SuggestedRemedy
add "PON - Passive Optical Network"

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58** *P* **129** *L* **1** # **410**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Naming*
The title is a mouthful!

SuggestedRemedy
I suggest:
Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-PX10 and 1000BASE-PX20 (long wavelength passive optical networks)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58** *P* **133** *L* **6** # **596**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A** *MDIO*
It would be nice to have a subclause called "PMD MDIO functional mapping" similar to Clause 60.

SuggestedRemedy
Copy or reference "Clause 60.2 PMD MDIO functional mapping".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Copy the text from 60.2

Cl **58** *SC* **58.1** *P* **130** *L* **10** # **430**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Table 58.1*
We can get more value out of table 1, which is an orphan at present. We can put more information up front where the reader wants it, and cut out clutter later.

SuggestedRemedy
At line 10, add sentence:
Table 58-1 shows the primary attributes of each PMD type.
In the table, change 'Nominal distance' to 'Minimum range', values 0.5 m to 10 km and 0.5 m to 20 km as appropriate.
Add rows for minimum and maximum channel insertion loss
In 58.3 and 58.4, refer to Table 58-1 instead of 58-6 and 58-10, and delete those mini-tables.
In 58.10, line 31, change to 'The channel insertion losses are given in Table 58-1.' (current sentence is wrong).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Change will be made as appropriate. Further comments address changes to this table

Cl **58** *SC* **58.1** *P* **130** *L* **11** # **3**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A** *Table 58.1*
A pointer is needed to Table 58-1

SuggestedRemedy
Add a sentence after the paragraph to read: "Table 58-1 shows the primary attributes of each PMD type."

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.1** *P* **130** *L* **36** # **4**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A** *Naming*
Mystery "From" in Table header.

SuggestedRemedy
Delete "From" in Table 58-1 (four places).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Remove 'from' change to 'nominal transmit wavelength'. Add further row to table with the transmit direction

Cl **58** *SC* **58.1** *P* **130** *L* **44** # **5**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*
Incorrect descriptor in Table 58-1.

SuggestedRemedy
Change "Nominal distance" to "Minimum range"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.1** *P* **130** *L* **44** # **6**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*
Minimum range format incorrect.

SuggestedRemedy
Use the format "0.5m to 10km" two places and "0.5m to 20km" two places in Table 58-1.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.1** *P* **130** *L* **45** # **7**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*
An additional attribute is needed in Table 58-1.

SuggestedRemedy
Add another row to Table 58-1: "Maximum channel insertion loss (a)" with entries "20, 19.5, 25, 24.5, dB" respectively. Footnote to read: "At the nominal operating wavelength."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Note, comment 415 has changed the channel insertion loss values

Cl **58** *SC* **58.1** *P* **130** *L* **46** # **80**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A** *Table 58.1*
Clarification to harmonize with Clause 60.

SuggestedRemedy
Add the following text after Table 58-1: "A 1000BASE-PX10 link uses a 1000BASE-PX10-U PMD at one end and a 1000BASE-PX10-D PMD at the other. A 1000BASE-PX20 link uses a 1000BASE-PX20-U PMD at one end and a 1000BASE-PX20-D PMD at the other. Typically, the 1550nm band is used to transmit away from the center of the network ("downstream") and the 1310 nm band towards the center ("upstream"), although this arrangement or notion of hierarchy, is not required."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Need to use the appropriate wavelengths (1490 nm). Remove the text "although this arrangement or notion of hierarchy, is not required.""

See resolution to 383

Cl **58** *SC* **58.1** *P* **130** *L* **46** # **412**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**
Need more introduction.

SuggestedRemedy
Insert sentence:
In an Ethernet passive optical network, a single "D" PMD breadcasts to a number of "U" PMDs and receives bursts from each "U" PMD over a single mode fiber network of branching topology. The same fibers are used in both directions.

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.1** *P* **130** *L* **7** # **411**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A** *MDIO*

Sentence needs redrafting: MDIO is always optional. Remedy is similar to Cl.52 and 60. 1000BASE-X PCS)and PMA are both in 36. Note other minor editorial changes in the remedy.

SuggestedRemedy

Revised sentence:
In order to form a complete physical layer, a PMD shall be integrated with the 1000BASE-X PCS and PMA of Clause 36, and optionally integrated with the management functions which may be accessible through the management interface
defined in Clause [22*ref* or 45*ref*], which are hereby incorporated by reference.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change will be made as appropriate

Cl **58** *SC* **58.1** *P* **130** *L* **7** # **1**

Swanson, Steven

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

Incomplete reference

SuggestedRemedy

Change "...Clause xx..." to "...Clause 36...'

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.1** *P* **130** *L* **8** # **2**

Swanson, Steven — Corning Incorporated

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

Incomplete reference.

SuggestedRemedy

Change "...Clause xx..." to "...Clause 22..."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.1.4** *P* **131** *L* **42** # **470**

TAKESHI, KOMIYA — MITSUBISHI ELECTRIC

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

missing

SuggestedRemedy

Modify "100BASE-PX10" into "1000BASE-PX10" and Modify"100BASE-PX20" into "1000BASE-PX20".

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.1.4** *P* **131** *L* **42** # **567**

Tom Mathey — Independent

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

Copy/Paste

SuggestedRemedy

100BASE in two places should be 1000BASE as this clause is for 1 Gig.

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.1.4** *P* **131** *L* **54** # **445**
Nojima, Kazuhiro Panasinic Mobile Com

Comment Type **E** *Comment Status* **A** *Primatives*
In the PMD sublayer service interface(58.1.4) descriptions,
"PMD_SIGNAL.request" primitive written in 58.2.5 is not defined.

SuggestedRemedy
Create Subclause "58.1.4.#. PMD_SIGNAL.request".

Add the following text in Subclause 58.1.4.#.

"58.1.4.# PMD_SIGNAL.request
In the upstream, this primitive is generated by the MPCP to give the notice to turn on the laser according to the granted time.

58.1.4.#.1 Semantics of the service primitive
PMD_SIGNAL.indicate(tx_enable)
The tx_enable parameter can take on one of two values:ENABLE or DISABLE,indicating whether the PMD transmitter ON(ENABLE) or OFF (DISABLE).

58.1.4.#.2 When generated
The MPCP generates this primitive to indicate a change in the value of tx_enable."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

A corresponding signal for laser control is generated in Clause 64.3.10.2 and will be documented this clause. A reference from Clause 58 will be included to this text

Cl **58** *SC* **58.1.4.2** *P* **132** *L* **6** # **607**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A**
This subclause should be subclause 58.1.4.1.1 and be under 58.1.4.1. This also applies to subclauses 58.1.4.3 and 5.1.4.4.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.1.4.4** *P* **132** *L* **20** # **413**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Primatives*
Need an entry for PMD_SIGNAL.request(tx_enable).

SuggestedRemedy
Per comment.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Text to be provided

Cl **58** *SC* **58.10** *P* **148** *L* **26** # **423**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**
58.10 and 58.11 are very short and address related issues. They should be brought together

SuggestedRemedy
Insert new level 2 heading 'Fiber optic cabling'. Then the subclauses become
58.10.1 Fiber optic cabling model, and 58.10.2 Characteristics of the fiber optic cabling.

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate. See related comments

Cl **58** *SC* **58.10** *P* **148** *L* **31** # **36**
Swanson, Steven Corning Incorporated

Comment Type **TR** *Comment Status* **A** *Table 58.1*
Incorrect references and normative requiremen needed for channel insertion losses.

SuggestedRemedy
Reword the first sentence to read: "The maximum channel insertion losses shall meet the requirements specified in Table 58-1."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Need to include the channel insertion loss (max) in Table 58-1, also include the min insertion loss in the table 58.1

Cl **58** *SC* **58.10** *P* **148** *L* **32** # **37**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Unneeded reference; 526-14A is a MMF reference and this Clause only specifies SMF.

SuggestedRemedy
Delete "...ANSI/TIA/EIA-526-14A [B14], Method B, and..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.10** *P* **148** *L* **33** # **422**

Dawe, Piers Agilent

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

Only one method, A-1, applies for SMF

SuggestedRemedy

Delete 'ANSI/TIA/EIA-526-14A [B14], method B;'.

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.11** *P* **148** *L* **38** # **34**

Swanson, Steven Corning Incorporated

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

Renumber clauses

SuggestedRemedy

Move current 58.11 Characteristics of fiber optic cabling to 58.10 (ahead of Fiber optic cabling model - see 60.10)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.11** *P* **148** *L* **40** # **35**

Swanson, Steven Corning Incorporated

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

Clarification needed.

SuggestedRemedy

Reword the first sentence to read: "The 1000BASE-PX fiber optic cabling shall meet the specifications defined in IEC 60793-2 and ITU-T G.652. They are shown in Table 58-17 for information only."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by comment 71

Cl **58** *SC* **58.11.1** *P* **148** *L* **47** # **38**

Swanson, Steven Corning Incorporated

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

Clarification of references.

SuggestedRemedy

Reword to read: "The fiber cable requirements are satisfied by the fibers specified in IEC 60793-2 Type B1.1 (dispersion un-shifted single mode) and B1.3 (low water peak single mode) and ITU-T G.652 as noted in Table 58-17."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved comment 71

Cl **58** *SC* **58.11.2** *P* **148** *L* **54** # **39**

Swanson, Steven Corning Incorporated

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

Consolidation of clauses and clarification of requirements needed.

SuggestedRemedy

After the current text, add the following:

"The maximum link distances for single mode fiber are calculated based on the allocation of 2 dB total connection and splice loss.

The maximum discrete reflectance for single mode connections shall be less than -26 dB."

Delete "58.11.2.1 Connection insertion loss"

Delete "58.11.2.2 Maximum discrete reflectance"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Include the second sentence of note a, table 58-14 (omit also) and point to table 58-14

Cl **58** *SC* **58.11.2.2** *P* **149** *L* **1** # **424**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Link Budget*

Suggested text:

SuggestedRemedy

The link attenuations have been calculated on the assumption of 14.5 dB for a 16:1 splitter; 3.5, 4, 7.5 or 8 dB (at the appropriate measurement wavelength) for fibre cable attenuation and 1.5 dB for connectors and splices. For example, this allocation supports three connections with an average insertion loss equal to 0.5dB (or less) per connection, or two connections with a maximum insertion loss of 0.75dB. Other arrangements, such as a shorter link length and a higher split ratio in the case of 1000BASE-PX20, may be used provided the requirements of Table 58–1 are met.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The ad-hoc will re-examine the epsilon values so as to align the dispersion penalties to the calculated penalty allocations.

Cl **58** *SC* **58.11.3** *P* **150** *L* **5** # **40**
Swanson, Steven Corning Incorporated

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

Incomplete text.

SuggestedRemedy

Add text; see 59.11.3 for sample text.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **58** *SC* **58.11.3** *P* **150** *L* **6** # **425**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *ATTN*

Suggested text:

SuggestedRemedy

The 1000BASE-PX10 or 1000BASE-PX20 PMDs are coupled to the fiber cabling at the MDI. The MDI is the interface between the PMD and the "fiber optic cabling" as shown in Figure 58–5. Examples of an MDI include
(a) Connectorized fiber pigtail
(b) PMD receptacle
When the MDI is a remateable connection, it shall meet the interface performance specifications of IEC 61753-1-1, Fibre optic interconnecting devices and passive component performance standard - Part 1-1:
General and guidance interconnecting devices (connectors).
NOTE: Compliance testing is performed at TP2 and TP3, not at the MDI.

Then you have to show connectors in the figure!

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Show which connectors

Cl **58** *SC* **58.12** *P* **151** *L* **1** # **426**
Dawe, Piers Agilent

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

Various editorial in PICS.

SuggestedRemedy

line 1 Shorten title in step with clause title
line 13 YY is 21
line 17 No text
line 21 and 26 copy from 59 or 60
p 152 line 5 58.12.4.6 Delete
line 12 add two more: 'Environmental' and 'Fiber optic cabling'

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.12** *P* **151** *L* **1** # **836**
Lynskey, Eric UNH-IOL

Comment Type **E** *Comment Status* **A** *PICS*
Please use attached file as starting point for PICS.

SuggestedRemedy
See attached PDF and FrameMaker files.

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.2.1** *P* **133** *L* # **486**
Murphy, Tom Infineon

Comment Type **E** *Comment Status* **A** *Block Diagram*
Need PMD block diagram

SuggestedRemedy
Generate Optical PMD diagram based on Fig 58-5 and 59-2

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See Figure 52-2 for better representations of connectors and electrical connections

Cl **58** *SC* **58.2.1** *P* **133** *L* **15** # **9**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Block Diagram*
Clarification in line one and missing figure for block diagram.

SuggestedRemedy
Reword the first sentence to read: "For purposes of system conformance, the PMD sublayer is standardized at the points shown in Figure 58-2."

Add a Figure 58-2 showing the block diagram.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See resolution to 486. Common to all clauses

Cl **58** *SC* **58.2.1** *P* **133** *L* **16** # **8**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Clarification needed.

SuggestedRemedy
Replace "...of a type consistent..." with "...of a fiber type consistent..."

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate Change in all clauses

Cl **58** *SC* **58.2.2** *P* **133** *L* **30** # **414**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Primatives*
Need to explain that in one direction (upstream, "U" PMD transmitting), the flow of bits is interrupted according to PMD_SIGNAL.request(tx_enable). There are now basically three optical levels, 1, 0 and dark. I doubt there is a need for the 4th level subheadings.

SuggestedRemedy
Per comment.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.2.2.1** *P* **133** *L* **34** # **10**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R** *Measurement*
Is this subclause needed?

SuggestedRemedy
Delete 58.2.2.1

Proposed Response *Response Status* **C**
REJECT.

This section will remain until the next draft as no resolution has been reached upon burstmode measurement and this subclause may be needed

Cl **58** *SC* **58.2.2.2** *P* **133** *L* **38** # **11**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R** *Measurement*
Is this subclause needed?

SuggestedRemedy
Delete 58.2.2.2

Proposed Response *Response Status* **C**
REJECT.

This section will remain until the next draft as no resolution has been reached upon burstmode measurement and this subclause may be needed

Cl **58** *SC* **58.2.3.2** *P* **133** *L* **52** # **13**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R** *Measurement*
Is this subclause needed?

SuggestedRemedy
Delete 58.2.3.2

Proposed Response *Response Status* **C**
REJECT.

This section will remain until the next draft as no resolution has been reached upon burstmode measurement and this subclause may be needed

Cl **58** *SC* **58.2.4** *P* **134** *L* # **477**
Murphy, Tom Infineon

Comment Type **E** *Comment Status* **A** *SD*
Repetition of signal detect tables

SuggestedRemedy
Combine the SD tables and text into single section

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. The reviewer believes that the four tables can readily be reduced to two: one each for D and U ends; but these need different lower limits. This could be further reduced by adding a signal detect lower limit row to each receiver table, or adding more rows and columns to a single SD table. 'compliant 1000BASE-X signal input' is too wide and needs to be restricted to the signal concerned in each case. Please make the tables full width and remove any carriage returns within them.

Note other relevant comments affecting these tables.

Cl **58** *SC* **58.2.4** *P* **134** *L* **1** # **429**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *SD*
Some Tx off powers are -39 dBm in this clause. The SD lower limit must match.

SuggestedRemedy
If some Tx off powers remain at -39 dBm, change the appropriate SD lower limits to match.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Addressed in comment 14

Cl **58** *SC* **58.2.4.1** *P* **134** *L* **10** # **609**
Radcliffe, Jerry Hatteras Networks

Comment Type **T** *Comment Status* **D** *SD*
The text states that the signal detect function does not need to determine if the signal is compliant. However, the referenced tables (58-3 and 58-5) require that the signal be compliant.

SuggestedRemedy
Remove the compliance requirement from tables 58-3 and 58-5.

Proposed Response *Response Status* **Z**
WITHDRAWN.

Cl **58** *SC* **58.2.4.2** *P* **134** *L* **15** # **475**
Yanagisawa, Hiroki NEC Corporation

Comment Type **T** *Comment Status* **R** *SD*
The current statement for the PMD Signal Detect function for the burst mode (upstream) is ambiguous. It is unclear whether the Signal Detect for upstream is indispensable to PMD layer.

SuggestedRemedy
Remove the Signal Detect function for the burst mode (upstream) from PMD layer. It should be defined in upper layer.

Proposed Response *Response Status* **C**
REJECT.

This comment is resolved by # 465

Cl **58** *SC* **58.2.4.2** *P* **134** *L* **15** # **608**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A**
Change "downstream" to "upstream"

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.2.4.2** *P* **134** *L* **20** # **610**
Radcliffe, Jerry Hatteras Networks

Comment Type **T** *Comment Status* **D** *SD*
The text states that the signal detect function does not need to determine if the signal is compliant. However, the referenced tables (58-2 and 58-4) require that the signal be compliant.

SuggestedRemedy
Remove the compliance requirement from tables 58-2 and 58-4.

Proposed Response *Response Status* **Z**
WITHDRAWN.

Cl **58** *SC* **58.2.4.2,58.2.4.3.1,58.2** *P* **134135** *L* **133218** # **465**
TAKESHI, KOMIYA MITSUBISHI ELECTRIC

Comment Type **T** *Comment Status* **R** *SD*
The signal detect in OLT PMD layer is too difficult technique.Instead of the signal detect in OLT PMD layer, apply the CDR lock detect function to the signal detect.

SuggestedRemedy
Delete "58.2.4.2 OLT PMD signal detect(upstream)","58.2.4.3.1 OLT PX10 Signal Detect" and "58.2.4.4.1 "OLT PX20 Signal Detect" ,and define OLT signal detect function in other clause.

Proposed Response *Response Status* **C**
REJECT.

The presence of the upstream PMD level SD was voted upon at the January meeting. SD functions from higher layers (i.e CDR lock, FEC or limiting amplifier) is in part the responsibility of other clauses and may be implementation specific

Cl **58** *SC* **58.2.4.3** *P* **134** *L* **23** # **14**
Swanson, Steven Corning Incorporated

Comment Type **TR** *Comment Status* **A** *SD*
There are inconsistencies in the signal_detect value definitions in Clauses 58, 59, and 60. We should harmonize them.

SuggestedRemedy
combine Tables 58-2, 58-3, 58-4 and 58-5 into a single Table.

Delete underscores in "input_optical_power" four places in each Table.

Clarify whether the requirement is >= receive sensitivity (max) [as noted in Clause 58 and 60] or <= limit in signal detect threshold (min) [as noted in Clause 59]

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. The four tables will be combined to single table, the underscores will be removed. In the downstream link, the value will be changed to -44 dBm.
Will add the SD values to the Rx tables in 58 and include reference in SD tables to this.
Note: Cl 59 and Cl 60 need to be changed to match text of Cl 58.

Cl **58** *SC* **58.3** *P* **135** *L* **52** # **15**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*
Incorrect reference.

SuggestedRemedy
Change "...defined in Table 58-6." to "...defined in Table 58-1."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.3** *P* **136** *L* **17** # **606**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A**
This section address the 10km version. The text discusses the 20km version

SuggestedRemedy
Change the "20.5" to "10.5" on this line and the "20" to "10" in two places on the next line.

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.3** *P* **136** *L* **21** # **16**

Swanson, Steven — Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*

Table 58-6 not needed.

SuggestedRemedy

Delete Table 58-6; information is in Table 58-1.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.3** *P* **137** *L* **8** # **418**

Dawe, Piers — Agilent

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

We should consider using RINxOMA in Clause 58. It is preferable both as a specification metric and as a practical measurement.

SuggestedRemedy

Use RINxOMA in table 58-7 and 58-11. Change 58.8.6 to:
58.8.6 Relative intensity noise optical modulation amplitude (RINxOMA)
RINxOMA is the ratio of noise to modulated optical signal in the presence of a back reflection. The measurement proecure is described in 60.8.7.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Make the change as outlined. Valued tbd

Cl **58** *SC* **58.3** *P* **139** *L* **1** # **415**

Dawe, Piers — Agilent

Comment Type **T** *Comment Status* **A** *Link Budget*

Allocation for penalties is insufficient for PX20 upstream. Also, measurement wavelength is 1550 nm even if operating wavelength is 1480-1500 nm?

The minimum channel loss derived from Tx and Rx tables is 5 dB not 10 dB, but at least for PX20-D we may wish to reduce the max Rx power anyway.

SuggestedRemedy

Change channel insertion losses to 24 dB (1310 nm) and 23.5 dB (1550 nm). Change allocation for penalties to 2 and 2.5 dB.

Sort out PX20 minimum channel loss and PX20-D max Rx power.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Increase the allocations by 1 dB and reduce the CIL by 1 dB. Need to change note c to reflect the true meaning of Allocations. Harmonise note c across clauses
Note: the ad-hoc will re-examine the table values in terms of fibre attenuation
Include editors note pointing to the new insertion loss values
The minimum channel insertion loss values remain the same
Will make the appropriate change regarding the measurement wavelength

---

Cl **58** *SC* **58.3.1** *P* **136** *L* # **480**

Murphy, Tom — Infineon

Comment Type **TR** *Comment Status* **A** *Link Budget*

The distribution of launched power and receiver sensitivity for the power budget of the PON links does not ensure the most cost effective PMD design. (see presentation murphy...). NOTE: The adoption of ER = 6 implies an ER penalty of >1 dB compared to the ER = 9 used in initial calculations

SuggestedRemedy

Reduce the PON sensitivities by 1 dB and increase launched powers accordingly. Make necessary changes to related parameters

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.3.1** *P* **137** *L* # **478**
Murphy, Tom Infineon

Comment Type **T** *Comment Status* **A**
Include the OMA values in dBm and uW in transmitter tables

SuggestedRemedy
See comment

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.3.1** *P* **137** *L* **11** # **450**
Kuniaki, Motoshima Mitsubishi Electric

Comment Type **TR** *Comment Status* **D**
Comment on Laser On/OFF time in case of using ONU's synchronized with OLT:
In case of using ONU's synchronized with OLT, Laser ON/OFF time has a crucial impact on the transmission efficiency of the upstream link, especially for short packets. For example, the transmission efficiency of the shortest packet with 64Byte length is 43 % for Laser ON/OFF time of 600 ns, which can be improved to 84 % for Laser ON/OFF time of 16 ns

SuggestedRemedy
We would like to propose 16 ns Laser ON/OFF time for the system employing ONU's synchronized with OLT. We will submit a cost analysis estimating the difference between LDs with 16 ns and 600 ns Laser ON/OFF time, which concludes there is no cost difference between them.

Proposed Response *Response Status* **Z**
WITHDRAWN.

Cl **58** *SC* **58.3.1** *P* **137** *L* **11** # **451**
Kuniaki, Motoshima Mitsubishi Electric

Comment Type **TR** *Comment Status* **D**
Comment on the maximum power during the Laser ON/OFF time:
So far, there has been no discussion on the transient behavior of the ONU transmitter during the Laser ON/OFF time. In case of the minimum loss between ONU and OLT, it might be possible to give a serious damage to OLT receiver without any regulation on the maximum power of the ONU

SuggestedRemedy
We would like to propose a specification on the maximum power during the Laser ON/OFF time. For example of the specification, we propose +3dBm, which is same as the maximum output power of ONU at the steady state.

Proposed Response *Response Status* **Z**
WITHDRAWN.

Cl **58** *SC* **58.3.1** *P* **137** *L* **19** # **267**
TSUJI, SHINJI SUMITOMO ELECTRIC

Comment Type **E** *Comment Status* **A**
Table 58-7
2 lines are the same.

SuggestedRemedy
Delete one of the line including "Transmitter and dispersion penalty(max)".
Also Table 58-11.

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.3.1.1** *P* **137** *L* **22** # **17**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A** *Attn*
Subclause header is not needed - dangling subclause. Include text on spectral width as part of 58.3.1 Transmitter optical specifications.

SuggestedRemedy
Delete "58.3.1.1 RMS spectral width."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.3.1.1** *P* **137** *L* **25** # **611**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A**
Change "frequency" to "wavelength"

SuggestedRemedy
Change "frequency" to "wavelength"

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.3.2** *P* **139** *L* # **479**
Murphy, Tom Infineon

Comment Type **T** *Comment Status* **A**
Include the OMA values in dBm and uW in receiver tables

SuggestedRemedy
See comment

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.3.2** *P* **139** *L* # **481**
Murphy, Tom Infineon

Comment Type **T** *Comment Status* **A** *ORL*

The PON receiver reflectance values of -20 dB is unnecessarily high and not in line with clauses 59 and 60 and it prohibits certain cost effective free beam optics designs.

SuggestedRemedy

Change the PON receiver reflectance values to -12 dB

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change receiver reflectance limit to -12 dB, add transmitter reflectance specs, also -12 dB.

Add the transmitter reflectance row to 1000BASE-BX Cl 59

Cl **58** *SC* **58.3.2** *P* **139** *L* **12** # **720**
Urricariet, Christian Finisar Corporation

Comment Type **T** *Comment Status* **A** *ORL*

Table 58-9
Receiver Reflectance for 10km PON transceivers is specified at -20 dB. This value would require implementing Physical Contact in the receiver, adding unnecessary cost and complexity. A value of -14 dB would still be adequate.

SuggestedRemedy

Change the value to -14 dB. Performance would still be adequate with this value.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to 481

Cl **58** *SC* **58.4** *P* **138** *L* **39** # **18**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*

Incorrect reference.

SuggestedRemedy

Change "...defined in Table 58-10." to "...defined in Table 58-1."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.4** *P* **139** *L* **37** # **19**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Table 58.1*

Table 58-10 is not needed.

SuggestedRemedy

Delete Table 58-10; information is in Table 58-1.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.4.1** *P* **140** *L* **1** # **20**
Swanson, Steven Corning Incorporated

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

Subclause 58.4.1 is the same as 58.3.1; should we distinguish between PX10 and PX20?

SuggestedRemedy

Change 58.4.1 to read "1000BASE-PX20 transmit optical specifications"

Note: If accepted, change 58.3.1 to read "1000BASE-PX10 transmit optical specifications"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **58** *SC* **58.4.1** *P* **140** *L* **20** # **717**
Urricariet, Christian Finisar Corporation

Comment Type **T** *Comment Status* **R** *Link Budget*

Table 58-11
A minimum launch power requirement of +1 dBm for 1000BASE-PX20-D is too high and will have an impact on laser reliability across the operating temperature range. This would impact manufacturing yield, which would of course increase transceiver cost.

SuggestedRemedy

Change the minimum launch power requirement for 1000BASE-PX20-D in Table 58-11 to 0 dBm. The optical budget can still remain the same if the receiver sensitivity in Table 58-13 is increased from -28 dBm to -29 dBm. This increase can easily be supported by the APD receiver at 1.25Gb/s.

Proposed Response *Response Status* **C**

REJECT. There was a vote two meetings ago to reduce the PX-20 sensitivity from -29 dBm to -28 dBm. Other comments address launched power issues

Cl **58** *SC* **58.4.1** *P* **140** *L* **22** # **741**
Bemmel, Vincent Alloptic

Comment Type **T** *Comment Status* **R** *Link Budget*

Table 58-11 - Extinction Ratio (min) of 6 dB would reduce the sensitivity at the other end by 1.5 dB. This penalty is worse for an APD detector.

SuggestedRemedy

Change the extinction ratio (min) to 9 dB

Proposed Response *Response Status* **C**

REJECT. The value of ER = 6 dB has been voted on several times at meetings. However, launched powers and OMA values are to be discussed at the meeting

Cl **58** *SC* **58.4.1** *P* **140** *L* **27** # **288**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **R** *Laser on/off*

It appears that there is more than 75%-consesus that 256 ns Ton/Toff times are achievable without major circuit redesign.

SuggestedRemedy

1. Change the Ton(max) to 256 ns (16 TQ)
2. Change the Toff(max) to 256 ns (16 TQ)

Proposed Response *Response Status* **C**

REJECT.

The value of 600 ns was adopted in January. Comment # 287 reduced this to 512 ns in line with the protocol requirements.

Cl **58** *SC* **58.4.1** *P* **140** *L* **27** # **287**
Glen Kramer Teknovus

Comment Type **TR** *Comment Status* **A** *Laser on/off*

MPCP protocol uses time quanta = 16ns. 600 ns Ton/Toff times equates 37.5 time quantas.

SuggestedRemedy

1. Change the Ton(max) to 512 ns (32 TQ)
2. Change the Toff(max) to 512 ns (32 TQ)

Proposed Response *Response Status* **C**

ACCEPT.

Value to be changed acording to comment

Cl **58** *SC* **58.4.1.1** *P* **140** *L* # **482**
Murphy, Tom Infineon

Comment Type **T** *Comment Status* **A** *Link Budget*

There is a discrepancy between allocated power budget and spectral curve calculations

SuggestedRemedy

Need to re-examine the Penalty allocations and the associated wording of these sections

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 424 for resolution

Cl **58** *SC* **58.4.1.1** *P* **140** *L* **39** # **21**
Swanson, Steven Corning Incorporated

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

Subclause is not needed.

SuggestedRemedy

Delete 58.4.1.1 RMS spectral width and include text as part of 58.4.1.

Proposed Response *Response Status* **C**

ACCEPT. see comment 17

Cl **58** *SC* **58.4.2** *P* **142** *L* **37** # **718**
Urricariet, Christian Finisar Corporation

Comment Type **T** *Comment Status* **R** *Link Budget*

Table 58-13
The receiver sensitivity for 1000BASE-PX20-D needs to be increased from -28 dBm to -29 dBm, in order to maintain the link budget at 29 dB if the minimum launch power is decreased from +1 dBm to 0 dBm, as suggested in my Comment #1.

SuggestedRemedy

Change the receiver sensitivity for 1000BASE-PX20-D in Table 58-13 needs to be increased from -28 dBm to -29 dBm.

Proposed Response *Response Status* **C**

REJECT. There was a vote two meetings ago to reduce the PX-20 sensitivity from -29 dBm to -28 dBm. Other comments address launched power issues

Cl **58** *SC* **58.4.2** *P* **142** *L* **38** # **721**

Urricariet, Christian — Finisar Corporation

Comment Type **T** *Comment Status* **A** *ORL*

Table 58-13

Receiver Reflectance for 20km PON transceivers is specified at -20 dB. This value would require implementing Physical Contact in the receiver, adding unnecessary cost and complexity. A value of -14 dB would still be adequate.

SuggestedRemedy

Change the value to -14 dB. Performance would still be adequate with this value.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to 481

Cl **58** *SC* **58.5** *P* **143** *L* **10** # **22**

Swanson, Steven — Corning Incorporated

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

Table formatting.

SuggestedRemedy

Merge cells in 6 places.

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.5** *P* **143** *L* **23** # **416**

Dawe, Piers — Agilent

Comment Type **E** *Comment Status* **A** *Attn*

Need max optical power for damage spec.

SuggestedRemedy

Add row to table 58-9 and 58-13 following clause 52 10GBASE-E.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add row to each receiver table (Clause 58) for Optical power (max) for damage threshold. Values are the maximum Tx values. Clause 59 and 60 to include footnote to Rx tables as in 52.9

Cl **58** *SC* **58.5** *P* **143** *L* **26** # **612**

Radcliffe, Jerry — Hatteras Networks

Comment Type **E** *Comment Status* **A** *Link Budget*

In Table 58-14 a number of link penalty numbers are used. They all refer back to clause 58.8.1 where only 2dB is mentioned, a value not in the table. The bridge between the numbers and the spectral properties needs to be filled.

As this is an informative clause, this comment is editorial.

SuggestedRemedy

Expand 58.8.1 for more information on epsilon to penalty relationship.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comments 415 and 424

Cl **58** *SC* **58.6** *P* **143** *L* # **484**

Murphy, Tom — Infineon

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

Jitter specifications for PON may be spit into upstream and downstream. A starting point for downstream values (CW operation) would be to use the 1000BASE-BX values

SuggestedRemedy

Split sections 58.7 and 58.8 to include upstream and downstream. For both -PX10 and -PX20 downstream tables, use the values from Table 59-9

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The sections and tables will be split as suggested. The values of Cl 59 will be included ifor the downstream link after resolution of comment 395

Note: In the measurement section, the point may need to be made tests with FEC are at BER 10^-4 rather then BER 10^-12

Cl **58** *SC* **58.6** *P* **144** *L* **1** # **23**

Swanson, Steven — Corning Incorporated

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

Incomplete jitter budgets.

SuggestedRemedy

Complete Tables 58-15 and 58-16.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Comment resolved by #484

Cl **58** *SC* **58.6** *P* **144** *L* **5** # **722**
Urricariet, Christian Finisar Corporation

Comment Type **E** *Comment Status* **A**
Table 58-15
Units for Total Jitter should be "UI" instead of "U1".

SuggestedRemedy
Change units to "UI".

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.7** *P* **143** *L* **45** # **417**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Jitter*
I think the jitter will be different between upstream and downstream, not PX10 and PX20. In either case would expect very little distortion between TP2 and TP3 hence no change in DJ; however, MPN will add RJ upstream, and burst effects will add DJ, particularly from TP3 to TP4. It may be that better performance than clause 38 is needed at TP1 and TP4. The downstream jitter would be similar to 1000BASE-BX10 on SMF. These subclauses are informative so they don't contain specifications.

SuggestedRemedy
Combine the subclauses into one, 'Jitter at TP1-4 for 1000BASE-PX10 and 1000BASE-PX20 (informative)'.

'The entries in Table 58–15 and Table 58–16 represent high-frequency jitter (above 637 kHz) and do not include low frequency jitter or wander. They are two sided (peak-to-peak) measures. Table 58–15 applies to the downstream direction (D to U) while Table 58–16 applies to the upstream direction (U to D). All values are informative.'

'Table 58-15, 1000BASE-PX10 and 1000BASE-PX20 downstream jitter budget (informative)'
Rows TP1, TP3, TP3 to TP4 and TP4: as clause 38. Row TP2: same as DJ row TP3. Row TP2 to TP3: DJ 0. Remaining cells by calculation from others. These are the same suggestions as I have made for 1000BASE-BX10 and may need revision in future.

'Table 59-10, 1000BASE-PX10 and 1000BASE-PX20 upstream jitter budget (informative)'

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Will add the suggested text. Sections will be combined as per comment 484. Values for downstream will be adopted as per resolved 1000BASE-BX values from Cl59. Upstream values are tbd

Cl **58** *SC* **58.7** *P* **144** *L* **24** # **723**
Urricariet, Christian Finisar Corporation

Comment Type **E** *Comment Status* **A**
Table 58-16
Units for Total Jitter should be "UI" instead of "U1".

SuggestedRemedy
Change units to "UI".

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.8.1** *P* **144** *L* **43** # **24**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Notes incorrectly numbered.

SuggestedRemedy
Two notes are presented; label the first "Note 1" and the second "Note 2"

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Common to 59

Cl **58** *SC* **58.8.1** *P* **144** *L* **53** # **25**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R**
Clarification of intent.

SuggestedRemedy
Change "...imposed by the middle column..." to "...imposed by column 2..."

Proposed Response *Response Status* **C**
REJECT. Decission of last meeting was to adopt "middle column" terminology

Cl **58** *SC* **58.8.10** *P* **146** *L* **52** # **29**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Measurement*
Incomplete clause

SuggestedRemedy
Define receive sensitivity measurements.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Will have a single section describing receive sensitivity measurment, copied from 59.8.10. Another part of Cl 58 will describe how to make this measurement in burstmode

Cl **58** *SC* **58.8.10** *P* **146** *L* **54** # **428**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Rise/Fall*
Suggested text

SuggestedRemedy
The receiver sensitivity shall meet the specifications of Table 58-9 or 58-13 with a test pattern {choose}. This pattern is designed to test the receiver's clock recovery. The measurement procedure is further described in 60.8.10. In the case of the burst mode "D" receiver, ...

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Choice of pattern and further text will be provided by the ad-hoc

Cl **58** *SC* **58.8.11** *P* **147** *L* **7** # **31**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"*ref*60.7.11..." should read "See *ref*60.8.11..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.8.12** *P* **147** *L* **12** # **447**
Nojima, Kazuhiro Panasinic Mobile Com

Comment Type **E** *Comment Status* **A**
1000BASE-PX PMDs don't specify the 100Mbps transmission.
And Signal speed is 1.25Gbps.

SuggestedRemedy
Modify "100Mbps and 1000Mbps" into "1.25Gbps"

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.8.13** *P* **147** *L* **14** # **32**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R** *Measurement*
Unneeded clause.

SuggestedRemedy
Delete "58.8.13 OTHER MEASUREMENT"

Proposed Response *Response Status* **C**
REJECT. Will keep this sectin which may in future contain measurements relevant to burst-mode

Cl **58** *SC* **58.8.13** *P* **147** *L* **16** # **421**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Measurement*
More tests needed for burst mode.

SuggestedRemedy
Add subclauses for transmitter switch-on time, transmitter switch-off time and receiver recovery time.

Proposed Response *Response Status* **C**
ACCEPT.

The subclauses will be added. Details of measurement procedures need to be discussed

Cl **58** *SC* **58.8.3** *P* **145** *L* **14** # **419**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Measurement*
The idle pattern is not the one in A36.2, nor is it a data pattern.

SuggestedRemedy
'... node transmitting a repeating I2 idle pattern.'

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **58.8.5** *P* **145** *L* **26** # **26**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"*ref* Clause 60.7.6..." should read "*ref* Clause 60.8.6..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.8.7** *P* **146** *L* **10** # **27**
Swanson, Steven Corning Incorporated

Comment Type **TR** *Comment Status* **A** *Jitter*
Transmitter eye mask not defined.

SuggestedRemedy
complete Figure 58-4.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Will used the revised Cl 59 eye mask for the downstream link, figure values now in the table. The upstream eyemask will remain tbd

Cl **58** *SC* **58.8.8** *P* **146** *L* **38** # **28**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **R** *Rise/Fall*
Incomplete clause.

SuggestedRemedy
Define transmit rise/fall characteristics.

Proposed Response *Response Status* **C**
REJECT.

Other comments have deleted the subclause

Cl **58** *SC* **58.8.8** *P* **146** *L* **38** # **613**
Radcliffe, Jerry Hatteras Networks

Comment Type **T** *Comment Status* **A** *Rise/Fall*
This clause references rise and fall time measuremets. As these are not required for this PMD the clause should be eleminated

SuggestedRemedy
Remove clause 58.8.8

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Change will be made as appropriate. See other related comments

Cl **58** *SC* **58.8.8** *P* **146** *L* **38** # **420**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Rise/Fall*
As an all-SMF PMD clause, we don't have a risetime spec here so we don't need a test subclause for it.

SuggestedRemedy
Delete 58.8.8.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.8.9** *P* **146** *L* **45** # **446**
Nojima, Kazuhiro Panasinic Mobile Com

Comment Type **E** *Comment Status* **A** *Attn*
1000BASE-PX PMDs don't specify to adopt the multimode fiber.

SuggestedRemedy
Delete the expression "for transmitter impairments with modal(not chromatic) dispersion effects for a transmiter to be used with multimode fiber".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See 60.8.9 for fix to this text.

Cl **58** *SC* **58.8.9** *P* **146** *L* **49** # **30**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"See *ref*60.7.9..." should read "See *ref*60.8.9..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **58** *SC* **58.9.2** *P* **147** *L* **27** # **449**
Nojima, Kazuhiro Panasinic Mobile Com

Comment Type **E** *Comment Status* **A** *Attn*
According to laser classifications , class 1 laser is specified as up to about 0.4 uW output. But the maximum output power specified in 1000BASE-PX is 6dBm(1000BASE-PX-20-D).

SuggestedRemedy
Modify "Class1" into "Class3A".

Proposed Response *Response Status* **C**
WITHDRAWN.

Comment withdrawn as per e-mail to editor

Cl **58** *SC* **58.9.2** *P* **147** *L* **27** # **448**
Nojima, Kazuhiro Panasinic Mobile Com

Comment Type **E** *Comment Status* **A**
mistake

SuggestedRemedy
Modify "1000BASE-X" into "1000BASE-PX".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Comment resolved by another comment whihc changes this text

Cl **58** *SC* **58.9.2** *P* **147** *L* **27** # **404**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**
As Class 1 is (now) a part of IEC 60825, this paragraph can be tidied up and brought into line with 52, 53 and 60.

SuggestedRemedy
Modify to: the first paragraph with:
1000BASE-LX10 and 1000BASE-BX10 optical transceivers shall conform to Class 1 laser requirements as defined in IEC 60825-1, under any condition of operation. This includes single fault conditions whether coupled into a fiber or out of an open bore.
Then join the second, one-sentence paragraph onto this one.

Modify the PICS to follow.

Apply to 59.9.2 also.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. The changes will be made to 58 using the correct indicators for the PMD types

Cl **58** *SC* **58.9.5** *P* **147** *L* # **483**
Murphy, Tom Infineon

Comment Type **E** *Comment Status* **A** *Labelling*
Combine labelling requirements into single piece of text

SuggestedRemedy
See comment

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. see comment 427, group with 33 also

Cl **58** *SC* **58.9.5** *P* **147** *L* **49** # **614**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A** *Labelling*
Do we really need this labeling section? Clause 38.9 has similar requirements and I do not recall ever having seen them followed, other than the laser safety labels.

SuggestedRemedy
Eleminate clause 58.9.5. Alternately, use clause 59.9.5 as a model

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Change will be made as appropriate, see other comments proposing combining labling requirements to single piece of text

Cl **58** *SC* **58.9.5** *P* **147** *L* **51** # **427**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Labelling*

I think the label can as well have the full PMD identification as most of it; and this list approach is a long-winded way of saying it anyway.

SuggestedRemedy

Replace p147 line 51 to p148 line 21 with 'It is recommended that each PHY (and supporting documentation) be labeled in a manner visible to the user, with at least the applicable safety warnings and the applicable port type designation (e.g., 1000BASE-PX10-U).

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate. See other comments related to labling

---

Cl **58** *SC* **58.9.5** *P* **147** *L* **54** # **33**
Swanson, Steven Corning Incorporated

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

Simplification needed.

SuggestedRemedy

Consolidate list of labelling requirements by using an example (see 59.9.5 for text).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. see comment 427

Cl **58** *SC* **58.9.5** *P* **148** *L* **22** # **405**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Labelling*

Following suggestion to label for temperature.

SuggestedRemedy

Add sentence:
It is recommended that either the label or readily available product documentation should specify the conditions of operation including temperature requirements.

Apply to all three optics clauses.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Is it now clear what this label is to be?

Cl **58** *SC* **58.9.9** *P* **190** *L* # **99107**
Diab, Wael William Cisco Systems

Comment Type **TR** *Comment Status* **A** *D1.1 #695*

TDP is the appropriate method for evaluating PMDs. Nonetheless, given the speed of these PMDs and the short-term desire to implement solutions (as expressed in the original proposal presentations), an informative that relates traditional measurement techniques to TDP may help bridge the gap.

SuggestedRemedy

Specify an informative correlation between the TDP measurements and the eye mask and/or the jitter numbers

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Needs more work by the ad-hoc & look at a jitter numbes for TP1/TP2/TP3.

Cl **58** *SC* **58-2** *P* **145** *L* **48** # **969**
Yokomoto, Tetsuya Japan

Comment Type **E** *Comment Status* **A** *Attn*

Missing

SuggestedRemedy

The mark in a polynominal is "+".
And change "transfer function(58-2)" to the same description as ITU-T G957.
"H(p)=(105+105y+45y2+10y3+y4)/105"

Proposed Response *Response Status* **C**

ACCEPT.

Comment relevant to 59

Cl **58** *SC* **58-3** *P* **145** *L* **53** # **970**

Yokomoto, Tetsuya Japan

Comment Type **E** *Comment Status* **A** *Attn*

he definition of OMEGAr needs to be described.

SuggestedRemedy

OMEGAr = 2*PAI*fr

Proposed Response *Response Status* **C**

ACCEPT.

Add OMEGRAr = 2*Pi*fr as third equation

Change to 59

May get correct version in 52.9.7

Cl **58** *SC* **General** *P* *L* **4** # **805**

John George OFS

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

Identifying single mode fiber as "SMF" under headings in tables identified as Fiber Type is redundant. Also, SMF is used as part of multiple trademarks by one of the fiber manufacturers and thus is not an appropriate term to be used in a standard.

SuggestedRemedy

Change "SMF" to "SM" in all cases in which such is described as a fiber type.

Proposed Response *Response Status* **C**

REJECT. SMF used throughout document

Cl **58** *SC* **Table 58-11** *P* **140** *L* **26** # **474**

Yanagisawa, Hiroki NEC Corporation

Comment Type **T** *Comment Status* **A** *Link Budget*

The current extinction ratio of 6dB is a burden to both ONU and OLT receiver. If the extinction ratio could not be changed from 6dB, it would be reasonable to change OMA specification to higher number to reduce sensitivity penalty.

SuggestedRemedy

Change Launce OMA(min) to keep the minimum amplitude equivalent to 9dB extinction ratio.
The specific changes are:
1000BASE-PX10-D from 1.51mW to 1.95mW
1000BASE-PX10-U from 0.76mW to 0.98mW

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The value of ER = 6 dB has been voted on several times at meetings. However, comment 480 has increased the OMA min

Cl **58** *SC* **Table 58-15** *P* **144** *L* **5** # **597**

Jonsson, Ulf Ericsson AB

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

'U1' should be 'UI' in the table

SuggestedRemedy

Change 'U1' to 'UI'. Change this at a few more places throughout Clause 58.

Proposed Response *Response Status* **C**

ACCEPT. Change will be made as appropriate

Cl **58** *SC* **Table 58-7** *P* **137** *L* **10** # **473**

Yanagisawa, Hiroki NEC Corporation

Comment Type **T** *Comment Status* **A** *Link Budget*

The current extinction ratio of 6dB is a burden to both ONU and OLT receiver. If the extinction ratio could not be changed from 6dB, it would be reasonable to change OMA specification to higher number to reduce sensitivity penalty.

SuggestedRemedy

Change Launce OMA(min) to keep the minimum amplitude equivalent to 9dB extinction ratio.
The specific changes are:
1000BASE-PX10-D from 0.48mW to 0.62mW
1000BASE-PX10-U from 0.76mW to 0.98mW

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The value of ER = 6 dB has been voted on several times at meetings. However, comment 480 has increased the OMA min

Cl **58** *SC* **Table 58-7,58-11** *P* **137140** *L* **11132729** # **967**
Yokomoto, Tetsuya Japan

Comment Type **T** *Comment Status* **A** *Measurement*
The definition of Ton/Toff needs to be described.

SuggestedRemedy
The definition of Ton/Toff needs to be described.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Will use Khermosh presentation from January meeting as starting point for definitions

Cl **58** *SC* **Table58-12** *P* **142** *L* **22** # **468**
TAKESHI, KOMIYA MITSUBISHI ELECTRIC

Comment Type **E** *Comment Status* **A**
missing

SuggestedRemedy
Modify "Figure58-2" into "Figure58-3".

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **Table58-15,Table58-1** *P* **144** *L* **524** # **469**
TAKESHI, KOMIYA MITSUBISHI ELECTRIC

Comment Type **E** *Comment Status* **A**
Different item name is used in Table58-15 and Table58-16.

SuggestedRemedy
Please unity item name in table 58-15 and table 58-16."Compliance Point"or"Reference Point".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Tables have changes as a result of other comments

Cl **58** *SC* **Table58-7,Table58-9** *P* **136139** *L* **415** # **466**
TAKESHI, KOMIYA MITSUBISHI ELECTRIC

Comment Type **T** *Comment Status* **A** *Measurement*
Signaling speed range specification is not decided.

SuggestedRemedy
Propose that signaling speed (range) is 1.25+/-100ppm[GBd].

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add editors note that the upstream clock tolerance may need to be widened based on clocking type in PON system

Cl **58** *SC* **Table58-8** *P* **138** *L* **25** # **467**
TAKESHI, KOMIYA MITSUBISHI ELECTRIC

Comment Type **E** *Comment Status* **A**
missing

SuggestedRemedy
Modify "Figure58-1" into "Figure58-2".

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **58** *SC* **TEXT** *P* **134** *L* **15** # **968**
Yokomoto, Tetsuya Japan

Comment Type **E** *Comment Status* **A**
Missing

SuggestedRemedy
Change "downstream" to "upstream".

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **59** *SC* **1** *P* **154** *L* **25** # **808**
John George OFS

Comment Type **E** *Comment Status* **R**
Channel Insertion loss in table 59-1 redundant with channel insertion loss stated in table 59-8

SuggestedRemedy
remove channel insertion loss row from table 59-1

Proposed Response *Response Status* **C**
REJECT.

Values needed in both tables

Cl **59** *SC* **10** *P* **167** *L* **53** # **809**
John George OFS

Comment Type **E** *Comment Status* **A**
referenced tables 59-12 and 59-13 do not exist.

SuggestedRemedy
Change reference to Table 59-8 or create tables 59-12 and 59-13.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Cahnge references to appropriate tables.

Cl **59** *SC* **58.2.3.1** *P* **133** *L* **49** # **12**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R** *Rise/Fall*
Is this subclause needed?

SuggestedRemedy
Delete 58.2.3.1

Proposed Response *Response Status* **C**
REJECT.

This section will remain until the next draft as no resolution has been reached upon burstmode measurement and this subclause may be needed

Cl **59** *SC* **59** *P* **153** *L* **10** # **381**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**
Notes 2 and 4 should be obsolete now. Note 8 is.

SuggestedRemedy
Remove them.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59** *P* **153** *L* **26** # **615**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **R**
CPR is no longer defined for the transmitters

SuggestedRemedy
Remove the reference to CPR in the editors notes box

Proposed Response *Response Status* **C**
REJECT.

CPR still needs to be defined in clause 1

Cl **59** *SC* **59** *P* **155** *L* **42** # **591**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A** *MDIO*
It would be nice to have a subclause called "PMD MDIO functional mapping"

SuggestedRemedy
Copy or reference "Clause 60.2 PMD MDIO functional mapping"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Copy the text from 60.2

Cl **59** *SC* **59.1** *P* **154** *L* **17** # **42**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A** *Naming*
Mysterious "From" in Table header.

SuggestedRemedy
Delete "From" in Table 59-1 header (2 places).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment 4

Cl **59** *SC* **59.1** *P* **154** *L* **24** # **719**
Urricariet, Christian Finisar Corporation

Comment Type **T** *Comment Status* **A**
Table 59-1
The maximum range for 1000BASE-LX10 on 62.5 um MMF is defined as 550m. This is only valid if the bandwidth of the fiber is 500 MHz.km or higher.

SuggestedRemedy
Add a footnote in Table 59-1 that specifies that the 550m on 62.5 um MMF is valid only if the bandwidth is 500 Mhz.km or higher.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add footnote that references table 59-11 for fiber distances and bandwidth.

Cl **59** *SC* **59.1** *P* **154** *L* **24** # **43**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Incorrect format for minimum range.

SuggestedRemedy
Change minimum range values to read: "0.5m to 10km, 0.5m to 550m, 0.5m to 10km, 0.5m to 10km"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.1** *P* **154** *L* **28** # **383**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Naming*
Need more text to explain the two bidirectional PMDs. As experience has shown that people have opposing ideas about which end is which, we need to explain at length.

SuggestedRemedy
Add paragraph:
A 1000BASE-LX10 link uses 1000BASE-LX10 PMDs at each end while a 1000BASE-BX10 link uses a 100BASE-BX10-U PMD at one end and a 1000BASE-BX10-D PMD at the other. Typically the 1550 nm band is used to transmit away from the center of the network ("downstream") and the 1310 nm band towards the center ("upstream"), although this arrangement, or the notion of hierarchy, is not required. The suffixes "D" and "U" indicate the PMDs at each end of a link which transmit in these directions and receive in the opposite directions.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Make changes to 58 and 60. Remove sentence with hierarchy from 58 Also check the wavelengths for downstream

Cl **59** *SC* **59.1** *P* **154** *L* **28** # **81**
Swanson, Steven Corning Incorporated

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

SuggestedRemedy
Add the following text after Table 59-1: "A 1000BASE-LX10 link uses 1000BASE-LX10 PMDs at each end while a 1000BASE-BX10 link uses 1000BASE-BX10-U PMD at one end and a 1000BASE-BX10-D PMD at the other. Typically, the 1550nm band is used to transmit away from the center of the network ("downstream") and the 1310 nm band towards the center ("upstream"), although this arrangement or notion of hierarchy, is not required."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

1490 nm band for BX

Cl **59** *SC* **59.1** *P* **154** *L* **28** # **997**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A**
Insert text like on page 178, line 34 here with appropriate changes for PMD type.

SuggestedRemedy
Per comment

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Has been addressed by comment 81

Cl **59** *SC* **59.1** *P* **154** *L* **4** # **41**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clause 59 includes MMF.

SuggestedRemedy
Delete "...single mode..." in the first sentence.

Proposed Response *Response Status* **C**
ACCEPT. Change will be made as appropriate

Cl **59** *SC* **59.1** *P* **154** *L* **50** # **592**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A** *Attn*
It would be nice to have a subsection similar to Clause 60 called "Terminology and conventions"

SuggestedRemedy
Add a subclause similar to Clause 60 "Terminology and conventions". Include appropriate references.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.1** *P* **154** *L* **7** # **382**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *MDIO*
Sentence needs redrafting: MDIO is always optional. Similarly to Cl.52 and 60 (note also 5 minor editorial changes in the remedy):

SuggestedRemedy
Revised sentence:
In order to form a complete physical layer, a PMD shall be integrated with the 1000BASE-X PCS and PMA of Clause 36, and optionally integrated with the management functions which may be accessible through the management interface defined in Clause 22*ref*, which are hereby incorporated by reference.

Also revise the PICS to follow.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.1** *P* **154** *L* **9** # **586**
Jonsson, Ulf Ericsson AB

Comment Type **T** *Comment Status* **A**
The management functions are also accessible through the management interface defined in Clause 45.

SuggestedRemedy
Change to: "...Management Interface defined in Clause 22*ref* or Clause 45*ref*, ..."

Proposed Response *Response Status* **C**
ACCEPT.

Apply to all three clauses

Cl **59** *SC* **59.1.2** *P* **154** *L* **50** # **385**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Attn*
I think the 'Terminology and conventions' section is useful.

SuggestedRemedy
Copy it with changes as necessary from 58.1.3 or 60.1.3. We could recast all three subclauses into narrative to be much more compact.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Resolved by 592

Cl **59** *SC* **59.1.3** *P* **154** *L* **50** # **44**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Missing subclause.

SuggestedRemedy
Add Clause 59.1.3 Terminology and conventions (see 60.1.3 for text).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See 592

Cl **59** *SC* **59.1.3** *P* **155** *L* **31** # **45**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification.

SuggestedRemedy
Reword the first sentence to read: "...8B/10B code-groups between the PMA and PMD entities."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.1.3** *P* **155** *L* **32** # **46**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification.

SuggestedRemedy
Reword sentence to read: " The PMD translates the serialized data of the PMA to and from signals suitable for the specified medium."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.1.3** *P* **155** *L* **42** # **384**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Primatives*
We may need all that stuff about semantics of primitives - not sure.

SuggestedRemedy
If we do, copy it as amended from 60.1.4.n

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.1.3** *P* **155** *L* **43** # **47**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Primatives*
Missing subclauses??

SuggestedRemedy
In Clause 60, several subclauses (60.1.4.1- 60.2) describe primitives. Should they be included in Clause 59 also?

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.10** *P* **157** *L* **53** # **618**
Radcliffe, Jerry Hatteras Networks

Comment Type **T** *Comment Status* **A**
In this location, and through the following pages, there are a number of references to Tables 59-12 and 59-13. I cannot find these tables.

SuggestedRemedy
Include the tables

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Has been addressed by other comments

Cl **59** *SC* **59.10** *P* **167** *L* **53** # **66**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
Reword the second sentence to read: " The maximum channel insertion loss shall meeet the requirements specified in Table 59-1.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.10** *P* **168** *L* **11** # **67**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect Figure labels.

SuggestedRemedy
Change "EX" to "LX" in Figure 59-7 (2 places).

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.10** *P* **168** *L* **11** # **1014**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A**
What is the "EX" in "EX MMF Channel"?
Ditto line 29

SuggestedRemedy
Remove EX.

If there is a good reason to have this, somewhere say what it means.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment 67

Cl **59** *SC* **59.10.1** *P* **168** *L* **41** # **68**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Unneeded subclause.

SuggestedRemedy
Delete 59.10.1.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.10.2** *P* **168** *L* **45** # **69**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Unneeded subcaluse.

SuggestedRemedy
Delete 59.10.2.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.11** *P* **168** *L* **50** # **70**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Harmonization with Clause 60.

SuggestedRemedy
Move Clause 59.11 to appear before the current 59.10, Fiber optic cabling model to be consistent with Clause 60.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.11** *P* **168** *L* **52** # **71**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification of intent and incorrect reference.

SuggestedRemedy
Reword the first two sentences to read: "The 1000BASE-BX and 1000BASE-LX10 fiber optic cabling shall meet the specifications defined in IEC 60793-2 and ITU G.652. They are shown in Table 59-11 for information only."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change text to:

"The 1000BASE-BX and 1000BASE-LX10 fiber optic cabling shall meet the dispersion and modal bandwidth specifications defined in IEC 60793-2 and ITU G.652, as shown in Table 59-11"

Make appropriate change to cl 58 & 60 without bandwith reference in 58

Cl **59** *SC* **59.11** *P* **168** *L* **53** # **1015**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A**
According to this subclause, the cable specificaions are "shown in Table 59-13 for information only" per agreement at last meeting.

1. This should be Table 59-11.
2. But, footnote "a" in T 59-11 says that the dispersion values are normative.

SuggestedRemedy
Fix.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Has been addressed in other comments - 71

Cl **59** *SC* **59.11.1** *P* **169** *L* **7** # **72**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification of intent and incorrect reference.

SuggestedRemedy
Reword first sentence to read: "The fiber optic cable requirements are satisfied by the fibers specified in IEC 60793-2 Type B1.1 (dispersion un-shifted single-mode fiber) and Type B1.3 (low water peak single-mode fiber) and ITU-T G.652 as noted in Table 59-11."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.11.1** *P* **169** *L* **9** # **619**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A**
I believe that the table reference should be to Table 59-11.

SuggestedRemedy
change reference

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.11.2** *P* **169** *L* **45** # **73**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Simplification of text.

SuggestedRemedy
Delete "59.11.2.1 Connection insertion loss" and "59.11.2.2 Maximum discrete reflectance" and include text in 59.11.2.

Proposed Response *Response Status* **C**
ACCEPT.

Make changes to 58

Cl **59** *SC* **59.11.2.1** *P* **169** *L* **48** # **406**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Connection insertion loss is not specified any more.

SuggestedRemedy
Change 'specified' to 'defined'.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.11.2.1** *P* **169** *L* **54** # **74**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"...Table 59-13..." should read "...Table 59-1..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.11.2.1** *P* **170** *L* **2** # **1016**
Thatcher, Jonathan WWP

Comment Type **TR** *Comment Status* **A** *Link Budget*

1 dB connection (misspelled in text) and splice loss is not enough for a 10 km link.

We should be much more clear that the specification for the cable plan is key and that full 10km links may require that the fiber be specially selected for attenuation in order to ensure that the total attenuation specification can be met.

We need to make this explicit.

SuggestedRemedy

Text something like:

To ensure operation, a channel must have no more than 6 dB loss at 1310 nm and 5.5 dB at 1550 nm. A fiber that just meets the maximum loss specifications in 59.11.1 will require no more than 1.5 dB of loss for connectors and splices at 1310 nm, and no more than 1.0 dB of loss for connectors and splices at 1550 nm to meet the channel requirements.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment addressed by comment 75 and 378

Cl **59** *SC* **59.11.2.1** *P* **170** *L* **2** # **407**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Link Budget*

Is it really 1 dB for 1550 nm?

SuggestedRemedy

Check. Possibly change to:
The maximum link distances are calculated based on an allocation of 2 dB total conection and splice loss for 1000BASE-LX10 and 1000BASE-BX.

Proposed Response *Response Status* **C**

ACCEPT.

Change will be made as suggested

See comment 75

Cl **59** *SC* **59.11.2.1** *P* **170** *L* **3** # **75**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Link Budget*

Incorrect text.

SuggestedRemedy

Reword sentence to read: "The maximum link distances for single-mode fiber are calculated based on an allocation of 2 dB total connection and spice loss."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **59** *SC* **59.11.3** *P* **170** *L* **22** # **76**
Swanson, Steven Corning Incorporated

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

Note misplaced.

SuggestedRemedy

Place note on separate line from preceding text.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.11.4** *P* **170** *L* **28** # **364**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Patchcord*

We should not have removed the offset patchcord material because it was not identical to 38.11.4. However, we can make it clear that the same patchcords can be compliant to both 38.11.4 and 38.11.4, by adding a reference.

SuggestedRemedy

Reinstate it. Add a sentence at the end of the first paragraph:
'The requirements of this subclause are virtually identical to those of 38.11.4.' Delete PICS LI10 to LI13.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Any differences should be highlighted and captured in PICS

reinstate the text of D1.2

Cl **59** *SC* **59.12** *P* **171** *L* **1** # **408**
Dawe, Piers Agilent

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

Please clean up the subclause title.

SuggestedRemedy

Follow the main clause title. Also 59.12.3 title is two titles combined in error:
59.12.3 Major capabilities/options
(followed by a table) then
59.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 1000BASE-LX10 and 1000BASE-BX10
(followed by PMD functional specifications).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.12** *P* **172** *L* **7** # **409**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Naming*

Various editorial. Main issue is that I think the distict identity of -D and -U PMDs needs to be reflected in the PICS.

SuggestedRemedy

p172 line 7 Please don't use OLT and ONU which are confusing and not necessary at all in this clause. Suggest *BD and *BU
p173 line 5 FN1, delete 'and management functions'
p173 line 41: change title to 'PMD to MDI optical specifications for 1000BASE-BX10-D'. Call the items BD1, BD2, BD3 of status BD:M. Clone the subclause for BU.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

change to BX-D and BX-U

ensure consistency with 58 and 60

Cl **59** *SC* **59.2** *P* **15** *L* **40** # **996**
Thatcher, Jonathan WWP

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

Before 59.2 (new 59.2?) put text like section 60.2

SuggestedRemedy

Per comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add new section 59.2 that is copied from 60.2

Cl **59** *SC* **59.2** *P* **155** *L* **40** # **998**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A** *MDIO*

Add new subsclause like 60.2 before 59.2 (new 59.2?)

SuggestedRemedy

Per comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to 591

Cl **59** *SC* **59.2.1** *P* **155** *L* **51** # **48**
Swanson, Steven Corning Incorporated

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

Clarification.

SuggestedRemedy

Reword the first sentence to read: "For purposes of system conformance, the PMD sublayer is standardized at the points shown in Figure 59-2."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 82. Ensure Cl 58 the same

Cl **59** *SC* **59.2.1** *P* **155** *L* **52** # **999**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R** *Patchcord*
Since we have changed the minimum distance to 0.5 meters, we should also change the length of the minimum patch cord used for testing to 0.5 m. This should be global throughout.

SuggestedRemedy
Change "between 2 and 5 m" to "between 0.5 and 5 m" everywhere in clause.

Proposed Response *Response Status* **C**
REJECT.

2M is enough to ensure good repeatbility of the emeasurements, whereas 0.5m may not.

Cl **59** *SC* **59.2.1** *P* **155** *L* **52** # **49**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Clarification.

SuggestedRemedy
Modify the second sentence to read: "...between 2 and 5 m in length, of a fiber type consistent..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.2.1** *P* **156** *L* **6** # **50**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification.

SuggestedRemedy
Add a sentence after the first paragraph to read: "TP1 and TP4 are reference points for use by implementers."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.2.4** *P* **156** *L* **54** # **616**
Radcliffe, Jerry Hatteras Networks

Comment Type **T** *Comment Status* **D** *SD*
The text states that the signal detect function does not need to determine if the signal is compliant. However, the referenced table (58-2) requires that the signal be compliant.

SuggestedRemedy
Remove the compliance requirement from table 58.2

Proposed Response *Response Status* **Z**
WITHDRAWN.

Cl **59** *SC* **59.2.4** *P* **157** *L* **20** # **387**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
This is a bit pedantic, but a ...-U signal detect is not required to respond to a signal from a -U Tx, and similarly for D.

SuggestedRemedy
One fix (rather ugly) is to have 3 PMD columns instead of two.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

change LX text to 'and compliant 1000BASE-LX OR 1000BASE-LX10" signal

change BX text to 'and compliant 1000BASE-BX" signal and add "at the specified receiver wavelength"

Will not have a 3 PMD column table

Cl **59** *SC* **59.2.4** *P* **157** *L* **22** # **386**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *SD*
Inequality is wrong.

SuggestedRemedy
Table entries like: Input optical power <= signal detect threshold (min) in Table 59–x FAIL

Input optical power >= receiver sensitivity (max) in Table 59-x AND compliant ... OK

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Addressed in comment 51

Cl **59** *SC* **59.2.4** *P* **157** *L* **22** # **51**
Swanson, Steven Corning Incorporated

Comment Type **TR** *Comment Status* **A** *SD*
Signal_detect value definition needs to be harmonized with Clause 58 and 60

SuggestedRemedy
Clarify whether the input optical power requirement is -45 dBm [as noted in Clause 58 and 60] -30 dBm [as noted in Clause 59]?

Clarify whether the requirement is >= receive sensitivity (max) [as noted in Clause 58 and 60] or <= limit in signal detect threshold (min) [as noted in Clause 59]?

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Remove the SD value from 59-2 and include pointer to 59-5 and 59-7. Align format and text to that of Cl58 after changes implied by comment 14

Cl **59** *SC* **59.3** *P* **157** *L* **33** # **1000**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A**
Reference to table 59-13 wrong

SuggestedRemedy
Fix.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Addressed by other comments

Cl **59** *SC* **59.3** *P* **157** *L* **33** # **52**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"Table 59-13" should read "Table 59-11"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.3** *P* **157** *L* **37** # **388**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**
Implementing decision to document mechanically computed OMA values.

SuggestedRemedy
Here, insert:
NOTE— In this subclause and 59.4, the specifications for OMA have been derived from extinction ratio and average launch power (min) or receiver sensitivity (max). The calculation is explained in 60.8.6.
Insert OMA rows in the four Tx, Rx tables.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Need values for the table. Need to include in other clauses

Cl **59** *SC* **59.3** *P* **159** *L* **15** # **1003**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A**
Table 59-5 & 59-7
Receiver Reflectance (max) should be -12 dB (not +12 dB).

SuggestedRemedy
Per comment

Proposed Response *Response Status* **C**
ACCEPT.

Harmonize with 389

check across clauses

Cl **59** *SC* **59.3.1** *P* **157** *L* **46** # **1001**
Thatcher, Jonathan WWP

Comment Type **E** *Comment Status* **A**
Better to use "center wavelength" than "frequency." It would be more consistent with the rest of the document and with the referenced table.

SuggestedRemedy
Per comment

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Modify any other occurances in the documents

check across clauses

Cl **59** *SC* **59.3.1** *P* **157** *L* **47** # **617**
Radcliffe, Jerry Hatteras Networks

Comment Type **E** *Comment Status* **A**
Change "frequency" to "wavelength"

SuggestedRemedy
Change "frequency" to "wavelength"

Proposed Response *Response Status* **C**
ACCEPT.

See comment 1001

check across clauses

Cl **59** *SC* **59.3.1** *P* **158** *L* **1** # **389**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *ORL*
Add row to tables 59-3 and 59-6: Optical return loss tolerance -X dB. X might be 12.

SuggestedRemedy
Add the row.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

12 should be the value as this is the value assumed in modeling and the baseline proposals.

Should be a positive number

Cl **59** *SC* **59.3.1** *P* **158** *L* **30** # **390**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Link Budget*
Following reader feedback, making the intent of tables 58-8, 58-12 and 59-4 clearer. I think the wavelength column is part of the normative content.

SuggestedRemedy
Make the left columns bold. Insert '(informative)' after 0.115. Replace the table entries e.g. 1292, 3.00 and 1334, 3.00 with 129x, 3.50 and 133x, 3.50. Replace fig. 58-2, 58-3, 59-3 with ones representing these changes.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Why changes to the values

Cl **59** *SC* **59.3.1** *P* **158** *L* **51** # **391**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Table 59-4: the spectral width limit slope in the 1490 band is over-fussy and we have abandoned it in clause 58.

SuggestedRemedy
Change 0.96 to 0.88. Consider collapsing the two rows into:
1480 to 1500 0.88 0.60

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change to be consistant with Cl 58

Cl **59** *SC* **59.3.2** *P* **158** *L* **24** # **1002**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A** *ORL*
Shouldn't there be an "optical return loss" specification in table 59-3 (see Table 60-5, 60-7)

SuggestedRemedy
?

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Addressed by another comment - 389

Cl **59** *SC* **59.3.2** *P* **159** *L* **15** # **392**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *ORL*
Table 59-5 and 59-7: reflectance sign is wrong.

SuggestedRemedy
-12

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Make consistent with 389

Cl **59** *SC* **59.4** *P* **159** *L* **36** # **1004**
Thatcher, Jonathan

Comment Type **T** *Comment Status* **A**
Reference missing in text 'media types listed in according to'

SuggestedRemedy
Add reference

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Reference to 59-11

Cl **59** *SC* **59.4** *P* **159** *L* **36** # **53**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification.

SuggestedRemedy
Modify the second sentence to read: "A 1000BASE-BX-10-D compliant transceiver supports all media types listed in Table 59-11 according..."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change text to:
"A 1000BASE-BX-10 compliant transceiver supports all single mode fibers listed in Table 59-11 according..."

Cl **59** *SC* **59.4** *P* **161** *L* **17** # **1006**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A** *ORL*
Table 59-7 appears to be missing rows of specifications. Compare to Table 59-5 (last 3 rows) + Optical return loss.

It also appears to be missing the footnotes from Table 59-5

SuggestedRemedy
Add to table.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See comment 394

Cl **59** *SC* **59.4.1** *P* **160** *L* **34** # **393**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Please add decision timing offsets row to table 59-6.

SuggestedRemedy
Per comment.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Add row according to 60-5. +/- 0.1 UI

Cl **59** *SC* **59.4.2** *P* **160** *L* **28** # **1005**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R**
Figure 59-3 is informative (normative is table 59-4).

SuggestedRemedy
Identify as "informative." If desired, add footnote pointing to Table 59-4.

Proposed Response *Response Status* **C**
REJECT.

There already exists a footnote pointing from T59-4 to Fig 59.3

Cl **59** *SC* **59.4.2** *P* **161** *L* **1** # **394**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Please add Stressed eye jitter, Jitter corner frequency and Sinusodial jitter rows to table 59-7.

SuggestedRemedy
Values and footnotes as table 59-5.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See related comments

Cl **59** *SC* **59.5** *P* **161** *L* **26** # **54**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Table formatting.

SuggestedRemedy
Resize Table 59-8 and merge cells (two places).

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.5** *P* **161** *L* **41** # **55**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification.

SuggestedRemedy
"Channel insertion loss a" should read "Maximum channel insertion loss a"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Check across clauses

Cl **59** *SC* **59.6** *P* **161** *L* **51** # **395**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Jitter*
I think the jitter will be different between SMF and MMF, but on SMF, LX10 and BX10 should be similar. We would expect very little distortion between TP2 and TP3 hence no change in DJ; however, MPN will add RJ. These subclauses are informative so they don't contain specifications.

SuggestedRemedy
Combine the subclauses into one, 'Jitter at TP1-4 for 1000BASE-LX10 and 1000BASE-BX10 (informative)'.

'The entries in Table 59–9 and Table 59–10 represent high-frequency jitter (above 637 kHz) and do not include low frequency jitter or wander. They are two sided (peak-to-peak) measures. Table 59–9 applies to 1000BASE-LX10 and 1000BASE-BX10 on single mode fiber while Table 59–10 applies to 1000BASE-LX10 on multimode fiber. All values are informative.'

'Table 59-10, 1000BASE-LX10 and 1000BASE-BX10 jitter budget for SMF (informative)'
Rows TP1, TP3, TP3 to TP4 and TP4: as clause 38. Row TP2: same as DJ row TP3. Row TP2 to TP3: DJ 0. Remaining cells by calculation from others. These suggestions may need revision in future.

'Table 59-10, 1000BASE-LX10 jitter budget for MMF (informative)'
Values as clause 38 and current table 59-9 for now. May need slight revision in future.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Will form two tables, one for MMF (-LX) and another for SMF (-LX and -BX)

The ad-hoc will look at the values

Cl **59** *SC* **59.6** *P* **162** *L* **5** # **724**
Urricariet, Christian Finisar Corporation

Comment Type **E** *Comment Status* **A**
Table 59-9
Units for Total Jitter should be "UI" instead of "U1".

SuggestedRemedy
Change units to "UI".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.7** *P* **162** *L* **29** # **725**

Urricariet, Christian — Finisar Corporation

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

Table 59-10

Units for Total Jitter should be "UI" instead of "U1".

SuggestedRemedy

Change units to "UI".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.8** *P* **162** *L* **43** # **1008**

Thatcher, Jonathan — WWP

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

Optical testing incomplete (2 of 2 for C59; also for C 36)

After completing part 1 of these 2, it is essential to get together with the logic folk (C36) to figure out how to:

1. Ensure that the system can create the test patterns required for each test. Some test patterns are currently in an informative annex (36A). Even if the patterns are called out in 59, the logic folk won't know to look there for logic test requirements unless some change in made elsewhere.
2. Ensure that the system can count the errors indicated. In short, the OAM functions being added will not be "optional" for this PMDs.
3. Can operate the link in a mode that supports these tests. The PHY must be able to send test frames when the link is not up (no Rx) for tests in Part 1 of the comment that are not asynchronous.
4. For those that are synchonous, it must be verified that the four partners are doing what is desired.

SuggestedRemedy

Meet with logic people. Discuss and evaluate capabilities for C36, and requirements for C59.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Discussions are ongoing with Cl 24 and 36 as to how to implement at logic level.
It is the responsibility of this group to identify the necessary test and test conditins and convey this to the CL 24 & 36 groups. A joint session between optics and logic is recommended when the tests have been identified.
The STF is trying not to modify clauses Cl 24 & 36 or the corresponding silicon

Cl **59** *SC* **59.8** *P* **162** *L* **43** # **1007**

Thatcher, Jonathan — WWP

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

Optical testing incomplete (1 of 2 for C59; also for C60)

It is essential that each optical test be clearly evaluated for when asynchronous data is required. Some indicate need, most do not. This is especially important for the BiDi, where there the test method needs to specify specific wavelength drop/add mechanisms.

SuggestedRemedy

1. Identify each test that requires asynchronous operation from: Extinction ratio; OMA; RIN; Transmit optical waveform; TDP; Rx Sensitivity; Total Jitter; Stressed Rx

2. Create scheme for testing BiDi with asynchronous operation.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editors boxes will be added to all three clauses at Cl 58.8, 59.9 and 60.8 saying "The tests in this subclause are being modified to use frame based data patterns"

The ad-hoc will address this testing with the following directive:
The testing procedures to be addressed should accomadate legacy equipment.
Specifiec proposals for Clauses 58, 59 and 60 will be circulated and presented at the May meeting.

Cl **59** *SC* **59.8** *P* **162** *L* **45** # **56**

Swanson, Steven — Corning Incorporated

Comment Type **E** *Comment Status* **A** *Attn*

Clarification.

SuggestedRemedy

Reword first sentence to read: "All optical measurements..."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.8.1** *P* **162** *L* **51** # **57**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Meet Pier's wishes.

SuggestedRemedy
Reword the first sentence to read: "the wavelength and spectral width (RMS) shall be assured in relation to measurement procedures..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.8.1** *P* **162** *L* **53** # **396**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
This note needs to be made precise (although the imprecison doesn't matter in practice, I think). We can follow clause 58. I have tweaked the words slightly to be clearer still

SuggestedRemedy
Change to: 'The allowable range of central wavelengths is narrower than the operating wavelength range by the actual RMS spectral width at each extreme.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.8.10** *P* **165** *L* **14** # **400**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
The second paragraph is redundant with 59.8.13.

SuggestedRemedy
Delete the second paragraph. Extend the first with:
Stressed sensitivity is described in 59.8.13 and 60.8.11.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.8.11** *P* **165** *L* **20** # **401**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Packet Testing*
Need to choose between Cl.38 style jitter measurements or XAUI style. they should be equivalent?

SuggestedRemedy
Choose. Either way, replace '0.5 dB greater than (to account for eye opening penalty)' on line 30 (which is no longer appropriate because of the way stressed sensitivity is now defined) with 'at', and remove 'of 9 dB' from line 32.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Change text to 'The optical power should be at the stressed..." Remove text in brackets

Delete "of 9 dB" of line 32

The issue of packet based testing will be discussed with logic people

Cl **59** *SC* **59.8.11** *P* **165** *L* **20** # **61**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Clarification

SuggestedRemedy
Should this Clause be replaced by a reference to 60.8.12?

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Text will remain in position, first for the sake of completeness and second as packet based testing may imply differences in this section between cl 59 and 60

Add text to the end of first sentence of 59.8.11, "see also 60.8.12" Make change to C58, "see also 59.8.11"

Note: As a general point, need to check the FC Jitter reference and perhaps fix in front panel

Cl **59** *SC* **59.8.13** *P* **166** *L* **19** # **402**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Measurement*

Stressed sensitivity normative or informative? I think we decided on informative.

SuggestedRemedy

Replace 'shall be' with 'is'.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.8.13** *P* **166** *L* **20** # **62**

Swanson, Steven Corning Incorporated

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

Incorrect reference.

SuggestedRemedy

"...of 60.7.11..." should read "...of *ref*Clause 60.8.11..."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.8.14** *P* **166** *L* **31** # **403**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Measurement*

It would be helpful to mention the alternative way of doing this measurement.

SuggestedRemedy

Extend the first paragraph with:
Alternatively the two signals may be combined in the optical domain.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **59.8.3** *P* **163** *L* **23** # **58**

Swanson, Steven Corning Incorporated

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

Harmonization with Clause 60.

SuggestedRemedy

Reword 59.8.3 to read: "Extinction ratio shall be measured using the methods specified in ANSI/TIA/EIA-526-4A [B13]. This measurement may be made with a node transmitting a data pattern defined in *ref*36A.2. As defined in Clause 36*ref*, this is coded as /K28.5/D16.2/ which is binary 001111 1010 100100 0101 or 110000 0101 011011 0101. The extinction ratio is measured with -20 dB back reflections into the transmitter."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change text to:
Extinction ratio is defined according to the methods specified in ANSI/TIA/EIA-526-4A with the node transmitting a repeating idle pattern I2 and with minimal back reflections into the transmitter, lower than -20 dB. This is defined in Clause 36*ref*, and is coded as /K28.5/D16.2/ which is binary 001111 1010 100100 0101 or 110000 0101 011011 0101.

Make this change to Cl 58

Cl **59** *SC* **59.8.3** *P* **163** *L* **23** # **397**

Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Measurement*

Need to mention FOTP-4A. Need to mention back reflections.

SuggestedRemedy

Revise sentence:
Extinction ratio is defined according to the methods specified in ANSI/TIA/EIA-526-4A with the node transmitting a repeating idle pattern I2 and with minimal back reflections into the transmitter, lower than -20 dB..

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 58 for resolution

Applies to Cl 58

Cl **59** *SC* **59.8.5** *P* **163** *L* **35** # **59**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"...*ref*Clause 60.7.6..." should read "...*ref*Clause 60.8.6..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.8.7** *P* **163** *L* **51** # **398**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Jitter*
Adding more text. We might be able to use a common eye mask subclause across the three optics clauses, but this makes them very similar.

SuggestedRemedy
Insert after 'logic ZERO and ONE respectively.':
0 and 1 on the unit interval scale are to be determined by the eye crossing means. A clock recovery unit (CRU) may be used to trigger the scope for mask measurements. It should have a high frequency corner bandwidth of less than or equal to the jitter corner frequency specified in the transmitter table, and a slope of -20 dB/decade.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.8.9** *P* **165** *L* **7** # **60**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Incorrect reference.

SuggestedRemedy
"See *ref*Clause 60.7.9..." should read "See *ref*Clause 60.8.9..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.8.9** *P* **165** *L* **7** # **399**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Attn*
Making the point more clearly:

SuggestedRemedy
Insert new sentence:
'... (TDP). The TDP limit is a requirement. See ...'

Apply to all three optics clauses.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

"The TDP limit shall be met" to be added to line 7 on page 165

Add to PICS between OR8 and OR9

Changes to 58

Cl **59** *SC* **59.8.9** *P* **209** *L* # **99108**
Diab, Wael William Cisco Systems

Comment Type **TR** *Comment Status* **A** *D1.1 #697*
TDP is the appropriate method for evaluating PMDs. Nonetheless, given the speed of these PMDs and the short-term desire to implement solutions (as expressed in the original proposal presentations), an informative that relates traditional measurement techniques to TDP may help bridge the gap.

SuggestedRemedy
Specify an informative correlation between the TDP measurements and the eye mask and/or the jitter numbers

Proposed Response *Response Status* **U**
ACCEPT IN PRINCIPLE.

Needs more work by the ad-hoc.

Jitter numbers remain for 1000BASEEXand BX as informaytive (with the exception of TP2 for BX).

Also, add "High probability jitter at TP2 is constrained by the eye mask. Total jitter at TP3 (and therefore at TP2 also) is constrained by the error detector timing offsets."

Cl **59** *SC* **59.9.2** *P* **167** *L* **19** # **63**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Simplification of text.

SuggestedRemedy
Reword first sentence to read: "1000BASE-X optical transceivers described..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.9.2** *P* **167** *L* **20** # **64**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Editorial.

SuggestedRemedy
Add a space between the first and second sentence.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.9.3** *P* **167** *L* **33** # **65**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Clarification of intent.

SuggestedRemedy
Reword first sentence to read: "It is recommended that proper installation practices, as defined by applicable local codes and regulations, be followed in every instance in which such practices are applicable."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **59.9.5** *P* **167** *L* **47** # **1013**
Thatcher, Jonathan WWP

Comment Type **E** *Comment Status* **A**
Reference should be to 59.9.2.

SuggestedRemedy
Replace

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **Figure 59-7** *P* **168** *L* **20** # **595**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A** *Attn*
Delete the words 'OLT' and 'ONU'. Add 'Tx' and 'Rx' respectively under 'PMD' in the PMD boxes.

SuggestedRemedy
Per comment

Proposed Response *Response Status* **C**
ACCEPT.

See fig 60-12 for fix

Cl **59** *SC* **Figure 59-1** *P* **155** *L* **14** # **589**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A**
MII should be GMII

SuggestedRemedy
Change 'MII' to 'GMII' in the figure

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **Figure 59-2** *P* **156** *L* **11** # **590**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A**
Align the picture with Clause 60.

SuggestedRemedy
Copy Figure 60-2

Proposed Response *Response Status* **C**
ACCEPT.

Cl **59** *SC* **General** *P* *L* **4** # **806**
John George OFS

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

Identifying single mode fiber as "SMF" under headings in tables identified as Fiber Type is redundant. Also, SMF is used as part of multiple trademarks by one of the fiber manufacturers and thus is not an appropriate term to be used in a standard.

SuggestedRemedy

Change "SMF" to "SM" in all cases in which such is described as a fiber type.

Proposed Response *Response Status* **C**

REJECT.

See related comments

Cl **59** *SC* **Table 59-1** *P* **154** *L* **19** # **587**
Jonsson, Ulf Ericsson AB

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

Incorrect symbol 'u' in '62.5 um MMF'.

SuggestedRemedy

Change 'u' to the correct symbol for 'micro'. Change this also in several other tables throughout Clause 59.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **Table 59-1** *P* **154** *L* **24** # **588**
Jonsson, Ulf Ericsson AB

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

'-' should be changed to 'to', e.g. '0.5 m to 10 km'.
Add space between value and unit, e.g. '0.5 m'

SuggestedRemedy

Per comment. Make similar changes throughout Clause 59.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **59** *SC* **Table 59-3** *P* **158** *L* **8** # **593**
Jonsson, Ulf Ericsson AB

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

'-' should be 'to' in the table

SuggestedRemedy

Change to: "1260 to 1360". Change a few more instances in other Clause 59 tables.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Be sure the document is consistent. Remove "-" and replace with "to" in all appropriate instances.

Check across clauses

Cl **59** *SC* **Table 59-6** *P* **160** *L* **49** # **476**
Yanagisawa, Hiroki NEC Corporation

Comment Type **T** *Comment Status* **R** *Link Budget*

The current extinction ratio of 6dB is a burden to the receiver, since it causes about 2dB penalty in sensitivity.

SuggestedRemedy

Add OMA(min) specification as same as Clause 58 and 60.
To keep the minimum apmlitude equivalent to 9dB estinction ratio, the following numbers are proposed:

	Launch OMA(min)
1000BASE-BX10-D	0.20mW
1000BASE-BX10-U	0.20mW

Proposed Response *Response Status* **C**

REJECT.

Link modeling includes the effects of ER on RX sensitivity.

Cl **59** *SC* **Table 59-9** *P* **162** *L* **5** # **594**
Jonsson, Ulf Ericsson AB

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

'U1' should be 'UI' in the table

SuggestedRemedy

Change 'U1' to 'UI'. Change this at a few more places throughout Clause 59.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.1** *P* **178** *L* **21** # **77**

Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A** *Naming*

Mysterious "From" in header of Table 60-1.

SuggestedRemedy

Delete "From" in Table 60-1 (2 places).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment 4

Cl **60** *SC* **60.1** *P* **178** *L* **26** # **78**

Swanson, Steven Corning Incorporated

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

Incorrect description.

SuggestedRemedy

Change "Nominal wavelength" to "Nominal operating wavelength"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.1** *P* **178** *L* **27** # **79**

Swanson, Steven Corning Incorporated

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

Incorrect wavelength.

SuggestedRemedy

Change "1550 nm" to "1490 nm" in Table 60-1.

Proposed Response *Response Status* **C**

REJECT.

Cl **60** *SC* **60.1.1** *P* **210** *L* **1** # **99048**

Dawe, Piers Agilent

Comment Type **TR** *Comment Status* **R** *D1.0 #264*

10^-12 BER can't really be necessary, being one (detected) error in two hours. It would be expensive to test for and remarkably hard to extrapolate reliably, though in practice (without the guarantee in the standard) it will be met cost-effectively. I understand the underlying technical reason for demanding very low BERs is to avoid TCP running slow when it sees dropped packets. 10^-10 or 10^-11 seems enough. Other 100Mb/s PHYs use on the order of 10^-10.

SuggestedRemedy

Consider a more traditional BER limit for all 100M PHYs.

Proposed Response *Response Status* **U**

REJECT.

The PMD STF needs to discuss the technical and economical feasibility for specifying a BER of 10^-12 for all 100Mbps PHYs, especially in terms of testing.

14-2-3. Commentor is encouraged to bring a revised proposal.

At the November meeting the commentor asked to postpone till the next cycle

Cl **60** *SC* **60.1.4** *P* **180** *L* **13** # **365**

Dawe, Piers Agilent

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

This is the place to warn the reader of the delay requirements.

SuggestedRemedy

Insert: NOTE - Delay requirements which affect the PMD layer are specified in 24.6*ref*.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.1.4.1** *P* **180** *L* **18** # **362**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Primatives*

It's a pity we have this offputting material so early in a clause which is not about computer science. One way to make it less offputting is to make it take less space so the reader can progress to the next subject.

SuggestedRemedy

Delete the 5th level subheadings 60.1.4.n.n. In the case of '60.1.4.n.1 Semantics of the service primitive', use a sentence: e.g. 'The semantics of the service primitive are PMD_UNITDATA.request(tx_bit).' (three occasions).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.10** *P* **204** *L* **39** # **92**
Swanson, Steven Corning Incorporated

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

Clarification of intent.

SuggestedRemedy

Reword the first three sentences to read: "The 100BASE-LX10 and 100BASE-BX10 fiber optic cabling shall meet the specifications defined in IEC 60793-2 and ITU G.652. They are shown in Table 60-14 for information only;..."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

New sentence:
"The 100BASE-LX10 and 100BASE-BX10 fiber optic cabling shall meet the dispersion specifications of IEC 60793-2 and ITU G.652, as shown in Table 60-14."

Ensure consistency with Cl 58 & 59. Footnotes of corresponding tables in 58 and 59 also need to be harmonised with those of 60-14

See comment #584

Cl **60** *SC* **60.10** *P* **204** *L* **41** # **584**
Jonsson, Ulf Ericsson AB

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

IEC xxx. I believe IEC 60793 is the correct reference.

SuggestedRemedy

Replace "IEC xxx" with "IEC 60793"

Proposed Response *Response Status* **C**

ACCEPT.

See resolution to comment 92

Cl **60** *SC* **60.10.1** *P* **205** *L* **1** # **376**
Dawe, Piers Agilent

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

This subclause marked as informative, contains at least one specification.

SuggestedRemedy

Delete '(informative)'.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.10.1** *P* **205** *L* **17** # **93**
Swanson, Steven Corning Incorporated

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

Clarification of intent.

SuggestedRemedy

Reword the first sentence to read: "The maximum channel insertion losses shall meet the requirements specified in Table 60-1."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.10.1** *P* **205** *L* **44** # **377**
Dawe, Piers Agilent

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

The footnote needs amplification. The issue here is that the limits of Zero dispersion wavelength and Dispersion slope do not have to be met individually, but that the dispersion must fall within the limits of the equations using these coefficients. But we don't write fibre or cable specs here, we leave that to the experts.

SuggestedRemedy

Extend the footnote: See IEC 60793 or G.652 for correct use of zero dispersion wavelength and dispersion slope.

Proposed Response *Response Status* **C**

ACCEPT.

Related to other clauses?

Cl **60** *SC* **60.10.14** *P* **206** *L* **10** # **95**
Swanson, Steven Corning Incorporated

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

Editorial

SuggestedRemedy

Delete semicolon and "a)" in text.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.10.2** *P* **205** *L* **28** # **94**
Swanson, Steven Corning Incorporated

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

Clarification of references.

SuggestedRemedy

Reword first sentence to read: "...(low water peak single mode) and ITU G.652 as noted in Table 60-14."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.10.3** *P* **205** *L* **50** # **378**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Link Budget*

Are these allocations correct? Also, there is no other fibre but SMF in this clause.

SuggestedRemedy

Revised sentence:
The maximum link distances are calculated based on an allocation of 2 dB total connection and splice losses.
As this leaves two paragraphs of barely a line, combine them.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Correct the allocation to 2 dB total connection and splice losses.

See resolution to comment 75

Cl **60** *SC* **60.10.3** *P* **205** *L* **51** # **1017**
Thatcher, Jonathan WWP

Comment Type **TR** *Comment Status* **A** *Link Budget*

1 dB connection (misspelled in text) and splice loss is not enough for a 10 km link.

We should be much more clear that the specification for the cable plan is key and that full 10km links may require that the fiber be specially selected for attenuation in order to ensure that the total attenuation specification can be met.

We need to make this explicit.

SuggestedRemedy

Text something like:

To ensure operation, a channel must have no more than 6 dB loss at 1310 nm and 5.5 dB at 1550 nm. A fiber that just meets the maximum loss specifications in 60.10.2 will require no more than 1.5 dB of loss for connectors and splices at 1310 nm, and no more than 1.0 dB of loss for connectors and splices at 1550 nm to meet the channel requirements.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment over-ridden by comment 75 and 378

Cl **60** *SC* **60.11** *P* **208** *L* **13** # **379**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Attn*

Various editorial. Main issue is that I think the distict identity of -D and -U PMDs needs to be reflected in the PICS. Also I'm not sure that the MDI connector spec is an 'INS' item and it's not mandatory.

SuggestedRemedy

Line 11 Duplicate, as *BD and *BU
Line 13 60.10
Line 42 FN7, change 'parameter' to 'behavior'
p209 line 13 Duplicate 60.11.3.3 as *BD and *BU.
p210 line 28 Change INS:M to O,

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolved by #409

Cl **60** *SC* **60.3.1** *P* **182** *L* **3** # **82**
Swanson, Steven Corning Incorporated

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

Clarification.

SuggestedRemedy

Reword the first sentence to read: "For purposes of system conformance, the PMD sublayer is standardized at the points shown in Figure 60-2."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Agree that the text should reference Figure 60-2.
Proposed modifications:
1) Replace the first sentence with "The PMD sublayer is defined at the four reference points shown in Figure 60-2. Two points, TP2 and TP3, are compliance points. TP1 and TP4 are reference points."

2) Modify figure to only have one arrow between the PMA boxes and the "Optical PMD transmitter" boxes.

Remove the first sentance of line 29 p182

Harmonise with 58 and 59.

Cl **60** *SC* **60.3.1** *P* **182** *L* **4** # **1018**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R** *Patchcord*

Since we have changed the minimum distance to 0.5 meters, we should also change the length of the minimum patch cord used for testing to 0.5 m. This should be global throughout.

SuggestedRemedy

Change "between 2 and 5 m" to "between 0.5 and 5 m" everywhere in clause.

Proposed Response *Response Status* **C**

REJECT.

2m chosen for test repeatability

Cl **60** *SC* **60.3.4** *P* **183** *L* **10** # **366**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *SD*

This is a bit pedantic, but a ...-U signal detect is not required to respond to a signal from a -U Tx, and similarly for D.

SuggestedRemedy

One fix (rather ugly) is to have 3 PMD columns instead of two.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

change BX text to 'and compliant 100BASE-BX" signal and add "at the specified receiver wavelength"

Remain with two columns

Cl **60** *SC* **60.3.4** *P* **183** *L* **5** # **83**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *SD*

Harmonization of signal_detect value definition.

SuggestedRemedy

Clarify whether the requirement is >= receive sensitivity (max) [as noted in Clause 60] or <= limit in signal detect threshold (min) [as noted in Clause 59]?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the SD value from 60-4 and include pointer to 60-6 and 60-8. Align format and text to that of Cl58 after changes implied by comment 14

Cl **60** *SC* **60.4.1** *P* **183** *L* **40** # **85**
Swanson, Steven Corning Incorporated

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

Clarification of clause title to distinguish between 60.4.1. and 60.5.1.

SuggestedRemedy

Rename 60.4.1: "100BASE-LX10 transmitter optical specifications.

Proposed Response *Response Status* **C**

REJECT.

This is already clear from the clause title of 60.4 "PMD to MDI optical specifications for 100BASE-LX10."

Cl **60** *SC* **60.4.1** *P* **183** *L* **43** # **84**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Measurement*

Missing requirement.

SuggestedRemedy

Add the following sentence: "It shall also meet a transmit mask of the eye measurement as defined in 60.8.8.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Eye values to be included in Tx tables for 58, 59 and 60.

Modify figure in 59 to remove values.

The sentance will not be included in all 3 clauses

Cl **60** *SC* **60.4.1** *P* **184** *L* **23** # **363**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Measurement*

If we move to assuming single sided clock recovery the mask would have to be made much longer. Also the indicative jitter value in 60.7 would be substantially reduced, and we may wish to consider putting more emphasis on a stessed or semi-stressed sensitivity spec.

SuggestedRemedy

Per comment. Similarly 100BASE-BX10.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In table 60-5 include values 1.2 to 1.6 ns (tbd) for the decision offset timing parameter.

Will change the indicative jitter number to "in the range of 0.3 to 0.4 UI" in 60.7

In table 60-5 and 60-7, change x1, x2, x3 to be 0.25, 0.35 and 0.4. Add editors note "Further tightening of the mask may be required and comments are welcome"

Cl **60** *SC* **60.5** *P* **184** *L* **18** # **1020**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R** *ORL*

"optical return loss" should be -12 (not +12) dB in Table 60-5

SuggestedRemedy

per comment

Proposed Response *Response Status* **C**

REJECT.

The optical return loss tolerance is a positive value.

Check across clauses

Cl **60** *SC* **60.5.1** *P* **185** *L* **33** # **86**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **R**
Clarification of clause title to distinguish between 60.4.1. and 60.5.1.

SuggestedRemedy
Rename 60.5.1: "100BASE-BX10 transmitter optical specifications.

Proposed Response *Response Status* **C**
REJECT.

This is already clear from the clause title of 60.4 "PMD to MDI optical specifications for 100BASE-BX10."

Cl **60** *SC* **60.5.1** *P* **185** *L* **36** # **87**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A** *Measurement*
Missing requirement.

SuggestedRemedy
Add the following sentence: "It shall also meet a transmit mask of the eye measurement as defined in 60.8.8.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
See resolution to comment 84

Cl **60** *SC* **60.5.1** *P* **185** *L* **37** # **367**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
This editors' note has been hanging around for a while. Let's write the real note or abandon the idea. How many legacy receivers in the 1580-1600 nm range are out there?

SuggestedRemedy
Option 1, add footnote to table 60-8: 'This range is wider than the assoctaied transmitter to allow interoperation with legacy transceivers.'
Option 2, delete the editors' note.
Option 3 (technical), change '1600 to '1580' and delete the ediors' note.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

This comment is addressed by resolution of 981

Cl **60** *SC* **60.6** *P* **187** *L* # **981**
Seto, Koichiro Hitachi Cable

Comment Type **T** *Comment Status* **A**
My comment is to resolve my previous comment to Draft1.0 (comment#144) on the foot note for Table 60-12. The comment was accepted in principle with note of "Koichiro Seto to provide the reason used by TTC to obtain wavelength range.
Statement to be incorporated by the editor." I'd like to provide the statement I promised. (Sorry this comes in so late..)

SuggestedRemedy
Add footnote to Table 60-8: "Receive wavelength range of 100BASE-BX10-U is defined up to 1600nm to achieve backword compatibility with existing implementations of 100Mbps bi-directional optics with the transmit center wavelength of 1500nm.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Delete 'the' from 'the transmit center...' in remedy

See comment #367

Cl **60** *SC* **60.6** *P* **187** *L* **32** # **88**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **A**
Missing Table entry.

SuggestedRemedy
Add "Fiber type" row to Table 60-9.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.7** *P* **186** *L* **18** # **1021**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **R** *ORL*
"optical return loss" should be -12 (not +12) dB in Table 60-7

SuggestedRemedy
per comment

Proposed Response *Response Status* **C**
REJECT.

Optical return loss tolerance is a positive value

Cl **60** *SC* **60.8** *P* **188** *L* **13** # **1009**
Thatcher, Jonathan WWP

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

Optical testing incomplete (2 of 2 for C60; also for C 24)

After completing part 1 of these 2, it is essential to get together with the logic folk (C24) to figure out how to:

1. Ensure that the system can create the test patterns required for each test. Even if the patterns are called out in 60, the logic folk won't know to look there for logic test requirements unless some change in made elsewhere.
2. Ensure that the system can count the errors indicated. In short, the OAM functions being added will not be "optional" for this PMDs.
3. Can operate the link in a mode that supports these tests. The PHY must be able to send test frames when the link is not up (no Rx) for tests in Part 1 of the comment that are not asynchronous.
4. For those that are synchonous, it must be verified that the four partners are doing what is desired.

SuggestedRemedy

Meet with logic people. Discuss and evaluate capabilities for C24, and requirements for C60.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See response to 1008

Cl **60** *SC* **60.8** *P* **188** *L* **13** # **1012**
Thatcher, Jonathan WWP

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

Optical testing incomplete (1 of 2 for C60)

It is essential that each optical test be clearly evaluated for when asynchronous data is required. Some indicate need, most do not. This is especially important for the BiDi, where there the test method needs to specify specific wavelength drop/add mechanisms.

SuggestedRemedy

1. Identify each test that requires asynchronous operation from: Extinction ratio; OMA; RIN; Transmit optical waveform; TDP; Rx Sensitivity; Total Jitter; Stressed Rx

2. Create scheme for testing BiDi with asynchronous operation.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to # 1007

Cl **60** *SC* **60.8** *P* **188** *L* **15** # **89**
Swanson, Steven Corning Incorporated

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

Clarification.

SuggestedRemedy

Reword first sentence to read: "All optical measurements except TDP shall..."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

All optical measurements, except TDP and RIN, shall be made through a short patch cable, between 2 and 5 meters in length ."

Apply to all clauses

Cl **60** *SC* **60.8.1.1** *P* **188** *L* **32** # **1019**
Thatcher, Jonathan WWP

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

Also line 43.

It is essential that this test pattern be completely defined (including DA, SA, LT) to ensure that all systems can be tested in at least one common way.

SuggestedRemedy

Work with logic folk to fully specify the frames. Most likely, the frame type should be something that cannot accidentally be forwarded to the bridge. Or, it should be something that gets dropped at either the MAC, the MAC CTL, or the OAM sublayers.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The motiviation of this comment is to ensure that the patterns required for testing can be passed through the system. We welcome volunteers to identify these test patterns.
It is not desirable to enforce every bit of the test pattern because we wish to allow a test pattern which mimics real traffic. The main effect in this test pattern is baseline wander which is built up over very many bytes. The pattern's disparity is defined for all but 4% of its extent; this is adequate. It is hoped that we will be able to develop a complete 'example' test pattern for use in bit-level testers. What are the issues with accidentally forwarded frames? What would cause a frame to be dropped at the places mentioned?
Group with comment 368 and 1025

Cl **60** *SC* **60.8.1.1** *P* **188** *L* **41** # **368**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A** *Packet Testing*

Revisions to test pattern.

SuggestedRemedy

Shorten at line 35: '... ones in the 4B/5B encoded data prior to NRZI transmission as shown in Table 60–11.'

Extend at line 41: '... this sequence gives a near worst case ISI pattern and provides alternating periods of high and low transition density to test CDR performance.'

Be more psoitive at line 48: '... the resulting data stream has baseline ...'

Revise table 60-11: replace present 4 rows with columns, insert first column with rows: Idle and start of packet;destination address;source address; implementation specific 1;implementation specific 2;low transition density;X;high transition density;X;Frame check sequence 1;Frame check sequence 2. Insert new second column, title 'Number of octets', rows 12;6;6;32;?;?;?;?;4. Two rows (contents 32 and 4) straddle the 1/2 alternatives in first row. Fill in remainder of table and remove the editors' note! I will try to progess this before the meeting.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept proposed changes. Check for revised test pattern. Group with #1019 and #1025.

Ad-hoc will work on developing test pattern

Cl **60** *SC* **60.8.10** *P* **197** *L* **17** # **1022**
Thatcher, Jonathan

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

This isn't a component specification. Is this necessary?

SuggestedRemedy

If so, comment withdrawn. If not, remove.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Agree with the principle: this is a ""system level" standard. Change to: '... set by the system under test. While this standard applies to complete data terminal equipment (DTE), the test may be used as a diagnostic for testing components with appropriate margin, in which case the sampling ...'

Cl **60** *SC* **60.8.11.1** *P* **198** *L* **50** # **1023**
Thatcher, Jonathan WWP

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

Not clear why text related to test fiber and transversal filter is mentioned here. Those have nothing to do with this test. The implication of having this here is that there is some tie to the TDP measurement. There isn't

SuggestedRemedy

Remove text.

Proposed Response *Response Status* **C**

REJECT.

The text is clear and correct and answers a reasonable question in the reader's mind. It does not make a tie to the TDP measurement.

Cl **60** *SC* **60.8.11.2** *P* **200** *L* **15** # **374**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Attn*

We need to get the equation out of the step-by step list; in any case the flow of the text could be improved.

SuggestedRemedy

Move lines 15-26 'Vertical closure is measured ... shown in Figure 60–9.' to p199 line 47 and move p201 lines 13-14 'A N can be approximated ... given in 60.8.5.'to immediately follow it, resulting in: 'jitter components. Vertical closure is measured ... shown in Figure 60–9. A N can be approximated ... given in 60.8.5. For this test, ...'.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **60** *SC* **60.8.11.3** *P* **202** *L* **6** # **1024**
Thatcher, Jonathan WWP

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

Not possible to guarantee.

SuggestedRemedy

Remove entire sentence?

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

We will replace the word with 'ensure'

Cl **60** *SC* **60.8.11.4** *P* **202** *L* **44** # **375**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Typo in equation

SuggestedRemedy
Correct to 0.05 * f2/ f + S - 0.05

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.8.12** *P* **203** *L* **1** # **1025**
Thatcher, Jonathan WWP

Comment Type **T** *Comment Status* **A** *Measurement*
What are the requirements on the system to allow this test to be run? In short, the system must be generating a specific pattern wich can also be programmed into the BERT. What is this (both C59 and C60).

SuggestedRemedy
Define patter, get added to C24 and C36 (or wherever the Chief wants this) and ensure that the system can support this. This may need to be required.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Comment 368 addresses the test pattern. Note: this pattern is worst case for baseline wander which is assumed to be the dominant effect in the system, other penalties will be covered by TDP testing. It is not yet clear how this is to be implemented. The latter awaits discussion with logic people

Please tell us what you see as 'the requirements on the system to allow this test to be run'. If the test pattern is traffic like, are there any apart from (for convenience) overriding the ban on transmitting without a received signal? Do not add the patterns to 24 or 36; keep 100BASE pattern here and refer to it in 24 if appropriate; if any new 1000BASE patterns created, add to 59 or Annex 36A.

Cl **60** *SC* **60.8.12** *P* **203** *L* **4** # **583**
Jonsson, Ulf Ericsson AB

Comment Type **E** *Comment Status* **A**
Missed '.' between "...60.10.3" and "The..."

SuggestedRemedy
Insert '.'

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.8.2** *P* **189** *L* **12** # **90**
Swanson, Steven Corning Incorporated

Comment Type **E** *Comment Status* **A**
Clarification.

SuggestedRemedy
Title for 60.8.2 should read: "Center wavelength and spectral width measurements"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Be consistent across clauses. Remove "center" from title in 59.8.1, and 58.8.1.

Cl **60** *SC* **60.8.2** *P* **189** *L* **19** # **369**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
This note needs to be made precise (although the imprecison doesn't matter in practice, I think). We can follow clause 58. I have tweaked the words slightly to be clearer still

SuggestedRemedy
Change to: 'The allowable range of central wavelengths is narrower than the operating wavelength range by the actual RMS spectral width at each extreme.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.8.3** *P* **189** *L* **25** # **729**
Dudek, Mike Picolight

Comment Type **T** *Comment Status* **A** *Measurement*
Transmiters (particularly DC coupled) will tend to give different output powers depending on the 1's density of pattern being transmitted. In order to get more reproducible results it would be better to use only balanced patterns.

SuggestedRemedy
Change to "This measurement may be made with the node transmitting any valid balanced 4B/5B NRZI encoded data stream.

Proposed Response *Response Status* **C**
ACCEPT.

Accept suggested remedy

Cl **60** *SC* **60.8.5** *P* **189** *L* **39** # **370**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A**
Idle patterns vary between PMDs and we should take care to avoid misleading the reader.

SuggestedRemedy
Change to 'idle (10101... for 100BASE-LX10 and 100BASE-BX10) sequence.'

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.8.5** *P* **189** *L* **45** # **371**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
Does anyone remember why the filter for OMA measurements should be optional?

SuggestedRemedy
Delete 'optional' here and in Fig. 3.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.8.5** *P* **190** *L* **16** # **568**
Tom Mathey Independent

Comment Type **E** *Comment Status* **A**
The /H/ code group for 100BASE is 00100. It seems strange to reference a 1000 BASE value in a 100 BASE clause.

SuggestedRemedy
Review and correct.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

/H/ code group for 100BASE is 00100 above the PMA but the NRZI encoding (see 24.3.4) gives a square wave on the line, for optical PMDs. The test is applicable to 1000BASE-LX and BX as well and is thus being referenced from Cl59. Insert at the end of each 3rd level subclause for which this is the case: 'NOTE: this measurement procedure [or whatever] applies to 58, 59 and 60 [or any two as appropriate].' When all test procedures are stable common tests will be moved to Cl59.

Cl **60** *SC* **60.8.7.2** *P* **191** *L* **46** # **372**
Dawe, Piers Agilent

Comment Type **E** *Comment Status* **A** *Attn*
Add FOTP-107 to the list of informative references.

SuggestedRemedy
Per comment. It may have a more up-to-date name.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Cl **60** *SC* **60.8.8** *P* **192** *L* **44** # **730**
Dudek, Mike Picolight

Comment Type **T** *Comment Status* **A** *Measurement*
I think that it is necessary to include in addition to this test a tighter mask that has to be met with a much more balanced pattern. If a vendor were to make their Tx low frequency cut off very low (less than 1KHz) then this mask becomes far too easy to pass, and the transmitter won't work with an AC coupled receiver.

SuggestedRemedy
Either
a Include a second test condition with a pattern (similar to K28.5) with an eye mask the same as SONET OC3

b State that the mask must be met with the signal AC coupled with an AC coupling 3dB frequency of 100KHz.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

The concern is valid. However, the first remedy is applying a test which is not necessary for proper operation of the link on the assumption, not known for all DUTs, that the transmitter will degrade a certain way through pattern effects. Also, the current mask was developed by reference to the GigE mask not OC-3. The second remedy is inconvenient, because the oscilloscopes used for eye measurements are DC coupled. The TDP procedure calls out a receiver high pass of 10 kHz; this will fail the same transmitters as the second eye test would. So there is no strict need to make a change. However, these ideas could be added to 60.8.9.5 Approximate measures of TDP

Ad-hoc will look at generating appropriate text

Cl **60** *SC* **60.8.8** *P* **194** *L* **7** # **91**
Swanson, Steven Corning Incorporated

Comment Type **T** *Comment Status* **R** *Rise/Fall*

Clarification.

SuggestedRemedy

Are transmit rise/fall characteristics needed?

Proposed Response *Response Status* **C**

REJECT.

Don't need to specify rise/fall time for the transmitter.

Cl **60** *SC* **60.8.9** *P* **194** *L* **1222** # **731**
Dudek, Mike Picolight

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

This standard is not concerned with multi-mode fiber

SuggestedRemedy

Delete references to multi-mode fiber.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The test is applicable to 1000BASE- LX (which may use MMF) as well and is thus being referenced from Cl59. Insert at the end of each 3rd level subclause for which this is the case: 'NOTE: this measurement procedure [or whatever] applies to 58, 59 and 60 [or any two as appropriate].'

Cl **60** *SC* **60.8.9** *P* **194** *L* **25** # **585**
Jonsson, Ulf Ericsson AB

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

Consider moving the NOTE. Procedures for testing multimode fiber is described for several of the test methods, not only for TDP. The first instance of multimode component testing is as early as 60.8.7.3.

SuggestedRemedy

Move the NOTE to Clause 60.8, page 188, line 18.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Prefer several notes as the test section is about 14 pages long. Insert at the point suggested: 'NOTE: 60.x.y, 60.a.b .... apply to 58 and/or 59. 59 uses multimode fiber, although this clause 60 (100BASE-LX10 and 100BASE-BX10), and 58, do not.' Insert at the end of each 3rd level subclause for which this is the case: 'NOTE: this measurement procedure [or whatever] applies to 58, 59 and 60 [or any two as appropriate].' See #568, 734.

Cl **60** *SC* **60.8.9** *P* **238** *L* # **99109**
Diab, Wael William Cisco Systems

Comment Type **TR** *Comment Status* **A** *D1.1 #694*

TDP is the appropriate method for evaluating PMDs. Nonetheless, given the speed of these PMDs and the short-term desire to implement solutions (as expressed in the original proposal presentations), an informative that relates traditional measurement techniques to TDP may help bridge the gap.

SuggestedRemedy

Specify an informative correlation between the TDP measurements and the eye mask and/or the jitter numbers

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Needs more work by the ad-hoc & look at a jitter number for TP3.

Jitter numbers remain for 100BASE LX and BX as informative (with the exception of TP2 & TP3).

Cl **60** *SC* **60.8.9.2** *P* **195** *L* **18** # **734**
Dudek, Mike Picolight

Comment Type **T** *Comment Status* **A**
Multimode fiber is not part of this clause

SuggestedRemedy
Delete reference to multimode fiber. Also on page 196 line 14

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

The reference to MMF will not be deleted. More notes will be inserted

see comment 585

Cl **60** *SC* **60.8.9.2** *P* **195** *L* **52** # **733**
Dudek, Mike Picolight

Comment Type **T** *Comment Status* **A**
The editor's note does not appear to match the text.

SuggestedRemedy
Delete editor's note, (or change optical return loss tolerance in the Tx tables)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.8.9.3** *P* **239** *L* **6** # **99110**
Thatcher, Jonathan World Wide Packets

Comment Type **TR** *Comment Status* **A** *D1.1 #861*
the BER should be less than, not greater than 10e-3.
Also, in line 1, -3dBe ?

SuggestedRemedy
Change per comment

Proposed Response *Response Status* **U**
ACCEPT IN PRINCIPLE.

This issue needs more disicussion in the ad-hoc.

Cl **60** *SC* **60.8.9.4** *P* **196** *L* **38** # **735**
Dudek, Mike Picolight

Comment Type **E** *Comment Status* **A** *Attn*
Good luck finding the 10e-12 point at 125Mb/s.

SuggestedRemedy
Reword the section to allow extrapolation.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

This comment is of technical nature.

Attach sentence to the end of bullet b "Extrapolation techniques may be used with care"

Cl **60** *SC* **60.8.9.5** *P* **196** *L* **52** # **373**
Dawe, Piers Agilent

Comment Type **T** *Comment Status* **A**
We have discovered that receiver created wander can vary.

SuggestedRemedy
Replace 'the receiver' by 'many receivers'.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **60** *SC* **60.9.9.1** *P* **194** *L* **49** # **732**
Dudek, Mike Picolight

Comment Type **T** *Comment Status* **A** *Measurement*
0.2UI for rise and fall time on a reference transmitter at 125Mb/s is ridiculously long, (and will potentially affect the result)

SuggestedRemedy
Reduce 0.2UI to 0.1UI.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

This procedure is used at 1.25 GBd also. The reference transmitter is used only with the reference receiver whose bandwidth is known (not the DUT), so the effect is bounded to <~0.2 dB. Also, p196 line 28 says 'sensitivity S must be corrected for any significant reference transmitter impairments including any vertical eye closure.' See #568, 734, 585.

Value will be tightened to 0.15 UI

Cl **60** *SC* **Figure 60-5** *P* **193** *L* **2** # **582**

Jonsson, Ulf — Ericsson AB

Comment Type **E** *Comment Status* **A** *Measurement*

The eye mask picture does not use the same template/style as the eye mask pictures for e.g. Clauses 58, 59 and 52.

SuggestedRemedy

Redraw the eye mask picture using the Clause 52 eye mask picture template (which is drawn in native Frame format).

Proposed Response *Response Status* **C**

ACCEPT.

Remember this drawing is to scale.

Cl **60** *SC* **General** *P* *L* **4** # **807**

John George — OFS

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

Identifying single mode fiber as "SMF" under headings in tables identified as Fiber Type is redundant. Also, SMF is used as part of multiple trademarks by one of the fiber manufacturers and thus is not an appropriate term to be used in a standard.

SuggestedRemedy

Change "SMF" to "SM" in all cases in which such is described as a fiber type.

Proposed Response *Response Status* **C**

REJECT.

The abbreviation SMF is defined in Clause 1.5 and is used throughout the 802.3 standard.

Cl **61** *SC* *P* *L* # **63003**

Simcha Aronson

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

typos

SuggestedRemedy

p212/l92: BER of less than 1 in part in ... : remove first "in"
p219/l15,32,49: remove extra closing parameters
replace "example 1" with "example a".
p219/l17,34,51: multiple periods in a row (to be removed)
p221/l16: replace "MAC-PHY interface" with "MAC"
p221/l3: replace "maximum length frame" with "maximum length packet"
p228/l6: replace "remote access register" with "remote discovery register"
p228/l7: replace "according via" with "via"
p233/l1: missing period
p234/l22: multiple periods in a row (to be removed)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* *P* *L* # **63002**

Barry O'Mahony

Comment Type **T** *Comment Status* **X**

Given the decision on error signals (#99114), the 32 bit CRC defined in the TPS-TC section must be replaced by a 16 bit CRC (CRC-CCITT).

SuggestedRemedy

The 32 bit CRC defined in the TPS-TC section must be replaced by a 16 bit CRC (CRC-CCITT).

Proposed Response *Response Status* **Z**

WITHDRAWN.

Cl **61** *SC* *P* **211** *L* **1** # **661**

O'Mahony, Barry — Intel R&D

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

Port type names seem inconsistant. One is "10PASS-T", and the other is "2BASE-TL".

SuggestedRemedy

Globally, change "2BASE-TL" to "2BASE-T"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Comment #491 proposes to globally change 10PASS-T back to 10PASS-TS.
1. Adopt 10PASS-TS and 2BASE-TL
Approve: 13 Don't Approve: 3 Abstain: 7

Cl **61** *SC* *P* **211** *L* **1** # **659**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Title only references PCS sublayer, but the Clause also describes handshaking procedures common to the two EFM Copper PHY's

SuggestedRemedy
Modify title to: "Physical Coding Sublayer (PCS) and Handshaking, type 10PASS-T and 2BASE-T"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Modify title to: "Physical coding sublayer (PCS) and common specifications, type 10PASS-TS and 2BASE-TL"

Cl **61** *SC* *P* **211** *L* **17** # **660**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
In list of abbreviations, "EFM" is not listed, although it is used in the Clause text

SuggestedRemedy
Add "EFM: Ethernet in the First Mile"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **2.1.3.2** *P* **221** *L* **2,3 and 9,** # **982**
Rahul Bhushan STMicroelectronics In

Comment Type **E** *Comment Status* **R**
Given that FIFO's are used to transfer frames between Half/Full Duplex 2Base-TL and 10Pass-T networks over MII which is 100Mbps(as per Clause 23.2.2.1), latency issues related to number of frames stored in the FIFOs before they are read out in either transmit/receive paths, is not clear.

SuggestedRemedy

Proposed Response *Response Status* **C**
REJECT. No suggested remedy.

Cl **61** *SC* **44** *P* **214** *L* **44** # **669**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Minor re-wording.

SuggestedRemedy
Change "TPS-TC function" to "TPS-TC functions"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61** *P* **211** *L* **1** # **569**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
There are numerous block diagrams in this clause. Many of them conflict and show different things for the same subject.

SuggestedRemedy
Provide one really good block diagram with correct labeling and with sufficient detail, all pieces and all layers, such that this one diagram can be referred to by multiple subclauses. The unwashed masses will appreciate your effort.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Editor will attempt to merge Figures 61-2, 61-3 and 61-10.

Cl **61** *SC* **61.1** *P* **212** *L* **3** # **643**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
2BASS-TL and 10PASS-T must be swaped for a better flow with second sentence which gives the data rate requirements for each phy technology

SuggestedRemedy
Line 3 first sentence must be changed to"

" 10PASS-T and 2BASE-TL are Physical Layer signalling systems for Ethernet in the first Mile."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1** *P* **212** *L* **3** # **662**

O'Mahony, Barry Intel R&D

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

Text in this subclause sounded stilted and odd; e.g., text in parentheses not needed. Also, D1.2 Comment #591 resolution not implemented correctly (the word "all" should not be present).

SuggestedRemedy

Change text to:

2BASE-T and 10PASS-T are Physical Layer signaling systems for Ethernet in the first mile. These PHYs deliver a minimum of 10 Mb/s over distances of up to 750 meters, and a minimum of 2Mb/s over distances of up to 2700 meters, using a single copper pair. Optionally, transmission over multiple copper pairs is supported.

The copper category of EFM PHY's is based on DSL PMD's used in the access network according to ATIS T1, ETSI and ITU-T standards. These systems are intended to be used in public as well as private networks; therefore they shall be capable of compliance with appropriate regulatory, governmental and regional requirements.

Unlike 100BASE-T and 1000BASE-T, voice-grade copper networks have channel characteristics that are very diverse and therefore it is conventional to discuss the channel behavior only in terms of averages, standard deviations and percentage worst case.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Resolution of comments #643 and #744 may apply. In last paragraph, change "Unlike 100BASE-T and 1000BASE-T" to "Unlike the media types specified for 10BASE-T, 100BASE-T and 1000BASE-T"

Cl **61** *SC* **61.1** *P* **212** *L* **3** # **744**

Squire, Matt Hatteras Networks

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

The first sentences says "2BASE-TL and 10PASS-TL", the second says these "PHYs deliver..10Mb/s..and 2Mb/s". Should talk about them in the same order in both sentences.

SuggestedRemedy

Change order in first sentence to 10PASS-TL and 2BASE-TL

Proposed Response *Response Status* **C**

ACCEPT. See comment #643.

Cl **61** *SC* **61.1.1** *P* **212** *L* **19** # **663**

O'Mahony, Barry Intel R&D

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

"differs" is grammatically incorrect.

SuggestedRemedy

Change to "differ". Also, in line 20, change "copper channel" to "access network copper channels".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.1.1** *P* **212** *L* **30** # **745**

Squire, Matt Hatteras Networks

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

Margin should be 5dB. Its 5 in several other places.

SuggestedRemedy

Margin should be 5dB not 6.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Margin for 10PASS-T is 6dB per Clause 62. Margin for 2BASE-TL is 5dB per Clause 63. Both numers will be copied in Clause 61.

Cl **61** *SC* **61.1.2** *P* **212** *L* **37** # **746**

Squire, Matt Hatteras Networks

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

At this point, its not clear what the PTM-TC gamma interface is, so making it an objective is confusing.

SuggestedRemedy

Reword to "To provide functional layering within the PCS to ensure compatibility with the generic frame interface for xDSL systems (the gamma interface defined in [G993.1])."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Reword to "To provide functional layering in the PCS which ensures compatibility with the layering and interfaces for xDSL systems, including a gamma interface based on that used for the PTM-TC sublayer as defined in ITU-T G.993.1"

Cl **61** *SC* **61.1.2** *P* **212** *L* **38** # **664**

O'Mahony, Barry Intel R&D

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

As stated here, this is not an adopted objective.

The baseline, in Notes_to_ Editor_1_0302 Note #1, does say we will do an adaptation layer that resides on top of the gamma-interface, which is the term for the interface on the top of the TPS-TC. However, the adopted TPS-TC for EFM-Cu, 64Byte/65Byte, is not the PTM-TC. Also, the gamma-interface described in the text, while similar to that defined for the PTM-TC, is not the same (extra signals, etc.) Therefore, the PTM-TC should not be explicitly mentioned here.

This does not preclude defining the gamma-interface for the new TPS-TC to closely resemble that for the PTM-TC.

SuggestedRemedy

Change text to:

"To provide functional layering in the PCS which ensures compatibility with the interface for xDSL systems (TPS-TC g interface)."

Proposed Response *Response Status* **C**

REJECT. See comment #746.

Cl **61** *SC* **61.1.3** *P* **212** *L* **49** # **747**

Squire, Matt Hatteras Networks

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

Table reference wrong, and the difference between "functions" and "subsections" is not clear (which is which?). These terms aren't part of the glossary in Section 1.

SuggestedRemedy

61-1 should be 61-2, and maybe just use "components" or "parts" instead of function/subsection.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Editor will add clarification. Resolution of comment #569 may apply.

Cl **61** *SC* **61.1.4.1** *P* **212** *L* **49** # **665**

O'Mahony, Barry Intel R&D

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

Reference to Figure 61-1 incorrect.

SuggestedRemedy

Change to 61-2.

Proposed Response *Response Status* **C**

ACCEPT. See comment #747.

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **13** # **897**

Cravens, George Mindspeed

Comment Type **E** *Comment Status* **D**

64b/65b encapsulation refers to bits not bytes, so use lowercase "b".

SuggestedRemedy

Change text to:
64b/65b Encapsulation

Proposed Response *Response Status* **Z**

WITHDRAWN.

64B/65B encapsulation as defined in 61.2.3.3.1 refers to bytes.

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **15** # **893**

Cravens, George Mindspeed

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

In Figure 61-1:
The Gamma Interface should be marked "Optional" (same as the MII interface).

SuggestedRemedy

In Figure 61-1:
Add "(Optional)" next to the Gamma Interface.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **15** # **666**
O'Mahony, Barry Intel R&D

Comment Type **T** *Comment Status* **A**
Reference to gamma interface as dividing line between PCS and PMA is incorrect. In Baseline (rezvani_1_0302), TPS-TC is part of PCS.

SuggestedRemedy
Change from "gamma interface" to "alpha/beta interface".

Editor may also wish to label boundary between PHY PMI Aggregation and 64B/65B Encapsulation functions as being the gamma interface.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **35** # **523**
Zion Shohet Infineon

Comment Type **T** *Comment Status* **A**
Add a function of extracting/adding the Preamble&SFD bytes

SuggestedRemedy
Modify line 52 on page 213 to read: "In the transmit direction, a frame, after Preamble and SFD bytes have been extracted from it, is transferred ....."
Modify line 4 on page 214 to read: "The frame is passed across the gamma-interface, then an SFD Byte is prepended to it, and then it is passed up across ....."
Fig 61-2 on page 213: add a functional block, named "Preamble/SFD Add/Drop" between the MAC-PHI Rate matching block and the PHI PMI Aggregation block.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Both pre-amble and SFD should be restored on received data as per comments #714 and #715. Although dropping preamble on RXD going into the MAC is legal it is possible it would lead to inter-operability problems.
Regeneration of IPG should also be addressed in text.
Approve: 19 Don't Approve: 0 Abstain: 4

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **40** # **667**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Add more description to TPS-TC boxes.

SuggestedRemedy
Add "64B/65B Encapsulation"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Resolution of comment #569 may apply.

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **43** # **748**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
We use alpha/beta and gamma interfaces rather liberally very early. Can we at add a section that defines what these interfaces are? The details are already provided later, but without context these sections are confusing to the reader.

SuggestedRemedy
Add a section defining the various alpha/beta/gamma interfaces.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Editor will add short description with reference to appropriate subclauses.

Cl **61** *SC* **61.1.4.1** *P* **213** *L* **52** # **894**
Cravens, George Mindspeed

Comment Type **T** *Comment Status* **A**
Change the word "frame" to "fragment" to reflect support for PMI aggregation.

SuggestedRemedy
Replace the paragraph with the following text: (Bold text shows changes)
In the transmit direction a whole fragmemt is transferred across the MII interface, through the MAC-PHY Rate Matching and PHY PMI Aggregation functions and across the ã-interface at the rate of the MII clock. The TPS-TC(s) will then signal across the ã-interface to prevent further transfer until it is ready to accept another fragment. The MAC-PHY Rate Matching function prevents the transfer of another fragment across the MII until the TPS-TC is ready.

(Note: The gamma symbol got squashed and turned into the "ã" symbol shown above.)

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
At the level of the MII interface, data consists of MAC Frames, not fragments. However, the frame may be broken into fragments at the level of the gamma-interface(s). Editor is instructed to make necessary changes, and update text to be in accordance with 61.2.3.3.1. Rewording will take into account that PMI aggregation is also optional.

Cl **61** *SC* **61.1.4.1** *P* **214** *L* **5** # **895**

Cravens, George Mindspeed

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

Change the word "frame" to "fragment" to reflect support for PMI aggregation.

SuggestedRemedy

Replace the paragraph with the following text: (Bold shows the changes)
In the receive direction the TPS-TC(s) signals that a whole fragment is ready for transfer. The fragment is passed across the ã-interface and passed up across the MII interface. The MAC-PHY Rate Matching function may delay the transfer of the fragment to avoid simultaneous transfer of Transmit and Receive frames if required.

(Note: The gamma symbol got squashed and turned into the "ã" symbol shown above.)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment #894.

Cl **61** *SC* **61.1.4.1.1** *P* **214** *L* **17** # **668**

O'Mahony, Barry Intel R&D

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

Minor re-wording suggested.

SuggestedRemedy

Change: "It is important to note that Clause 4 [see Clause 4] allows the MAC to simultaneously receive and transmit data when configured for half duplex operation"

To: "It is important to note that Clause 4 [see Clause 4] does not prohibit the MAC from simultaneously receiving and transmittling data when configured for half duplex operation"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.1.4.1.1** *P* **214** *L* **23** # **896**

Cravens, George Mindspeed

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

Use parameters to define the maximum frame length rather than just a number (1522 bytes) and a set of references. This should prevent conflicts if/when Tag Stacking gets approved.

SuggestedRemedy

Replace the text show below (from line 23):
... a maximum length frame, i.e. 1522 bytes (see 3.5, 4.2.7.1 and 4.4).

With the following text:
... a maximum length frame (i.e. maxUntaggedFrameSize + qTagPrefixSize, currently 1522 bytes (see 3.5, 4.2.7.1 and 4.4)).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.1.4.1.1** *P* **214** *L* **25** # **714**

O'Mahony, Barry Intel R&D

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

Incomplete description

SuggestedRemedy

Insert paragraph:

The transmitter MAC-PHY Rate Maching function strips the Preamble and SFD fields from the MAC frame, and forwards the resulting data frame to the PMI Aggregation Function.

Modify subsequent paragraph to read as follows:

The PHY buffers complete receive frames. On reception of a complete frame the PHY prepends the Preamble and SFD fields, and sends it to the MAC at 100Mb/s.

Proposed Response *Response Status* **C**

ACCEPT. See comment #523.

Cl **61** *SC* **61.1.4.1.4** *P* **214** *L* **55** # **799**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **A**
(line 55 doesn't exist if you're looking for it)

Suggest we add another overview section that discusses the relationship between physical layer management and Ethernet OAM. The question about EoC vs Ethernet OAM has been asked many times.

SuggestedRemedy
61.1.4.1.4 Overview of Management

Ethernet OAM (Clause 57) runs over an aggregated set of PMIs in a PMD. The Ethernet OAM operates as long as there is at last one PMI in the PMD thats operational. The physical xDSL PMIs in Clauses 62 and 63 each have their own management channel that operates per loop (EoC/voc). The PMI OAM is used for loop activation, aggregation, and maintenance of an individual loop. Ethernet OAM is used to monitor and maintain the aggregate.

<maybe someone can come up with something better>

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.1** *P* **215** *L* **21** # **670**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
This subclause needs text.

SuggestedRemedy
Proposed text:

The PCS, PMA, and the MDI are defined to provide compatibility among devices designed by different manufacturers. Designers are free to implement circuitry within the PCS and PMA in an application-dependent manner provided the MDI and MII specifications are met.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.2** *P* **215** *L* **23** # **671**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
This subclause has no text.

SuggestedRemedy
Proposed text:

When the PHY is incorporated within the physical bounds of a DTE, conformance to the MII is optional, provided that the observable behavior of the resulting system is identical to that of a system with a full MII implementation. For example, an integrated PHY may incorporate an interface between PCS and MAC that is logically equivalent to the MII, but does not have the full output current drive capability called for in the MII specification.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.3** *P* **215** *L* **25** # **672**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **R**
subclause has no text

SuggestedRemedy
delete subclause (I can't think of any appropriate text, can anyone else? Nor does it seem any is necessary).

Proposed Response *Response Status* **C**
REJECT.
Reject: Approve: 10 Don't Approve:1 Abstain: 7
Note: Comments (against D1.4) are invited to add text to this subclause.

Cl **61** *SC* **61.1.5.4** *P* **215** *L* **32** # **749**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Figure reference is wrong

SuggestedRemedy
Figure 61-2 should be 61-3.

Proposed Response *Response Status* **C**
ACCEPT. Resolution of comment #569 may apply.

Cl **61** *SC* **61.1.5.4** *P* **215** *L* **33** # **898**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Reference should be to Figure 61-3 (not 61-2).

SuggestedRemedy
Change reference to Figure 61-3.

Proposed Response *Response Status* **C**
ACCEPT. See comment #749.

Cl **61** *SC* **61.1.5.4** *P* **215** *L* **33** # **673**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Figure reference incorrect.

SuggestedRemedy
change "61-2" to "61-3"

Proposed Response *Response Status* **C**
ACCEPT. See comment #749.

Cl **61** *SC* **61.1.5.4** *P* **215** *L* **36** # **750**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
This paragraph and the description in general is hard to follow. Suggest adding a couple of easy sentences of description - the concepts aren't difficult once someone knows what the registers are for.

SuggestedRemedy
Before "Note that..." add the following:
"The PMD Available register controls which loops (PMA/PMD instances) may be aggregated into a particular PMD. This register value is limited by the physical connectivity in the device, may be further constrained by management, and is additionally constrained as PMIs are aggregated into other PMDs (which causes their bit to be zero'd in the PMDs that they are not part of). The register represents the potential for connectivity into this PMD at the particular point in time. The PMD Aggregate register indicates the actual connectivity, i.e. which loops (PMA/PMD instances) are being aggregated into the particular PMD. "

Proposed Response *Response Status* **C**
ACCEPT. Editor shall make sure naming is consistent.

Cl **61** *SC* **61.1.5.4** *P* **215** *L* **36** # **571**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
There is no 45.2.2.1 in this draft. What is referred to as the PMD Available register seems to be the PMI Available register in table 45-11, but with a 3.x.y MMD address which indicates that this is a PCS register.

SuggestedRemedy
Correct all references, make sure inter-clause names are identical, and make the text understandable.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. See comment #572.

Cl **61** *SC* **61.1.5.4** *P* **215** *L* **37** # **674**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
minor re-wording to remove "must"

SuggestedRemedy
change "must be" to "is".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.4.1** *P* **215** *L* **50** # **675**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
incorrect punctuation.

SuggestedRemedy
change comma to either semicolon, or period.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Change comma to period.

Cl **61** *SC* **61.1.5.4.1** *P* **216** *L* **29** # **751**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Fig reference wrong

SuggestedRemedy
61-3 should be 61-4.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.4.1** *P* **216** *L* **29** # **901**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Reference should be to Figure 61-4 (not Figure 61-3).

SuggestedRemedy
Change the reference to Figure 61-4.

Proposed Response *Response Status* **C**
ACCEPT. See comment #751.

Cl **61** *SC* **61.1.5.4.1** *P* **216** *L* **29** # **676**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
incoorect Figure reference

SuggestedRemedy
change 61-3 to 61-4

Proposed Response *Response Status* **C**
ACCEPT. See comment #751.

Cl **61** *SC* **61.1.5.4.1** *P* **216** *L* **33** # **899**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Minor readability change:
Change "different to" to "different from".

SuggestedRemedy
Replace the sentence with the following (change shown in Bold):

Similarly, the number of PCS instances may be different from the number of PMA/PMD instances addressed by one MDIO bus.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.4.2** *P* **216** *L* **42** # **900**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Make the word "configuration" plural.

SuggestedRemedy
Change "configuration" to "configurations".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.4.2** *P* **216** *L* **45** # **677**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
incorrect Figure references

SuggestedRemedy
change 61-4 to 61-5. Also, in line 50 change 61-5 to 61-6.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.1.5.4.2** *P* **216** *L* **46** # **752**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Figure references wrong, line 46,50.

SuggestedRemedy
Fix references.

Proposed Response *Response Status* **C**
ACCEPT. See comment #677.

Cl **61** *SC* **61.1.5.4.2** *P* **216** *L* **46** # **902**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Reference should be to Figure 61-5 (not Figure 61-4).

SuggestedRemedy
Change reference to Figure 61-5.

Proposed Response *Response Status* **C**
ACCEPT. See comment #677.

Cl **61** *SC* **61.1.5.4.2** *P* **216** *L* **50** # **903**

Cravens, George — Mindspeed

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

Reference should be to Figure 61-6 (not Figure 61-5).

SuggestedRemedy

Change reference to Figure 61-6.

Proposed Response *Response Status* **C**

ACCEPT. See comment #677.

Cl **61** *SC* **61.1.5.5** *P* **220** *L* **16** # **678**

O'Mahony, Barry — Intel R&D

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

This subclause has no text

SuggestedRemedy

Strawman text (need better term than "subtype", however):

The 10PASS-T and 2BASE-T EFM Copper PHY's, in conjunction with the MAC specified in Clauses 1 through 4, are used for point-to-point communications on the access network between Central Office (C.O.) equipment, and Customer Premise Equipment(CPE).

For both 10PASS-T and 2BASE-T port types, there are two each subtypes, depending on whether the PHY is intended for operation in the C.O. or the Customer Premise. A C.O. subtype can communicate with a CPE subtype and vice versa. A C.O. subtype cannot connect to another C.O. subtype; similarly, a CPE subtype cannot connect to a CPE subtype.

[Also, add C.O. and CPE to list of abbreviations in editor's notes.]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Introduce terms 10PASS-T-O, 2BASE-TL-O and 10PASS-T-R, 2BASE-TL-R. Resolution of comment #661 applies. Editor shall make text more readable, especially to find a better term for "Central Office".

Cl **61** *SC* **61.1.5.5** *P* **220** *L* **16** # **63001**

Michael Beck — Alcatel

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

Clause 56 states that 2BASE-TL and 10PASS-TS PHYs can be configured either as an LT or as an NT. Our clauses 61, 62, 63 specify the LT and NT subtypes, but there is no "configurability" implied.

SuggestedRemedy

Request changes in Clause 56 to break up 2BASE-TL and 10PASS-TS into subtypes 2BASE-TL-O/-R and 10PASS-TS-O/-R respectively.

Add text to 61.1.5.5 specifying that CO and CPE subtypes may be implemented in the same device.

Trhoughout clauses 61,62,63,45, all references to LT/NT have to cleaned up.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.1.5.6** *P* **220** *L* **18** # **679**

O'Mahony, Barry — Intel R&D

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

This subclause has no text.

SuggestedRemedy

Move 2nd and 3rd paragraphs from subclause 61.1.4.2 and put them here.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.11** *P* **278** *L* **20** # **644**

Venugopal, Padmabala — InterOperability Labor

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

Remove reference to 2PASS-TL

SuggestedRemedy

Remove reference 2PASS-TL in line 20 and line 33.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.1.1** *P* **220** *L* **26** # **715**
O'Mahony, Barry Intel R&D

Comment Type **T** *Comment Status* **A**
Incomplete specification

SuggestedRemedy
Insert paragraph:

Upon receipt of a MAC frame from on the MII, the PHY shall discard the Preamble and SFD fields, and transmit the resulting data frame across the physical link.

Modify subsequent paragraph to read:

The PHY shall buffer a received data frame and prepend Preamble and SFD fields before sending it to the MAC at a rate of 100Mb/s.

Proposed Response *Response Status* **C**
ACCEPT.
See comment #714. This topic needs to be discussed by the STF.

Cl **61** *SC* **61.2.1.1** *P* **220** *L* **29** # **753**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **A**
Says PHY "may" support not sending to MACs that can't rcv/xmit simultaneously. Shouldn't this be a "must". Otherwise, we'd have incompatibility problems with certain pre-existing MACs, and since old MACs can't change, new PHYs have to be adaptable.

SuggestedRemedy
Make it a must.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Use the word "shall" in place of "may" (the use of the word "must" is discouraged in IEEE specs).
Delete the word 'optional' from line 32 on page 214.

Cl **61** *SC* **61.2.1.3.4** *P* **221** *L* **35** # **904**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Minor readability comments:

SuggestedRemedy
Move 61.2.2 after Figures 61-7, 61-8, and 61-9.

Refer to the Figures in order: (change text to:)
... are shown in Figure 61–7, Figure 61–8 and Figure 61-9.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2** *P* **221** *L* **41** # **680**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
PAF is not used "with EFM copper PHYs", as the PAF is part of the PHY.

SuggestedRemedy
Change "and EFM copper PHYs" to "in EFM copper PHYs"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2** *P* **221** *L* **45** # **681**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Saying "the PAF interfaces with the PHYs" is incorrect, as the PAF is part of the (aggregated) PHY

SuggestedRemedy
Change to: "The PAF interfaces with the individual TPS-TCs, PMAs and PMDs"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Change to: "The PAF interfaces with the TPS-TCs across the gamma interface".

Cl **61** *SC* **61.2.2** *P* **221** *L* **50** # **574**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
The text Supports aggregation of 2 to 32 PHYs" does not allow the very useful case of an aggregation of 1 link.

SuggestedRemedy
Follow the lead of 802.3ad, Link Aggregation, and allow the very useful aggregation of 1 link.

Proposed Response *Response Status* **C**
ACCEPT. See comment #754.

Cl **61** *SC* **61.2.2** *P* **221** *L* **50** # **754**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **A**
I think (hope) we can support one link in an aggregated group. I know this was talked about before (meetings ago), though I don't remember the outcome.

SuggestedRemedy
Change "2-32 PHYs" to "up to 32 PHYs".

Proposed Response *Response Status* **C**
ACCEPT.
Note that PAF is optional and datastream is unchanged in (1 PHY) pass-through mode.

Cl **61** *SC* **61.2.2** *P* **221** *L* **52** # **682**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **D**
In c) do not use "packet". 1.4.198 defines a packet as a data frame + preamble + SFD.

SuggestedRemedy
Change "packet" to "fragment"

Proposed Response *Response Status* **Z**
WITHDRAWN.
This section describes the characteristics of PAF when viewed from the system perspective.

To change packet to fragment would be incorrect. Fragment latency is not effected and fragment order is not preserved. However, packet latency may be lower than on individual links and packet order is preserved despite fragment disorder.

Changing "packet" to "frame" would be required upon acceptance of comment #523.

Cl **61** *SC* **61.2.2.1** *P* **223** *L* **46** # **683**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
"MAC frame" is not defined in definitions; sublclause 3.2 defines it to include preamble and SFD, which is not what we want.

SuggestedRemedy
1.4.96 contains a definition of "data frame" (consists of Destination Address, Source Address, Length Field, logical link control (LLC) Data, PAD, and Frame Check Sequence). Change "MAC frame" to "data frame".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Direct the editor to add a figure to the overview.

Cl **61** *SC* **61.2.2.1** *P* **224** *L* **1** # **684**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Figure 61-10 is almost identical to Figure 61-2.

SuggestedRemedy
Delete 61-10; redirect references to 61-2.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Resolution of comment #569 applies.

Cl **61** *SC* **61.2.2.1** *P* **224** *L* **10** # **905**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
PHY Loop Aggregation is called PMI Aggregation

SuggestedRemedy
Change text from "Phy Loop Aggregation" to "PMI Aggregation".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2.1** *P* **224** *L* **28** # **919**

Barrass, Hugh — Cisco Systems

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

In Figure 61-11 the sequence number is defined as 12 bit and 2 bits are reserved. In order to prevent sequence number wraparound problems, the sequence number must be 14 bit (and the two reserved bits get swallowed up).

The number of bits which must be buffered (for each PMI) is equal to 64,000 (from 61.2.2.4) plus an amount to allow for speed difference (= max frag size * speed ratio). Therefore the total buffer size > 256kbytes. Since the min frag size is 64bytes, this would correspond to > 4k fragments. Sequence number must be > 13 bits.

SuggestedRemedy

Change Figure 61-11 to show SeqNum (14 bits) and eliminate Reserved (2 bits).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.1** *P* **224** *L* **28** # **685**

O'Mahony, Barry — Intel R&D

Comment Type **E** *Comment Status* **D**

In Figure 61-11, the term "packet" is used.

SuggestedRemedy

replace with the term "fragment"

Proposed Response *Response Status* **Z**

WITHDRAWN.
The flags refer to start and end of packet - not fragment. Some fragments may have neither flags, others may have both.
See also comment #682.

Cl **61** *SC* **61.2.2.2** *P* **224** *L* **40** # **906**

Cravens, George — Mindspeed

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

Parameter "minAggBytesPerPHY" is not defined, and behavior at end of packet is not clear.

SuggestedRemedy

Change text from:
(shall be greater than minAggBytesPerPHY).

To:

(shall be at least minFragmentSize and no more than maxFragmentSize bytes unless end of packet, then shall be no more than maxFragmentSize bytes).

Proposed Response *Response Status* **Z**

WITHDRAWN.
See comment #524.

Cl **61** *SC* **61.2.2.2** *P* **224** *L* **40** # **524**

Zion Shohet — Infineon

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

minAggBytesPerPHY is wrong

SuggestedRemedy

Replace minAggBytesPerPHY with minFragmentSize

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Also add "and less than maxFragmentSize".

Cl **61** *SC* **61.2.2.2** *P* **224** *L* **40** # **693**

O'Mahony, Barry — Intel R&D

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

inconsistant nomenclature

SuggestedRemedy

Change "minAggBytesPerPHY" to "minFragmentSize"

Proposed Response *Response Status* **C**

ACCEPT. See comment #524.

Cl **61** *SC* **61.2.2.2** *P* **224** *L* **41** # **694**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Incrementing of sequence number should mention that is wraps around at 13 bits

SuggestedRemedy
In c), Change "Increment" to "Increment (modulo-2^12, maxFragmentSequenceNumber)"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Add wrap around, but take into account comments that change sequence number size.

Cl **61** *SC* **61.2.2.2** *P* **224** *L* **41** # **525**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
There is no "EFM header"

SuggestedRemedy
Replace "EFM header" in lines 41 and 42, with "Fragmentation header".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. "Fragmentation Header" shall be used. Editor will ensure consistency of terms throughout the clause.

Cl **61** *SC* **61.2.2.2** *P* **224** *L* **42** # **695**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **D**
incorrect nomenclature

SuggestedRemedy
In d0, change "packet" to "fragment"

Proposed Response *Response Status* **Z**
WITHDRAWN.
See response to comments #682, #685.

Cl **61** *SC* **61.2.2.3** *P* **224** *L* **53** # **686**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
term "loop" should be changed for sake of consistancy.

SuggestedRemedy
change "per-loop" to "per-PMI"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **1** # **687**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Minor re-wording

SuggestedRemedy
suggest changing "bring-up" tp "start-up"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **10** # **756**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Should mention that the comparisons of sequence numbers use split horizon.

SuggestedRemedy
Append new sentence at paragraph end:
"Thus all sequence number comparisons should use split horizon calculations, where x<y if
a) x < y <= x+(maxSequenceNumber/2), or
b) y <= x-(maxSequenceNumber/2)
"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Editor will add definition of "split horizon".

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **13** # **757**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
Use the variables just defined in the previous section in the algorithms.

SuggestedRemedy
Replace "next sequence number" with "nextFragmentSequenceNumber". Replace "expected sequence number" with "expectedFragmentSequenceNumber."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **14** # **758**

Squire, Matt — Hatteras Networks

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

Distributing the algorithm from the error cases makes it difficult to understand. In particular, step (b) says "wait for that condition or follow the error handling rules in 61.2.2.5." That would of course make the text more akin to what was in Draft 1.2. I'm not sure if the re-writes were done by group decision, but I find the separation of the errors very difficult to follow. For example, it also makes it look like (c) always follows (b), but thats not the case for many of the error conditions. And its not clear how the timeout (p226 line25) interacts with the other conditions (i.e. what error conditions get priority, etc.).

SuggestedRemedy

Merge the error conditions back into the algorithm. We can still have the detailed handling of the errors in the latter section, but we should at least catch/enumerate them in the main algorithm.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Direct the editor to modify the section. Add a figure if the editor deems it necessary.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **17** # **688**

O'Mahony, Barry — Intel R&D

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

In c.), do not use "packet buffer"

SuggestedRemedy

Change to "fragment buffer"

Proposed Response *Response Status* **C**

ACCEPT.

Technically it could be either - it contains fragments being reassembled into packets.

Accept because "fragment buffer" is less contentious.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **21** # **920**

Barrass, Hugh — Cisco Systems

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

This paragraph contains normative requirements that are a repeat of 61.2.2.4 (where they belong). The only information which is relevant for the receive function is the buffer requirement - which can be 2^16 bits if the comments against 61.2.2.4 are accepted.

SuggestedRemedy

Change final paragraph to:

Subclause 61.2.2.4 restricts the transmit function such that the maximum buffer requirement for a receiver is 2^16 bits per PMI.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Size of buffers depends on resolution of other comments on PMI aggregation.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **22** # **909**

Cravens, George — Mindspeed

Comment Type **T** *Comment Status* **D**

Delete comment about buffer size implementations. Suggesting that an implementation could support differential latencies that are out of spec (greater than 64,000 bit times) is unnecessary and potentially misleading.

(An implementation could support any size buffers as long as the max differential latency is supported.

SuggestedRemedy

Replace text with (delete portion in parenthesis):

The PMD control of aggregated links shall ensure that the maximum latency difference between any two aggregated links correponds to no more than 64,000 bit times.

Proposed Response *Response Status* **Z**

WITHDRAWN.

See response to comments #920, #907, #528 and #755.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **43** # **759**
Squire, Matt Hatteras Networks

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

The restrictions listed here (with additions from Barry&Hugh) are one way to guarantee the sequence number space is adequate. However, there other ways as well. For instance, if one knows that the differential latency is very small, then a wider variability in fragment sizes is possible without sequence number wrap-around. So the restrictions here can be examplary, not absolute.

SuggestedRemedy

Replace line 43 with:
"Implementations must guarantee that the 14-bit sequence number space is adequate to prevent wrap-around conditions. One method to achieve guarantee this is to use the following restrictions in the transmit algorithm:
<restrictions>
However, other methods to guarantee sequence number space adequacy are also possible."

Additionally, remove the min/max fragment size checks in the receive algorithm, as the receiver doesn't really care, its the transmitter that has to use them (allows more variability in xmit).

Proposed Response *Response Status* **C**

REJECT.
Approve:13 Don't Approve: 1 (Steve Jackson) Abstain:6

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **6** # **528**
Zion Shohet Infineon

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

64000 bit time differential delay is too big. Reasonable assumptions can lead to a 2KByte differential delay.

SuggestedRemedy

Replace 64000 to 15000 bit time.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Applies to 10PASS-TS only. Editor will add a note in text that some interleaver setting may not be supported with this restriction.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **6** # **755**
Squire, Matt Hatteras Networks

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

Replace the repeated use of "64,000 bit times" with a constant. I'd hate for it to change and us to have to find all occurences.

SuggestedRemedy

Replace 64,000 bit times with maxDifferentialDelay, and define this constant in a later section.

Proposed Response *Response Status* **C**

ACCEPT.
See comment #907.

Cl **61** *SC* **61.2.2.3** *P* **225** *L* **6** # **689**
O'Mahony, Barry Intel R&D

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

Unclear what a "bit time" is here.

SuggestedRemedy

Add text to end of sentence: ", at the bit rate of the PMD associated with that queue."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.4** *P* **224** *L* **45** # **927**
Barrass, Hugh Cisco Systems

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

Add another restriction for speed ratio

SuggestedRemedy

insert a line between a) and b)

The highest speed ratio between any two PMIs shall be 8.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
highest speed ratio = 8
Approve: 7 Don't Approve: 7 Abstain:9

highest speed ratio = 4
Approve: 14 Don't Approve: 1 Abstain: 12

Editors of Cl.61 and Cl.45 shall provide text explaining the restrictions on PMI aggregation imposed by this comment, with respect to the AggregateAvailable register.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **29** # **690**

O'Mahony, Barry
Intel R&D

Comment Type **TR** *Comment Status* **D**

The transmit function restrictions in 61.2.2.4 are insufficient.

The first restriction is that differential latency be no more than 64,000 "bit times".

The definition of differential latency in the section is as follows: "A differential latency of N bit times implies that N bits can be sent across one PMI in by the time a single bit makes it across the other". This latency is made of a two components: the ratio of bit rates between the two links, R, and the difference in propagation delay between the links (which, for the purposes of this discussion, may include differences in queuing and interleaving delay, etc.).

With a "bit time" t being defined as the time for the higher-speed link, the differential latency is then equal to (R-1)+D, where D is the propagation delay measured in units of bit times t.

The first restriction in the text means R-1+D=<64,000. However, for small values of D, and large values of R, sequence number wrapping is possible. So we need additional restrictions in place to prevent this.

In the example shown in squire_copper_1_0902, R=8, and D=0. We need to generalize this for nonzero values of D. For maximum fragment size M, minimum fragment size m, a maximum of N aggregated PMI's, and a maximum sequence number S, the worst-case is where one slow link, with a bit period of R*t and a prop. delay of D*t, sending an M-sized fragment, is aggregated with N-1 fast links with bit period t, sending m-sized fragments. To avoid sequence number wrapping, we then need:

M*R*t*8+D*t < (S/(N-1))*m*t*8, or

[1] M*R*8 + D < (S/(N-1))*m*8

In addition, I believe the original motivation for the 64,000 bit time number was to limit the size of the PMI receive buffers to this number. This leads to the requirement:

[2] M*R*8 + D < 64,000.

In [1], S is equal to 2048 even though the sequence number is 12 bits, in order to maintain the split horizon discussed in 61.2.2.5. Also we must increase m to 64, to make it compatible with the encapsulation method. This gives:

[1a] M*R*8 + D ~< 32K.

This may be rewritten as:

[Differential Latency] +R*(8M-1) ~<32K

SuggestedRemedy

Replace section with this text:

****

There are factors that limit the freedom of the transmission algorithm specified in Subclause 61.2.2.2.

One factor is the differential latency between multiple PMIs in an aggregated group.

Latency is defined between the a-interface of the C.O.-located PHY and the b-interface of the CPE PHY, and vice versa. Differential latency, D, is the difference in latency between the highest and lowest speed links in an aggregated group, as measured in units of bit times of the highest speed link.

Larger differential latencies imply greater variance in bit delivery times across aggregated PMIs, which in turn require larger sequence number ranges.
A second factor is the size of the fragments being transmitted across the PMIs. Very small fragments require larger sequence number ranges as there can be more fragments within the same number of bit times.

The restrictions for the transmission algorithm in Section 61.2.2.2 are:

a.) [Differential latency] + R*8*maxFragmentSize can be no more than 32,000.

b.) Fragments cannot be less than 64 Bytes (minFragmentSize).

These restrictions allow the use of a 12-bit sequence number space, where sequence numbers of outstanding fragements differ by no more than 2^11.

Control over differential latency is achieved by adjusting the bit rate, error correction and interleaving functions in the PMA/PMD of each link. Note that the burst noise protection offered by the error correction and interleaving functions is directly proportional to the latency, therefore it is logical that multiple aggregated links in the same environment should be optimized to have similar latencies.

****

Also, replace last paragraph of 61.2.2.3 with:

****

The PMI Aggregation Transmit Function Restrictions specified in Subclause 61.2.2.4 ensure that per-PMI buffers of 64,000 bits are of sufficient size (implementers may choose to provide buffers of up to 2^16 bits, in order to provide extra margin).

****

Proposed Response *Response Status* **Z**

WITHDRAWN.
It seems clear that the section needs major changes but there are two philosophical approaches proposed.

The STF will review two versions of subclause 61.2.2.3 rewritten (along with descriptions of other subclause changes) in their entirity and choose how to proceed.

Note that this response is tied in with comments #927, #690, #923, #921, #922, #925, #926, #527, #914

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **36** # **923**

Barrass, Hugh Cisco Systems

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

The differential latency is most useful if it takes into account the maximum fragment size. i.e. the number of bits transferred on the faster link in the time it takes for a max length fragment to be transferred on the slower link.

This will bound the buffer size more efficiently.

SuggestedRemedy

Change "a single bit" to "a single max size fragment"

Proposed Response *Response Status* **C**

ACCEPT.
Also depends on philosophical response to comments #927, #690.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **38** # **921**

Barrass, Hugh Cisco Systems

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

Some of the information removed from 61.2.2.3 is useful and can be added to this paragraph.

SuggestedRemedy

Add the following text after the end of the paragraph:

The PMD control of aggregated links shall control the maximum latency difference between any two aggregated links. This is achieved by adjusting the bit rate, error correction and interleaving functions in the PMA/PMD of each link. Note that the burst noise protection offered by the error correction and interleaving functions is directly proportional to the latency, therefore it is logical that multiple aggregated links in the same environment should be optimized to have similar latencies.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **42** # **922**

Barrass, Hugh Cisco Systems

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

Two factors are given which limit the transmission algorithm. The third one is speed ratio.

SuggestedRemedy

Add a paragraph:

The third factor is the speed ratio. This is defined as the ratio of the bit rate of the faster link divided by the slower link.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **44** # **907**

Cravens, George Mindspeed

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

The maximum differential latency for 2Base-TL cannot be as large as that for 10Pass-TL since G.SHDSL does not use interleaving. A large value for the maximum differential latency only serves to increase the cost of a 2Base-TL PHY that supports PMI Aggregation. (64,000 bit times for 2Base-TL is 31 msec.)

To maintain the readablity of the standard, define a parameter for the maximum differential latency with stated values for both 10Pass-TL and 2Base-TL, and replace the value (64,000) with the parameter name (maxDiffLatency).

SuggestedRemedy

Define maxDiffLatency to be: the maximum differential latency between any two PMIs in an aggregated group.

Define the value of maxDiffLatency to be: 64,000 for 10Pass-TL and 8,192 for 2Base-TL.

Replace all instances of 64,000 in clause 61 (4 total) with maxDiffLatency, and add "(see 61.2.2.4)".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Define maxDiffLatency = 8,000 for 2BASE-TL).
maxDiffLatency for 10PASS-TS is further specified in resolution of comment #528.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **44** # **928**
Barrass, Hugh Cisco Systems

Comment Type **E** *Comment Status* **A**
Prefer "shall" and "shall not to "can" and "cannot"

SuggestedRemedy
Replace "can" in line a) with "shall"
replace "cannot" in lines b) and c) with "shall not"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **46** # **924**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
The minimum fragment size needs to be 64 bytes in order to match the 64/65 byte encapsulation.

SuggestedRemedy
Change 32 bytes to 64 bytes.

Proposed Response *Response Status* **C**
ACCEPT. See comment #526.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **47** # **913**
Cravens, George Mindspeed

Comment Type **TR** *Comment Status* **D**
minFragmentSize cannot be smaller than 62 bytes (0x3E) since there is not way for the 64B/65B encapsulation to signal two End of Frames in one codeword block. With a 62 or smaller byte fragment, a codeword could contain the last byte of one frame followed by a "Start" character ("S"), followed by an entire frame. The encapsulation can signal zero or one End of Frame and zero or one Start of Frame in a single codeword block, but not two End of Frames.

Also, since a valid Ethernet Frame must be at least 64 bytes, sending smaller fragments gains little.

SuggestedRemedy
Change line 47 (restriction B) to:
Fragments cannot be less than 64 Bytes (minFragmentSize), unless the fragment contains the end of packet.

Proposed Response *Response Status* **Z**
WITHDRAWN.
See comments #526, #924.
Note that encapsulation "start" and "end" refer to fragment start and end - not packet.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **47** # **908**
Cravens, George Mindspeed

Comment Type **T** *Comment Status* **D**
minFragmentSize does not apply when the fragment contains the End of Packet. Otherwise, fragments containing the end of packet would have to be padded to minFragmentSize, and the receiver would have to determine the size of the padding and strip it off.

(But maxFragmentSize always applies.)

SuggestedRemedy
Change line 47 (restriction B) to:

Fragments cannot be less than 32 Bytes (minFragmentSize) unless the fragment contains the end of packet.

Proposed Response *Response Status* **Z**
WITHDRAWN.
See response #924, restriction B needs to be 64bytes.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **47** # **925**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
The definition of max fragment size is too restrictive.

SuggestedRemedy
Change 128 bytes to 512 bytes.

Proposed Response *Response Status* **C**
ACCEPT.
Approve: 16 Don't Approve: 0 Abstain: 7

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **47** # **526**
Zion Shohet Infineon

Comment Type **T** *Comment Status* **A**
32 bytes for minFragmentsize will not work with the 64/65Byte encapsulation

SuggestedRemedy
Replace 32 with 64.

Proposed Response *Response Status* **C**
ACCEPT. See also comment #924.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **48** # **63007**

George Cravens

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

Additional restriction required on fragment size.

SuggestedRemedy

add restriction:

d) fragment should be modulo 4 bytes, except the last fragment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **48** # **914**

Cravens, George Mindspeed

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

Since the minFragmentSize must be 63 bytes or greater to keep from breaking the encapsulation (see previous comment), change the maxFragmentSize to 256 so that a sufficient range of fragment sizes are available to support different rate PMIs within an aggregate.

SuggestedRemedy

Change line 48 (restriction C) to:

Fragments cannot be more than 256 Bytes (maxFragmentSize).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace 128 with 512, as per resolution of #925.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **48** # **527**

Zion Shohet Infineon

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

128byte for maxLongFragment is too little. This reduces effiency.

SuggestedRemedy

Replace 128 with 256.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace 128 with 512, as per resolution of #925.

Cl **61** *SC* **61.2.2.4** *P* **225** *L* **49** # **926**

Barrass, Hugh Cisco Systems

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

The sequence number must change to 14 bits

SuggestedRemedy

Change 12 bits to 14 bits.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.5** *P* **226** *L* # **760**

Squire, Matt Hatteras Networks

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

Potential undetected problems:

- unexpected start of packet
- current buffered packet > maxFrameSize (we talk about buffere overflow in line 7 p 226, but its not clear thats the same thing).

Potential incorrect solutions

- when a PMA buffer overflows, you have to flush all PMA buffers and re-sync - it generally means that the sequencing got completely messed up (assuming the other guys is obeying the laws which make the sequence numbers not get screwed up).

SuggestedRemedy

See earlier comment where I suggested merging the error cases into the algorithm. Now include the above error cases as well.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rewrite proposed in comment #758 is accepted. More detailed analysis of error condition is required.

Direct the editor to take into account error conditions highlighted above.

Cl **61** *SC* **61.2.2.5** *P* **226** *L* **1** # **691**

O'Mahony, Barry Intel R&D

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

typo

SuggestedRemedy

change "per PMA" to "per-PMA" Also line 9; and in line 21 change "PMA" to "per-PMA"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.5** *P* **226** *L* **18** # **692**

O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **D**

sequence number only 12 bits; wraps around at 2^12

SuggestedRemedy

Change "+ 2^11" to + 2^11, modulo-maxFragmentSequenceNumber as defined in 61.2.2.2"

Proposed Response *Response Status* **Z**

WITHDRAWN.

This needs to be expressed in a manner that is not dependant on the size of maxFragmentSequenceNumber. i.e.

Change "+ 2^11" to

"+ maxFragmentSequenceNumber/2, modulo maxFragmentSequenceNumber)"

Cl **61** *SC* **61.2.2.5** *P* **226** *L* **38** # **206**

Marris, Arthur Cadence

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

The contents of the garbage frame should be specified to make it easier to implement this and to recognize such frames during system debug. I suggest a valid preamble and SFD followed by 64 bytes of 0x00. Having all zeroes in the source and destination address fields means there will be no danger of these addresses matching other MAC addresses in the system.

SuggestedRemedy

Add the following paragraph "The garbage frame shall consist of 7 bytes of preamble, followed by the SFD byte and 64 bytes of zero (0x00)."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Preamble and SFD shall not be sent (see accepted comment #523), but they will be added later.

Cl **61** *SC* **61.2.2.5** *P* **226** *L* **4** # **205**

Marris, Arthur Cadence

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

The use of the terms "RxErr" and "RxError is inconsistant". I recommend using "RX_ER" for the MII interface and "RxErr" for the gamma interface.

SuggestedRemedy

On line 4 change RxError to RxErr

On lines 32 and 35 change RxError to RX_ER

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use "Rx_Err" for the gamma-interface, as specified in G.993.1 Annex H.

Cl **61** *SC* **61.2.2.6** *P* **226** *L* **42** # **696**

O'Mahony, Barry Intel R&D

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

"The PAF interfaces with the PHYs" seems incorrect, as the PAF is part of the PHY.

SuggestedRemedy

Change to "The PAF interfaces to the individual PMDs, PMAs, and TPS-TCs"

Proposed Response *Response Status* **C**

ACCEPT.

See response to comment #681.

Cl **61** *SC* **61.2.2.6.2** *P* **227** *L* **17** # **761**

Squire, Matt — Hatteras Networks

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

The errors here don't make sense to me. The bad fragment definition says we received something that didn't fit into the expected sequence. How is that different than lost fragment (seems the same)? When you lose N fragments, how is that counted - as one or N? Also, some error cases seem to be missed (see suggestion below).

SuggestedRemedy

I would have thought the error signals would have been
- rxError
- reassemblies aborted
- reassembly overflows
- sequence number reset events (don't really know how many fragments you've lost)
- pma buffer overflows
- min/max fragment errors

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Based on response to comment #758, error handling is being rewritten.
Editor will take into account comments #758, #760 and the above to produce new section.
Clause 45 shall be updated accordingly.

Cl **61** *SC* **61.2.2.6.3** *P* **227** *L* **32** # **762**

Squire, Matt — Hatteras Networks

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

Why is the PMD Available register read-only? Certainly physical interconnectivity determines an initial value, but management can restrict it further. Maybe you mean read-only by NT over EoC? If so, thats not clear from the context.

SuggestedRemedy

PMD Avail should not be read-only on LT.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The PMD_Available_register indicates capability and is therefore read-only. It may writeable on the NT in order to restrict the capability as described in 45.2.6.1.
Change "(for LT)" to "(except for NT locally)"
Editor will explicitly specify capabilities of LT and NT.

Cl **61** *SC* **61.2.2.6.3** *P* **227** *L* **33** # **763**

Squire, Matt — Hatteras Networks

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

Why is bit0 set if the device doesn't support aggregation? Wouldn't that mean that all bits PMDs get mapped to the first PMI?

SuggestedRemedy

Please clarify why or correct, because it doesn't seem right.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
It is correct that this section is confusing. The problem is caused by the definition of "aggregation" when applied to a single PMI.

Proposed change:

For a device that does not support aggregation of multiple PMIs, a single bit of this register shall be set and all other bits clear.

Add Editor's note to explain we need a way of indicating that aggregation is either provisioned or it isn't.

Cl **61** *SC* **61.2.2.6.3** *P* **227** *L* **41** # **764**

Squire, Matt — Hatteras Networks

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

I'm confused on the operation described here. What does "Links shall not be enabled until the PMD_Available_register has been set to limit the connectivity such that each PMI maps to one and only one MII." First, what's a link? a PMI? the PMD? Enabled to what degree? i.e. is the EoC working? If not, how is the NT accessed?

SuggestedRemedy

I'm guessing the paragraph means the following, so I suggest this text:
"
For NT devices, the PMD_Available_register may optionally be writable by the LT. The reset state of the register reflects the capabilities of the device. The management entity on the LT (through clause 45 access) may clear bits which are set to limit the mapping between MII and PMI for PMI aggregation. A link is not in use for data until it is mapped to one and only one PMD. A PMD is not active until it has at least one PMI mapped to it.
"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.2.6.3** *P* **227** *L* **44** # **765**

Squire, Matt — Hatteras Networks

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

Kill the entire paragraph but the last sentence as it seems to completely overlap the previous two paragraphs, and in some cases contradicts them (i.e. r/w-ability of LT PMD_Available_register).

SuggestedRemedy

See comment.

Proposed Response *Response Status* **C**

REJECT.
The paragraph starting line 44 describes the function of the PMD_Aggregate_register. This is necessary.

Cl **61** *SC* **61.2.2.6.3** *P* **227** *L* **47** # **910**

Cravens, George — Mindspeed

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

Spell out "OC" and include a reference the first time it is used.

SuggestedRemedy

Change the text as follows:
Original:
...(through the OC).

New:
...(through the Operation Channel (OC) see 63.1.4.3).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add references to Clause 62 as appropriate.

Cl **61** *SC* **61.2.2.6.3** *P* **227** *L* **53** # **766**

Squire, Matt — Hatteras Networks

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

This write operation is confusing. The LT asserts write_PMD_Aggregation_reg, then sends a bit on the remote_write_data channel. The NT gets the bit, and puts it in the "PMD_Aggregation_register in the bit location corresponding to the PMA/PMD from which the request was received." That confuses me. Doesn't each PMD on the NT have a register? Why does it matter which PMD on the LT sent it? Can't there be conflicts?

SuggestedRemedy

It might be better to do a procedure example, as well as LT and NT behavior. I'd offer better suggestions, but I don't understand the behavior well enough to write it up more coherently.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This shouldn't be confusing. The editor will work with the commenter to rewrite more coherently.

The PMD_Aggregation and PMD_Available registers are common across all PMDs.

Cl **61** *SC* **61.2.3.1** *P* **230** *L* **1** # **697**

O'Mahony, Barry — Intel R&D

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

Re-word first two paragraphs

SuggestedRemedy

Replace with:

The g interface is specified by incorporating section H.3.1 and all subsubsections of ITU-T Recommendation G..993.1 (Annex H) by reference, with the following exceptions and additions:

The TX_Err signal is not present.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Resolution of comment #576 applies.

Cl **61** *SC* **61.2.3.1** *P* **230** *L* **10** # **911**

Cravens, George — Mindspeed

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

The PAF sends whole fragments across the gamma interface (which may be whole frames if both Start and End of packet are set). Change the wording to substitute "fragment" for "frame"

SuggestedRemedy

Modify the text to the following (changes are in Bold):
The PAF shall assert Tx_Avble when it has a whole data fragment available for transmission, and de-assert Tx_Avble when there are no data fragments to transmit. Tx_Avble must never be de-asserted during the transmission of a data fragment."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.1** *P* **230** *L* **6** # **576**

Tom Mathey — Independent

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

The text "The PAF shall never assert the TX_Err signal." seems incorrect as the MAC can have an internal error, as reflected via MIB variable 30.3.1.1.12 aFramesLostDueToIntMACXmitError, and the MAC can request that the physical layer deliberately corrupt the frame. The best place to do this is in the PCS.

SuggestedRemedy

Have the PAF layer pass the MII signal Tx_Err to the PCS layer.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Codepoint shall be added to 64B/65B encapsulation mechanism, to signal an error/abort condition, which shall force RX_ER to be asserted on receiver side.

Cl **61** *SC* **61.2.3.1.2** *P* **302** *L* **29** # **99207**

Barrass, Hugh — Cisco Systems

Comment Type **TR** *Comment Status* **A** *D1.2 #605*

It is entirely unnaceptable that an error is detected in one sublayer and not propagated to further sublayers.

If the FEC detects, but cannot correct an error (or errors) in a frame then an error signal must be passed upwards with that frame. Detected errors must not be "swept under the carpet."

SuggestedRemedy

Comment #653 referenced in the footnote must be reconsidered (and accepted).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Approve: 20 Don't Approve: 4 Abstain:5
Applies to 10PASS-TS only.
If PHY management is implemented, detected non-corrected errors are counted in management. The PHY shall provide an unspecified mechanism to get this information at the appropriate time to the TC layer. At the gamma-interface, the Rx_Err signal must be asserted upon detection of a detected uncorrectable error.

Cl **61** *SC* **61.2.3.2** *P* **230** *L* **27** # **698**

O'Mahony, Barry — Intel R&D

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

VTU-O and VTU-R only seem appropriate for 10PASS-T

SuggestedRemedy

Agree on terms for C.O. equipment and CPE that can be used globally.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #678. Clause 45 to be updated accordingly.

Cl **61** *SC* **61.2.3.2** *P* **230** *L* **32** # **577**

Tom Mathey — Independent

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

Use of text OAM confuses the reader as OAM is completely defined by clause 57.

SuggestedRemedy

Try to find an alternative term and use everywhere appropriate.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
"OAM" and "OAM flow" are the terms used in the referenced document G.993.1, which is incorporated into this section. To avoid confusion, extra text may be provided.

Cl **61** *SC* **61.2.3.2.2** *P* **231** *L* **5** # **699**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
"PTM Entity" confusing (may be confused with PTM-TC). Also, 61.2.3.3 states the TC interfaces to the PAF across te gamma interface

SuggestedRemedy
Replace all instances of "PTM Entity" with "PAF" in table

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.3.3** *P* **232** *L* **44** # **700**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
"packets" is incorrect term

SuggestedRemedy
change to "fragment"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.3.3** *P* **232** *L* **47** # **529**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
Add clearer description of TC functionality

SuggestedRemedy
Modify line 47 to read: "In the transmit direction, the TC receives data frames from PAF via gamma-interface, calculates and adds 32-CRC, performs 64/65Byte encapsulation, and sends codewords ....."

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Editor will insert scrambling function in description.
Replace data frames by fragments.

Cl **61** *SC* **61.2.3.3** *P* **233** *L* **3** # **701**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Label "Tx_PTM" confusing

SuggestedRemedy
Chane to something else; such as "Tx_encap"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.2.3.3.1** *P* **233** *L* **48** # **933**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
The encapsulation function needs a scrambler.

The scrambler defined for 10G could be co-opted for this function.

SuggestedRemedy
Insert the contents of document barrass_cmnts_1_0303.pdf (61_2.3.3_Scram.fm) as the first subclause of 61.2.3.3 (before the current 61.2.3.3.1).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Datastream is scrambled before encapsulation.
The scrambler only advances for valid data.
Approve: 11 Don't Approve: 0 Abstain: 7

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **10** # **915**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **D**
There are five cases to consider, all shown in Table 61-9. The text description should align with the examples shown in the table to improve readability.

SuggestedRemedy
Add a case (add new text):

e) start of frame (while idle): up to 63 bytes of data belong to the same TC frame, preceeded by zero or more Idle octets, and a single Start of Frame octet.

Also, modify Table 61-9 to align with the text description as shown in separate contribution (couldn't get the table to paste into this form).

Proposed Response *Response Status* **Z**
WITHDRAWN.
See comment #702

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **11** # **702**

O'Mahony, Barry Intel R&D

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

Missing combination for all idle (start new frame)

SuggestedRemedy

Add text:

e) all idle (start new frame): a number of Idle octets and a single Start of Frame octet precede up to 62 data octets of the next TC frame.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

. . .precede up to 63 octets. . .

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **14** # **703**

O'Mahony, Barry Intel R&D

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

inconsistant labelling

SuggestedRemedy

Change word "gamma" to the lower-case greek alphabet character.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **25** # **531**

Zion Shohet Infineon

Comment Type **E** *Comment Status* **D**

Table 61-9 includes errors.

SuggestedRemedy

In line 32, modify: k=1 to 63 (instead of 0 to 63)
in lines 36 and 40, modify: k=1 to 62 (instead of 0 to 62)
in line 34, change D64 to C64
in line 36, replace first Z with C64
add a note to the table: "S may immediately follow C64 or D, when no idles".
add a row in table 61-9 describing this note as follows: F0, C0, S, D0, D1, ...,D61

Proposed Response *Response Status* **Z**

WITHDRAWN.

"In line 32, modify: k=1 to 63 (instead of 0 to 63)"
"In lines 36 and 40, modify: k=1 to 62 (instead of 0 to 62)"

INCORRECT. If the previous word was the all-data codeword and there are no more data bytes to send, an end-of-frame codeword with zero additional data bytes (i.e., k=0) must be sent.

"In line 34, change D64 to C64"
"in line 36, replace first Z with C64"

These are correct, but also covered in other comments (#930).

Add a note to the table: "S may immediately follow C64 or D, when no idles".
Add a row in table 61-9 describing this note as follows: F0, C0, S, D0, D1, …….,D61

NOT NECESSARILY. S may only occur after an end-of-frame indication (i.e., indicated by a Ck, k=0-63). In other words, S may only occur at locations where the receiver is expecting a Z. Although a note may be useful at the top of the page stating that the number of Z's preceding an S may be zero. See also comment #931 resolution.

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **34** # **930**

Barrass, Hugh Cisco Systems

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

Fix codeword typos

SuggestedRemedy

Table 61-9, row 4, column 4, change D64 to C64
Table 61-9, row 5, column 4, change Z to C64

Proposed Response *Response Status* **C**

REJECT.

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **34** # **704**

O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **D**

typos in Table 61-9

SuggestedRemedy

In "all idle" row, change "D64 to "C64"

In "start of frame while idle" row, change first occurrence of "Z" to "C64"

Proposed Response *Response Status* **Z**

WITHDRAWN.
See comment #930.

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **34** # **912**

Cravens, George Mindspeed

Comment Type **T** *Comment Status* **D**

Table 61-9: The line for "all idle" must not contain any data bytes before the first "S" character. If the byte following the Sync Byte is data, then the sync byte MUST signal "all data" (otherwise the byte following the sync byte is interpreted as either Z, S, or Ck).

SuggestedRemedy

Change the byte following the sync byte in the "all idle" example to "Z".

Proposed Response *Response Status* **Z**

WITHDRAWN.
Ths seems more of an editorial comment.
See resolution of comment #930.

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **44** # **931**

Barrass, Hugh Cisco Systems

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

Table 61-9 would benefit from 2 more rows which illustrate the cases when k=0 (a frame ends on the last octet of a 65 byte codeword, so the end of frame marker is the first byte of the next codeword) and j=0 (a frame starts on the first data octet of a 65 byte codeword, so the start of frame marker is the last byte o fth eprevious codeword).

SuggestedRemedy

Add 2 rows to Table 61-9:

First row:

End of frame | last data byte | F0 | C0 | Z | .... | Z |
k=0 | was D63 of | | | | | |
| previous codeword | | | | | |
| | | | | | |

Second row:

Start of frame | first data byte | F0 | C64 | Z | .... | S |
k=0 | will be D0 of | | | | | |
| next codeword | | | | | |
| | | | | | |

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The proposed instances are already normatively described in Table 61-9, if one reads it carefully.

However, informative text and an additional table describing the example instances cited in this comment would be extremely valuable, as it is apparently unobvious to some readers.

The all idle codeword does not start with C64, but with a Z or an S.

Cl **61** *SC* **61.2.3.3.1** *P* **234** *L* **5** # **929**

Barrass, Hugh — Cisco Systems

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

The number of data octets per 65 byte codeword needs adjusting.

SuggestedRemedy

Line 5, change 63 to 62
Line 7, change 62 to 61

Table 61-9, row 3, column 2, change 63 to 62
Table 61-9, row 5, column 2, change 62 to 61
Table 61-9, row 6, column 2, change 62 to 61 and change 62-k to 61-k
Table 61-10, row 4, column 3, change 01-3F to 00-3E

Proposed Response *Response Status* **C**

REJECT.
"Line 5, change 63 to 62"

INCORRECT. How does one send the 63rd byte, if there are 63 left to send?

"Line 7, change 62 to 61
Table 61-9, row 3, column 2, change 63 to 62
Table 61-9, row 5, column 2, change 62 to 61
Table 61-9, row 6, column 2, change 62 to 61 and change 62-k to 61-k"

INCORRECT, for similar reasons.

"Table 61-10, row 4, column 3, change 01-3F to 00-3E"

THERE are actually 65 different Ck's needed; C0 thru C64. See comment #705 for discussion on specific values.

Cl **61** *SC* **61.2.3.3.2** *P* **235** *L* **1** # **532**

Zion Shohet — Infineon

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

missing characters in table 61-10

SuggestedRemedy

add a new row to the table: Frame type: All idle, or Start while Idle; Value: C64=64 (40 hex),
add a new row to the table: Frame type: Immediate Start of frame; Value: C0=0

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #705.

C0 does not mean "immediate start of frame"; it signifies that the previous codeword (an all-data word) was the end of the frame.

Cl **61** *SC* **61.2.3.3.2** *P* **235** *L* **10** # **932**

Barrass, Hugh — Cisco Systems

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

Table 61-10, another row is needed to define C64

SuggestedRemedy

Insert a row defining C64:

Idle or start | C64 | 40(16) |
from Idle frames | | |

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comments #532, #705.

Cl **61** *SC* **61.2.3.3.2** *P* **235** *L* **6** # **705**

O'Mahony, Barry Intel R&D

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

Changing value of Z to 00 improves error-detecting capabilities of CRC.

For 2BASE-T where R-S encoding is not used, increasing Hamming distance of characters may improve error-detecting capabilities. 'can do Hamming distance of 2 by just using even parity bit.

SuggestedRemedy

In Table 61-10, set Z=0. Set Cn equal to values with even parity bit in d7 (starting with C0 = 0x81). Set S to next value after C's (0xC0).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.3.3** *P* **235** *L* **21** # **530**

Zion Shohet Infineon

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

This paragraph should appear earlier in the text, for proper understanding of the text

SuggestedRemedy

Move paragraph 61.2.3.3.3 before 61.2.3.3.1 TC Encapsulation and Coding

Proposed Response *Response Status* **C**

REJECT.
Already covered by first paragraph of 61.2.3.3.1, and additional text added by Comment #529.

Cl **61** *SC* **61.2.3.3.3** *P* **235** *L* **21** # **578**

Tom Mathey Independent

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

Initial value and other requirements are not described. Also please clarify just what "entire payload frame" includes. Such as: is the sync byte and byte count on last piece part of the payload frame

SuggestedRemedy

Add text to describe initial value and any other requirements such as sync byte and byte count included or not include in CRC calculation.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment #706.
Also, precisely define "payload"

Cl **61** *SC* **61.2.3.3.3** *P* **235** *L* **39** # **706**

O'Mahony, Barry Intel R&D

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

Improve error-detecting capabilities of CRC by initializing the shift register to ones, as is usually done.

SuggestedRemedy

Add text after the equation:

Mathematically, the CRC value corresponding to a given payload frame (including any attached header) is defined by the following procedure:

a) The first 32 bits of the payload are complemented.
b) The n bits of the payload are then considered to be the coefficients of a polynomial M(x) of degree n–1.
(The first bit of the PAF Header corresponds to the x(n–1) term and the last bit of the Ethernet FCS corresponds to the x0 term.)
c) M(x) is multiplied by x32 and divided by G(x), the CRC polynomial, producing a remainder R(x) of degree =31.
d) The coefficients of R(x) are considered to be a 32-bit sequence.
e) The bit sequence is complemented and the result is the CRC.

After last paragraph in subclause, add this text:

At th receiver, a payload received without error will result in the remainder 0x1C2D19ED when divided by G(x).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.3.4** *P* **235** *L* **40** # **934**

Barrass, Hugh — Cisco Systems

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

The sync detection (and also receive control) function is needlessly complicated and restricts implementations unnecessarily.

The state machine should mandate sufficient protection to minimize the probability of false lock and should also allow freewheel in the case of a damaged sync.

SuggestedRemedy

Replace subclauses 61.2.3.3.4 and 61.2.3.3.5 with the contents of document barrass_cmnts_2_0303.pdf (61_2.3.3_RxCtl.fm)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Approve:9 Don't Approve: 0 Abstain: 7

If RX_ER is asserted, it shall be asserted during at least one byte of the frame.

Cl **61** *SC* **61.2.3.3.5** *P* **235** *L* **52** # **533**

Zion Shohet — Infineon

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

wrong condition for Rx_Err assertion.

SuggestedRemedy

Change "If Synchronized=true or SynchError = true then....." to " If Synchronized=true AND SynchError = true then....."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

If Synchronized=false, don't send anything up (deassert Rx_Enbl on gamma-interface).

See comment #934 resolution.

Cl **61** *SC* **61.2.3.3.5** *P* **235** *L* **53** # **579**

Tom Mathey — Independent

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

If the link is down, shown by Synchronized = false, the follow the lead of 10BASE-T and block the transfer of data to the next higher layer. Thus not drive either RX_DV or Rx_Err. In Clause 49 for the other physical layer which uses block coding, signal block sync when false holds the Figure 49-15 state diagram in an initialization state when sync is lost.

SuggestedRemedy

As above.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution of comment #934.

Cl **61** *SC* **61.2.3.3.5** *P* **236** *L* **9** # **709**

O'Mahony, Barry — Intel R&D

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

reformatting needed

SuggestedRemedy

replace "<=" with correct assignment symbol

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.3.5** *P* **236** *L* **9** # **707**

O'Mahony, Barry — Intel R&D

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

reformatting needed

SuggestedRemedy

replace "<=" with correct assignment symbol

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.3.6** *P* **238** *L* **11** # **708**

O'Mahony, Barry Intel R&D

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

reformatting needed.

SuggestedRemedy

In 4 places, replace "<=" with correct assignment symbol

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.2.3.3.6** *P* **238** *L* **32** # **580**

Tom Mathey Independent

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

I believe that the two management signals are not listed in clause 45.

SuggestedRemedy

Add tc_loss_of_sync and tc_crc_error to clause 45.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add register (latching low) PCS_Sync / PCS_NotSync.
Add counter that counts the number of PCS CRC errors.
May be able to use existing bits in PCS register.
Notify Editor of Clause 45.

Cl **61** *SC* **61.3.12** *P* *L* # **63004**

Michael Beck

Comment Type **T** *Comment Status* **D**

Clause 56 states that 2BASE-TL and 10PASS-TS PHYs can be configured either as an LT or as an NT. Our clauses 61, 62, 63 specify the LT and NT subtypes, but there is no "configurability" implied.

SuggestedRemedy

Add new subclause "61.3.12 CO/CPE enhanced handshaking" to Clause 61, in which an optional enhanced handshaking mechanism based on and interoperable with G.hs is specified, according to following algorithm:

1. PHY shall listen for G.hs initiation tones already present on the medium (C-TONES or R-TONES-REQ); if signal is detected, proceed with handshake as CPE subtype or as CO subtype respectively.

2. PHY shall attempt G.hs initiation by sending CPE initiation tones (R-TONES-REQ); if CO response is detected, proceed with handshake as CPE subtype.

3. PHY shall attempt G.hs initiation by sending CO initiation tones (C-TONES); if CPE response is detected, proceed with handshake as CO subtype.

4. Repeat 1-3 until link is established.

Proposed Response *Response Status* **Z**

WITHDRAWN.

Cl **61** *SC* **61.3.8.7** *P* **247** *L* **53** # **710**

O'Mahony, Barry Intel R&D

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

This editor's note is in the wrong place, and is no longer needd, anyway.

SuggestedRemedy

delete it.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **61** *SC* **61.3.8.7** *P* **250** *L* **4** # **711**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
Table 61-34 no longer needed (leftover from 2PASS-TL)

SuggestedRemedy
Delete it.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.3.8.7** *P* **250** *L* **47** # **712**
O'Mahony, Barry Intel R&D

Comment Type **E** *Comment Status* **A**
correct editor's note

SuggestedRemedy
Change "PTM" to "64B/65B"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **61.3.8.7** *P* **251** *L* **1** # **713**
O'Mahony, Barry Intel R&D

Comment Type **T** *Comment Status* **A**
Tables 61-36 and 61-37 no longer needed (2PAS-TL leftover)

SuggestedRemedy
Delete them

Proposed Response *Response Status* **C**
ACCEPT.

Cl **61** *SC* **Figure 61-4** *P* **217** *L* **1** # **573**
Tom Mathey Independent

Comment Type **T** *Comment Status* **D**
This figure shows one MDIO/MDC for all of the up to 32 MACs, with each MAC connected via a 100BASE MII. However, each and every MII includes a MDIO/MDC per clause 22. And this MII attachment can be via a physical connector. Thus multiple MDIO/MDCís may all try to access the shared resource at the same time. The concept of MDIO/MDC being separate from the "MII" only exists in P802.3ae.

SuggestedRemedy
Harmonize and provide text to describe how multiple MDIO/MDCís will work.
It is NOT acceptable to
1) assign a master via a given MII as that cable may not be connected.
2) place the burden on the end user

Proposed Response *Response Status* **Z**
WITHDRAWN.
Clause 22 describes one MDC/MDIO per STA - not per MII.

Read definition in 22.2.2.11, 22.2.2.12 and also 22.2.4.5.5 (PHY address) which describes how multiple PHYs may be connected toa single MDC/MDIO.

Note also, it would be useful for the editor to add a note in 61.1.4 which states explicitly that the PHY may be connected using Clause 45 definition of MDC/MDIO.

Cl **61** *SC* **Figure 61-9** *P* **223** *L* **14** # **575**
Tom Mathey Independent

Comment Type **T** *Comment Status* **R**
Incorrect action in state SEND_FRAME_TO_MAC_1. At present, when a frame is being transferred to mac, signal crs_rs is set to FALSE.

SuggestedRemedy
Action in state SEND_FRAME_TO_MAC_1 should be to set crs_rx to TRUE, then this state can be merged with state SEND_FRAME_TO_MAC_2 and title changed to drop the _2.

Proposed Response *Response Status* **C**
REJECT.
crs_rx must be set to false in state SEND_FRAME_TO_MAC_1. If it were set to true it would cause a MAC capable of transmitting while receiving in half-duplex mode to defer while receiving data.

Cl **61** *SC* **Table 61-1** *P* **218** *L* **31** # **572**
Tom Mathey Independent

Comment Type **T** *Comment Status* **A**
Register assignment is totally bogus. Register 1.3.x is already assigned by 802.3ae, as is 2.3.x. Similar problem elsewhere.

SuggestedRemedy
Not quite sure what was intended as clause 45 is also vague.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Device address 3 is assigned by 802.3ae as PCS - that is how it is being used here.

The editor needs to add some explaination that address

1.3.45

refers to Port 1; device 3; register address 45 etc.

NOT device 1; register address 3; bit 45 (which would be impossible anyway) as misinterpreted by the commenter.

Cl **61** *SC* **Table 61-12** *P* **240** *L* **37** # **500**
Beck, Michael Alcatel

Comment Type **TR** *Comment Status* **A**
2BASE-TL will not use tones in 4312.5kHz family. Mandatory specifications for G.992.1 and G.992.2 are outside the scope of our PAR. No toneset is specified for 10PASS-T.

SuggestedRemedy
Remove data rows 1-4. In data row 5, replace TBD by "B43".

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

It is clear rows 1-3 should be deleted.

10PASS-TS shall use B43 if MCM-VDSL is selected.

A liaison will be sent to inform ITU-T Q4/15 of this resolution.

Cl **61** *SC* **Table 61-14** *P* **241** *L* **14** # **501**
Beck, Michael Alcatel

Comment Type **TR** *Comment Status* **A**
Mandatory specifications for G.991.2 are outside the scope of our PAR. No toneset is specified for 2BASE-TL.

SuggestedRemedy
Remove data rows 1 and 3. Replace TBD in data row 2 by A4.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

It is clear row 1 should be deleted.

2BASE-TL shall use A4.

10PASS-TS shall use tones as proposed to ITU-T Q4/15 in CS-067R1 if SCM-VDSL is selected.

Cl **62** *SC* **62.1.4.1.2** *P* **322** *L* **54** # **99113**
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **A**
Receive error signal must be passed upwards across the alpha/beta interface.

SuggestedRemedy
Add line:

f) Receive Forward Error Correction detected but not corrected error, asserted for the whole FEC frame in which the error is detected (PMA_FEC_uncorrected_error)

Additionally, the signal must be added to the table (Table 62.1)

Proposed Response *Response Status* **Z**
WITHDRAWN.
Reference comment 653.
See 605

Cl **62** *SC* **62.2.3** *P* **281** *L* **48** # **622**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Reference to wrong table. The interpretations are shown in Table 62-2

SuggestedRemedy
Change Table 62-11 to Table 62-2

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.2.3** *P* **282** *L* **39** # **624**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Table 62-2:
U interface of MCM-VDSL is interpreted as MDI in EFM.

There are two U interfaces, U2 and U1 in MCM-VDSL.

The table must clearly specify that U1 interface of MCM-VDSL is the MDI interface if splitter is present and U2 interface of MCM- VDSL is the MDI is splitter is absent.

SuggestedRemedy
Modify fourth row to clarify two U interfaces

U1- interface of MCM - VDSL will be interpreted as MDI if splitter is present
U2 - interface of MCM-VDSL will be interpreted as MDI if splitter is absent. In this case there is no distinction between U2 or U1 interface

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Same change applies to SCM.

Cl **62** *SC* **62.2.4.5** *P* **283** *L* **5** # **623**
Venugopal, Padmabala InterOperability Labor

Comment Type **T** *Comment Status* **A**
Sub-clause 62.2.3 point b states, "10PASST PMA does not support the "fast path"".

When comment #47 on Draft 1.2 was accepted the text in sub-clause 62.2.4.5 was replaced with the current text in draft 1.3. By directly referring to MCM-VDSL section 9.3.5, the frame description will now have fast path included in it, as MCM -VDSL frame has both fast and slow path data.

Where as in Figure 62-1 fast path is absent. But, by referring to MCM-VDSL 9.3.5 the frame description will now refer to a figure which has fast path data in the frame description.

The text in draft 1.2 for this section had framing description for EFM without the fast path. The frame structure for EFM must be clearly defined without fast path if fast path is not allowed.

SuggestedRemedy
There are 3 possible ways to resolve this

1) Add appropriate text in sub-clause 62.2.4.5 which clarifies that the fast path data in the frame description in reference 9.3.5 is not applicable for EFM.

2) Reintroduce text from draft 1.2 sub-clause 62.2.5

3) Since sub-clause 62.2.3 point b is not a "shall not" or " should not", does this mean that fast path may exsist. If so, introduce reference to fast path in appropriate sub-clauses

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Editor will add appropriate text in sub-clause 62.2.4.5 which clarifies that the fast path data in the frame description in reference 9.3.5 is not applicable for EFM.

Cl **62** *SC* **62.3.1** *P* **283** *L* **24** # **510**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
mistype of title. Should be: PMA Functional Block Diagram

SuggestedRemedy
Change title to read: PMA Functional Block Diagram

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2** *P* **284** *L* **47** # **511**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
Mistype in the description field of last 3 rows of table 62-3.

SuggestedRemedy
Change the description field of last 3 rows to include "octet" instead of "word".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.2** *P* **285** *L* **33** # **512**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
Note "a" to be modified. Note "b" is redundant

SuggestedRemedy
In note "a" replace "path" with "PMA".
Delete note "b".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.3** *P* **285** *L* **39** # **629**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Reference to wrong table: Table 62-5 has Control-2 Octect Descrption

SuggestedRemedy
Change Table 62-8 to Table 62-5

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.3** *P* **286** *L* **7** # **513**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
in line 7 and 17 need to define TBD, and rephrase the description

SuggestedRemedy
The description field of IB-6 (line 7) and IB10/IB11 (line 17) should be "Reserved"; and change "TBD" to "abnormal state"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.4** *P* **285** *L* **34** # **628**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Table 62-6: The descrption has a typo: It should be "Frame header CRC check"

SuggestedRemedy
Change description "Frame header RC check " to " Frame header CRC check"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.4** *P* **285** *L* **45** # **625**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
To be consistent reference to Table 62-6 must be added in the text at the end of first sentence similar to sub-clause 62.3.2.2.3

SuggestedRemedy
At the end of first sentence add, " The control-3 octect description is shown is Table 62-6"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.5** *P* **285** *L* **50** # **626**
Venugopal, Padmabala InterOperability Labor

Comment Type **T** *Comment Status* **A**
The use of division symbol is incorrect. The sentence reads as
"The CRC bits CRC_1 to CRC_4 are computed as a remainder of multiplying the polynomial: "

CRC_1 is not divided by CRC_4.

SuggestedRemedy
Division symbol must be replace by the word "to" and the sentence must be changed to

"The CRC bits CRC_1 to CRC_4 are computed as a remainder of multiplying the polynomial: "

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.3.2.2.5** *P* **285** *L* **54** # **627**

Venugopal, Padmabala InterOperability Labor

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

character '=' is missing : Bits m8, m15,m16,m23 = 0

SuggestedRemedy

Change the expression as m8, m15, m16, m23 = 0

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.3.2.2.8** *P* **287** *L* **30** # **935**

Barrass, Hugh Cisco Systems

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

The description of the RS is for generic codeword lengths. Given that EFM uses a fixed length codeword, this could be simplified.

SuggestedRemedy

Add a sentence at the end of the paragraph:

For this application, the codeword length (N) is always 200 and the number of data octets (K) is always 181.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Editor directed to re-write to clarify code definition.
K should be 184.

Cl **62** *SC* **62.3.2.2.8** *P* **287** *L* **35** # **630**

Venugopal, Padmabala InterOperability Labor

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

In the expression (3+p+16, 3+P),

1) the same variable P is refered with both p and P. Use single consistent format. It creates a confussion if p and P are two different variables

2) The variable 'P' is not defined anywhere

SuggestedRemedy

1) Change the expression to (3+P+16, 3+P)

2) also add reference to varibale P. 'P' is the number of payload bytes.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Comment #935 already hase taken care of this.
Action:
delete the last sentence of the paragraph:
" The actual values for N and K in RS(N,K) corresponds to (3+p+16,3+p) of sub-frame"

Cl **62** *SC* **62.3.2.2.9** *P* **288** *L* **34** # **514**

Zion Shohet Infineon

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

some values of I are missing.

SuggestedRemedy

Change lines 34-35 to read: The incoming codeword of 200 octets is divided into Interleaver blocks of I octets long. The Interleaver block length I, shall be equal to 25, 50, or 100. The octets within the Interleaver blocks are numbered from j=0 to j=I-1.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.3.2.2.9** *P* **288** *L* **46** # **515**

Zion Shohet Infineon

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

Add here a description for M=0. remove the description from note "a", on line 51.

SuggestedRemedy

On line 46 add the sentence: "Setting M=0 cancels the Interleaver".
Delete the last sentence of note "a", on line 51.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.3.2.2.9** *P* **289** *L* **5** # **516**

Zion Shohet Infineon

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

Add the missing values for I.

SuggestedRemedy

Modify the "Value" column of table 62-7, first row, to read: I=25, 50, or 100 octets.

Proposed Response *Response Status* **C**

ACCEPT.

Other parts of the text may have to be changed accordingly. (E.g., note the effect on PMI aggregation)

Cl **62** *SC* **62.3.2.2.9** *P* **289** *L* **6** # **937**

Barrass, Hugh Cisco Systems

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

The use of "I" as a variable in Table 62-7 is redundant since I is fixed at 25.

SuggestedRemedy

Replace all instances of I in Table 62-7 with 25 (evaluating equations as necessary).

Proposed Response *Response Status* **C**

REJECT.

See comment #516.

Cl **62** *SC* **62.3.2.2.9** *P* **289** *L* **7** # **631**

Venugopal, Padmabala InterOperability Labor

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

Table 62-7: The notes section reads as M = 0 division symbol 64, programmable.

But the text on page 288, line 47 clearly states that M can take values from 0 to 64. The divide by symbol must not be used

SuggestedRemedy

Change the notes to
" M = {0,1,...,64}, Programmable"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.3.2.2.9** *P* **289** *L* **8** # **936**

Barrass, Hugh Cisco Systems

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

Table 62-7 has a typo in the "Error Correction" row (row 4).

The term (t * I/S) has been written (t * I/N).

Since I and S are constants (= 25 and 200 respectively), this term evaluates to 1.

SuggestedRemedy

Change the row 4, column 2 to "E = (25 * M) + 1"
The note in row 4 colum 3 is no longer needed.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment #516. Correct typo, but do not replace I with 25.

Cl **62** *SC* **62.3.2.2.9** *P* **290** *L* **1** # **632**

Venugopal, Padmabala InterOperability Labor

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

Fill in the Figure x with actual figure number

SuggestedRemedy

First sentence must be replaced with, " The structure of the interleaver is shown in Figure 62-4"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.4.1** *P* **290** *L* **43** # **633**

Venugopal, Padmabala InterOperability Labor

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

Table 62-2 gives the interpretation for MCM-VDSL terms for EFM.

A consistent format must be used throughout clasue 62. For example in line 43 term "U2 interface" is used. Instead MDI must be used to be consistent, as in the case of PMS-TC, PMA is used through out clause 62.

SuggestedRemedy

Change any reference with MCM-VDSL terms to EFM terms

page 290: line 43, 52 (U2 interface / MDI)
page 293: The text which replaces section 8.2.4 of MCM-VDSL: page 293 line 7 till page 294 line 40, the terms VTU-O and VTU-R are used which refers to 10PASST-O and 10PASST-R
Page 300: lines 53 and 54
Page 306: sub-clause 62.5.4

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.4.4.2.2** *P* **292** *L* **16** # **634**

Venugopal, Padmabala InterOperability Labor

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

Typo: reference to wrong Figure number

SuggestedRemedy

Change Figure 62-8 to 62-6

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62** *SC* **62.4.4.2.2** *P* **292** *L* **44** # **499**

Beck, Michael Alcatel

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

Editor's note must be removed or replaced by text further restricting the range of cyclic extensions.

SuggestedRemedy

Replace Editor's note with following text:
"The CE length is specified by the value of parameter m. In 10PASS-T, the value m=20 is mandatory. Support for other values of m is out of scope."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Note: This implies that m does not need negotiation during G.hs.

Cl **62** *SC* **62.4.4.2.2** *P* **292** *L* **6** # **498**

Beck, Michael Alcatel

Comment Type **TR** *Comment Status* **D**

N_SC,min is TBD. A minimum of 2048 carriers is required to achieve the bit rate objective.

SuggestedRemedy

-specify N_SC,min = 2048
-change text on line 8 to read "n can take the values 3 and 4"
-remove footnote

Proposed Response *Response Status* **Z**

WITHDRAWN.

Cl **62** *SC* **62.4.4.2.2** *P* **293** *L* **16** # **635**

Venugopal, Padmabala InterOperability Labor

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

Section 62.8 does not exsist. Appropriate content is in clause 62A

SuggestedRemedy

Change the following reference to section 62.8

page 293; line 16: change 62.8.1.2 to 62A.3.3.2
page 293; line 21: change 62.8.1.2 to 62A.3.3.2
page 293; line 31: change 62.8.1.2.1 to 62A.3.3.2
page 293; line 48: change 62.8.1.2 to 62A.3.3.2
page 294; line 47: change 62.8.1.2 to 62A.3.5

Proposed Response *Response Status* **C**

ACCEPT. Suggested reference is specific to North America. Replace "62A.3.3.2" with "the applicable section of 62A.3.3".

Cl **62** *SC* **62.4.4.2.2** *P* **293** *L* **47** # **636**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Typo error in Table number

SuggestedRemedy
Change Table 62-11 to Table 62-9

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.4.4.8** *P* **296** *L* **54** # **964**
Simon, Scott Cisco Systems, Inc.

Comment Type **E** *Comment Status* **A**
Annex C support is manatory for EFM compliance, but it is not mandatory to operate in Annex C mode.

SuggestedRemedy
Change text to:

Stet. 10PASS-T PHYs shall support operation as described in Annex C.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.4.5.1** *P* **297** *L* **15** # **637**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Typo in table number

SuggestedRemedy
Change Table 62-15 to Table 62-10

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.1.1** *P* **299** *L* **21** # **638**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Figure 62-8: To be consistent, with reference to Figure 62-5 in page 290, figure 62-8 must also name the PMS-TC layer as PMS-TC/PMA and U2-interface as U2-interface/MDI

SuggestedRemedy
In figure 62-8, change PMS-TC as PMS-TC/PMA and U2-interface as U2-interface/MDI

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.1.2** *P* **299** *L* **50** # **522**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
add a ref. to annex 62A for other band plans

SuggestedRemedy
add a sentence: "other band plans are described in 62A.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.2.1** *P* **300** *L* **3** # **517**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
Make reference to t1e1.4

SuggestedRemedy
Change title to read: Splitting, Reference 1-2 section 6.2.1
Replace the whole text, from line 5 to line 49, with "Stet".
Delete figure 62-9, on page 301.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.2.2** *P* **300** *L* **50** # **518**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
Make reference to T1E1.4

SuggestedRemedy
Modify the title to read: "Coding and Modulation, Reference 1-2, section 6.2.2
Replace the text, from page 300 line 53 to page 301 line 46, with: "Stet, with the exception that only Base-Band Spectral shaping (BSS) is used"
Delete figure 62-10.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.2.2** *P* **301** *L* **25** # **639**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **R**
"(BSS)." must be part of previous sentence in page 300 line 54.

SuggestedRemedy
Move "(BSS)" to line 54 in page 300 before full-stop.

Proposed Response *Response Status* **C**
REJECT.
Not relevant. See comment #518.

Cl **62** *SC* **62.5.2.2** *P* **301** *L* **33** # **640**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **R**
Figure 62-10: In right side the text "Trans Sign" is incomplete.

SuggestedRemedy
Change "Trans Sign" to " Transmit Signal"

Proposed Response *Response Status* **C**
REJECT.
Not relevant. See comment 518

Cl **62** *SC* **62.5.4.1.4.1** *P* **307** *L* **13** # **938**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
If PSDref, kl and LOSS_CORR are regionally specific then they should be added to profiles defined in Annex 62A

SuggestedRemedy
Add a sentence at the end of the paragraph:

Refer to Annex 62A for profile definitions including regional variance of power back-off characteristics.

The editor of Annex 62A needs to add the appropriate text for this also.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.4.2** *P* **308** *L* **1** # **520**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
replace "TBD" with "62A"

SuggestedRemedy
Replace "TBD" with "62A".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.4.2** *P* **308** *L* **22** # **521**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
mistype. 1.8 should be changed to 4.0

SuggestedRemedy
Change the two frequency columns on page 308, line 22, to be "0.225-4.0" instead of "0.225-1.8".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.4.2.2.2** *P* **303** *L* **54** # **641**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Refer to variable alpha with symbol alpha and not by a

SuggestedRemedy
replace 'a' by symbol alpha, in line 54 page 303 and in line 13 page 304.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.4.2.2.2** *P* **304** *L* **10** # **519**
Zion Shohet Infineon

Comment Type **E** *Comment Status* **A**
various values of excess bw are supported.

SuggestedRemedy
Change the sentence to read: ".....the range between 0.1 to 0.2 with granularity of 0.025 are supported".
Delete the note on page 305, line 1.

Proposed Response *Response Status* **C**
ACCEPT.
Approve: 7 Don't Approve: 2 Abstain: 7

Cl **62** *SC* **62.5.5** *P* **309** *L* **22** # **939**
Barrass, Hugh Cisco Systems

Comment Type **E** *Comment Status* **A**
Typo:

OCC is written OOC

SuggestedRemedy
Replace OOC with OCC

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62** *SC* **62.5.6** *P* **310** *L* **21** # **642**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
Inconsistent terminology. EFM-O or EFM-R is not used anywhere else in clause 62. To be consistent with EFM terminology, refer them as 10PASS-T-O and 10PASS-T-R

SuggestedRemedy
Change EFM-O and EFM-R to 10PASST-O and 1OPASST-R

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Resolution of comments #661 and #678 may apply.

Cl **62** *SC* **62.5.6.1** *P* **310** *L* **34** # **944**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
As per editor's note...

State Idle and procedure Warm Resume have no place in Ethernet.

SuggestedRemedy
Remove state Idle and procedure Warm Resume from Figure 62-14

Remove Warm Resume timeout row (row 4) from Table 62-15

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
The editor will get back with modified state diagram.
Approve: 10 Don't Approve:0 Abstain:8

Cl **62** *SC* **62.5.6.1** *P* **310** *L* **35** # **940**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
As per editor's note...

State Power Down and procedure Warm Start are unnecessary optimizations and can be removed.

SuggestedRemedy
Remove state Power Down and procedure Warm Start from Figure 62-14

Remove Warm Start timeout row (row 4) from Table 62-15

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Cl **62A** *SC* **61A.3.3.5** *P* *L* # **63006**
Scott Simon

Comment Type **T** *Comment Status* **A**
The function of this subclause is unclear and probably uneccessary. Annex 62A is intended to create a finite list of well known generic profiles that can be used by most environments for plug and play deployment. Additionally, these profiles are those that will be tested for compliance with 10PASS-TS.

The bandplans that are currently in 62A (in D1.3 and the accepted comments) are already defined and parameratized appropriately. Any additional PSD masks that the STF might add on its own volition will have to be described.

User-defined PSD masks and bandplans may be implemented completely using Clause 45 registers. The concept of a user-defined profile has no real meaning in Annex 62A.

The degree of control in Clause 45 (see the tone control register) for MCM modems already permits user-defined settings with even more granularity than is specified in this subclause.

SuggestedRemedy
Remove the subclause and tables.

Grant the editor license to describe that Clause 45 control may be used to override the profiles listed in this clause within the capabilities of Clause 62.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62A** *SC* **62A.3** *P* **377** *L* *#* **99114**

Simon, Scott Cisco Systems, Inc.

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

The text of the subclause refers to user-defined bandplan and PSD Mask profiles. No constraints are placed on the definition of user-defined bandplans.

SuggestedRemedy

Using appropriate editorial license, create subclause 62A.3.3.4.1 "User-defined bandplan" with the following text:

10PASS-T PHYs shall support user-defined bandplans within the limits described below. User defined bandplans are specified by choosing a set of frequency bands, their transmission direction and their boundaries.

Up to 4 frequency bands may be selected. Frequency band 0 may be selected to transmit in either the upstream or downstream direction. Frequency bands 1 and 3 transmit downstream. Frequency bands 2 and 4 transmit upstream.

The start and end frequencies of each band may be specified in integer multiples (n) of 4KHz, where n >= 6 and n <= 3000. The minimum separation between bands is TBD. If a PHY is set with a profile that violates a minimum band separation, then TBD (the PHY ignores the setting, or refuses to link, etc. If band 0 is selected as a downstream band, the band 0 end and band 1 start frequencies may be both set to n = 35, indicating that band 0 and band 1 will operate as a single contiguous downstream band.

Using appropriate editorial license, create subclause 62A.3.3.4.2 "User-defined PSD mask" with the following text:

For each selected frequency band, a user-defined PSD mask may also be specified by selecting a maximum transmit PSD for that band. 10PASS-T PHYs shall support setting the maximum transmit PSD of each band as follows in 0.5dBm/Hz increments. Band 0: TBD (ed note. this max PSD should match the same number from ADSL). Band 1: TBD, Band 2: TBD, Band 3: TBD, Band 4: TBD.

Also, include a table to summarize each of the parameters in a user defined profile and its limits. Example (and only and example!):

Band 0 Activate: 1,0
Band 0 Start: 4-34
Band 0 End: 5-35
Band 0 Max PSD: -40dBm/Hz
Band 1 Activate: 1,0
Band 1 Start: 35-3000
Band 1 End: 36-3000
Band 1 Max PSD: -55dBm/Hz
etc. etc. etc.

Also, add the following note to the bottom of 62A.3.1

Ed. Note: Comformance testing for 10PASS-T phys should be based on cycling each parameter above and observing the output of the PHY on a spectrum analyzer. The actual procedure and limits for doing so should be described in A62B.

Proposed Response *Response Status* **Z**

WITHDRAWN.

Cl **62A** *SC* **62A.3.3.1** *P* **404** *L* **54** *#* **490**

Beck, Michael Alcatel

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

Band plans are missing.

SuggestedRemedy

Add reference to G.993.1 Annex A, Annex B and Annex C, or provide description of the band plans defined there. This will make 62A.3.3.2 and 62A.3.3.3 obsolete.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Add reference to G.993.1 Annex A, Annex B, Annex C and Annex F. Remove 62A.3.3.2 and 62A.3.3.3.
Add editor's note about mandatory requirements.
Approve: 20 Don't Approve: 2 Abstain: 4

Cl **62A** *SC* **62A.3.3.5** *P* **405** *L* **47** *#* **495**

Beck, Michael Alcatel

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

Definition of the frequency steps does not correspond to the frequency steps used in tables BJ2 and BJ3.

SuggestedRemedy

Calculate frequency steps according to definition in text and update tables BJ2 and BJ3.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **62A** *SC* **62A.3.3.5** *P* **405** *L* **47** # **494**
Beck, Michael Alcatel

Comment Type **E** *Comment Status* **A**
"placewise linear" should be "piecewise linear"

SuggestedRemedy
Replace "placewise" with "piecewise".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62A** *SC* **62A.3.3.5** *P* **405** *L* **48** # **645**
Venugopal, Padmabala InterOperability Labor

Comment Type **E** *Comment Status* **A**
In-consistent table numbers.
Table BJ2, Table BJ3, Table 62C1 are inconsistent in clause 62A.

SuggestedRemedy
Change table numbers and make appropriate changes in the text

1) change Table BJ2 to Table 62A-2 in page 406 line 1
2) change Table BJ3 to Table 62A-3 in page 406 line 15
3) change Table 62C1 to Table 62A-4 in page 407 line 26
4) In page 405 line 48 change Table BJ2 to Table 62A-2
5) In page 405 line 51 change Table BJ3 to Table 62A-3

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62A** *SC* **62A.3.4** *P* **405** *L* # **965**
Simon, Scott Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A**
The payload rate profiles are too fine grained and are pretty useless. The modem will retain fine grained control of datarate via Clause 45. Clause 62A should specify a few subset rates to simplify the creation of Clause 30 objects and Clause 62B guidelines

SuggestedRemedy
Change the text to restrict downstream and upstream rates to 25, 15, 10, 5, 3 Mbps.

Add a table with clause 45 register settings for each profile for PSD mask and bandplan.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
50, 35, 25, 15, 12.5, 10, 7.5, 5, 2.5
Add note: this is payload rate at MII
Add note: not all rates are supported by all bandplans in all directions

Cl **62A** *SC* **Table 62A-1** *P* **405** *L* **1** # **489**
Beck, Michael Alcatel

Comment Type **E** *Comment Status* **A**
Plan A is used with ETSI masks while Plan B is used with T1E1 masks. It should be the other way round.

SuggestedRemedy
In the column labeled PSD Mask, align the six data cells referring to TS1 101 270 with G.993.1 Annex B. Align the six data cells referring to T1.424/Trial-Use with G.993.1 Annex A. Add integer numbers in ascending order to the column labeleld Profile Number.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **62A** *SC* **Table 62C1** *P* **407** *L* **26** # **496**
Beck, Michael Alcatel

Comment Type **E** *Comment Status* **A**
Table number is wrong.

SuggestedRemedy
Change table number into Table 62A-4.

Proposed Response *Response Status* **C**
ACCEPT. See comment #645.

Cl **62A** *SC* **Table 62C1** *P* **407** *L* **26** # **497**
Beck, Michael Alcatel

Comment Type **T** *Comment Status* **A**
The table lists only the radio frequency bands as specified in ETSI TS 101 270, subclause 9.3.3.6.1.

SuggestedRemedy
Replace the table by a generic definition of RF bands and references to ETSI TS 101 270 subclause 9.3.3.6.1, and T1.424/Trial-Use Part 1 Clause 15.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE. Add reference to ITU-T G.993.1 Annex F Table F-5.

Cl **62A** *SC* **Table BJ2** *P* **406** *L* **1** # **492**
Beck, Michael Alcatel

Comment Type **E** *Comment Status* **A**
Table number is strange.

SuggestedRemedy
Change table number into Table 62A-2.

Proposed Response *Response Status* **C**
ACCEPT. See comment #645.

Cl **62A** *SC* **Table BJ3** *P* **406** *L* **14** # **493**
Beck, Michael Alcatel

Comment Type **E** *Comment Status* **A**
Table number is strange.

SuggestedRemedy
Change table number into Table 62A-3.

Proposed Response *Response Status* **C**
ACCEPT. See comment #645.

Cl **63** *SC* *P* *L* # **793**
Squire, Matt Hatteras Networks

Comment Type **T** *Comment Status* **D**
T1E1.4 has recently adopted higher constellations and altered bandplans for SHDSL operation in North America. Clause 63 (and 63A and 63B) should be allowed to take advantage of these adopted constellations and PSDs.

SuggestedRemedy
Propose to give the editor the freedome to supply text in support of 32PAM constellations and of the new PSDs adopted in T1E1.4.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Approve: 12 Don't Approve: 14 Abstain: 2
PROPOSED REJECT.
Approve: 14 Don't Approve: 12 Abstain: 3

Cl **63** *SC* **63.1.4** *P* **314** *L* **35** # **892**
Cravens, George Mindspeed

Comment Type **E** *Comment Status* **A**
Reword the second and third sentences of the paragraph to remove the two occurrences of "some".

SuggestedRemedy
Change the second and third sentences of the paragraph to the following:
The payload is formed into a 2BASE-TL PMA frame with overhead added (for example, the PMI Aggregation Header). The framed data is then scrambled and sent to the PMD sublayer.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Editor shall make it consistent with wording of Clause 61 and 62.

Cl **63** *SC* **63.2.1** *P* **317** *L* **14** # **789**
Squire, Matt Hatteras Networks

Comment Type **E** *Comment Status* **A**
What is "Equation (1)" ?

SuggestedRemedy
Clarify Equation 1 reference. Multiple times throughout clause. Equation (1) is in 63.3.2.1?

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Eq (1) is identified in section 63.3.2.1. In order to make it clearer, we can add the words "of 63.3.2.1" after the eq(1) reference. The same clarification is needed in section 63.3.1 p.318 L40.

Cl **63** *SC* **63.2.2** *P* **317** *L* **26** # **790**
Squire, Matt Hatteras Networks

Comment Type **TR** *Comment Status* **A**
One of the reasons SHDSL was selected was because it can be repeatered. We should not say it doesn't apply.

SuggestedRemedy
Eliminate the statements saying signal regenerators don't apply (p317 line 27, p318 line42).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
L28: Change "do not apply to" to "are out of scope for".
Commenter was not present during resolution, but approved the resolution on March 13, 2003.

Cl **63** *SC* **63.2.2** *P* **317** *L* **28** # **792**

Squire, Matt — Hatteras Networks

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

We say management (EoC, Section 9) is not required (p317 L8, P318 L54). If thats the case, then PMI discovery must be optional as well. However, PAF discovery (P227, L30 as an example) "shall be implemented."

SuggestedRemedy

PMI Aggregation discovery should be optional. (Maybe this comment should be made against Clause 61 instead?).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
PMI Aggregation is optional.
Add note to Clause 61 that PMI Aggregation Discovery is a mandatory part of PMI Aggregation.
EoC is optional, but it is not used in PMI Aggregation Discovery (G.hs is used).
Commenter was not present during resolution, but approved the resolution on March 13, 2003.

Cl **63** *SC* **63.3.1(e)** *P* **318** *L* **42** # **266**

Jackson, Stephen — Hatteras Networks

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

This line writes out support of Layer 1 signal regeneration, as provided for in G991.2 ... I'm not so keen on this, are you? And I don't recall discussing it.

SuggestedRemedy

Strike (e).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. See comment #790.

Cl **63** *SC* **63.3.2.1** *P* **319** *L* **12** # **791**

Squire, Matt — Hatteras Networks

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

SHDSL (as well as VDSL) have very granular rates. Codepoints for all rates in 64Kbps increments are given in G994.1. Should EFM restrict the potential achieved data rates to something less granular (i.e. 256Kbps increments)?

SuggestedRemedy

Restrict rates for SHDSL (and VDSL) to multiples of 256Kbps.

Proposed Response *Response Status* **C**

REJECT.
Profiles are defined to reduce the number of modes of 2BASE-TL. The 64kbps granularity allows a better mapping between spectrum management restrictions and reach (I.e. a SM mask might not allow a rate K, but might allow a rate K-64kbps. With a granularity of 256k, the rate allowed would be K-256kbps).
Note: coarser profile steps will be defined in Annex 63A.

Cl **63** *SC* **63.3.2.1** *P* **319** *L* **4** # **657**

Kimpe, Marc — Adtran

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

Clause 63 should take advantage of the 32-TCPAM constellation to offer higher data rates using the 32-TCPAM mapping agreed by ITU for G.shdsl.bis. This comment proposes text modifications to clause 63 and annex 63A to include that mode. Note that this comment does not address the use of extended bandwidths. Instead, by restricting the maximum data rate to 3072 kbps (2304/3*4), it keeps the maximum bandwidth to that currently defined in G.991.2 (Feb 2001). Three modifications are necessary. In addition, the editor should be given license to add appropriate G.994.1 codepoints. Those codepoints should be added to clause 61 as well.

SuggestedRemedy

Suggested modifications to the draft are contained in the appended kimpe_clause63_32tcpam file

Proposed Response *Response Status* **C**

ACCEPT.
Approve: 19 Don't Approve: 5 Abstain: 4
Adding a new constellation would be a major change to the approved baseline. Needs discussion/agreement in STF. See also comment #793.
Commenter approved resolution by email on March 17 2003.

Cl **63A** *SC* *P* **411** *L* # **655**
Kimpe, Marc Adtran

Comment Type **T** *Comment Status* **A**
Profiles should be defined for 2Base-TL.

SuggestedRemedy
The attached file kimpe_annex63A contains proposed draft text for that annex.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **63B** *SC* *P* **413** *L* # **656**
Kimpe, Marc Adtran

Comment Type **T** *Comment Status* **A**
Performance guidelines should be included for 2Base-TL

SuggestedRemedy
Suggested draft text is included in the attached file kimpe_annex63B

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* *P* *L* # **271**
Glen Kramer Teknovus

Comment Type **E** *Comment Status* **A**
Typos:
page 324 line 27: "Multipoint MAC" is called "Multi-Point MAC" everywhere else
page 324 line 52: "instanciated" should be "instantiated"
page 333 line 32: "speci.ed" should be "specified"
page 338 line 18: "on" should be "one"

SuggestedRemedy
See comment

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* *P* *L* # **654**
Maislos, Ariel Passave

Comment Type **E** *Comment Status* **A**
some diagrams are stil not using frame

SuggestedRemedy
allow editor to continue conversion to frame-format

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* *P* *L* # **726**
Jin Kim Samsung

Comment Type **TR** *Comment Status* **D**
In case one of ONU is not working properly and start to send an an abnormally long output data stream, all other ONU will loss the opportunity of transmitting any packet in the upstream direction. This is one of fundamental weakness in the passive optical network.

A similar problem was already considered in 10 base 5 network as well as a network with a repeater. 10 base 5 used to have a TX jabber control function to inhibit an abnormally long output data stream in PMA. Also, the repeater has a same control capability using RX jabber control.

By adding similar jabber control function like 10 base 5 has, EPON network can have a self interrupt capability to stop transmitting an abnormally long output data stream

SuggestedRemedy
Let's add an optional jabber control function to EPON.

Proposed Response *Response Status* **Z**
WITHDRAWN.
Jabber functionality is not currently defined for 1000Base-X PMDs.
As PON PMDs rely on Base-X construction, this type of functionality is not generally available nor easy to add.

This requirement requires further joint discussion with the PMD group.

Cl **64** *SC* *P* *L* # **274**
Glen Kramer Teknovus

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

1) Inconsistent variable naming conventions
Ex.transmitEnable vs transmit_in_progress vs TxAllowed

2) Variable names don't match:
Ex. TransmitPending (fig 64-8) vs transmit_pending in text and in Fig 64-11

SuggestedRemedy

make names consistent with existing 802.3 document (see clasue 4 for example)
(variable starts with lower case, word separation is achieved by starting consequent parts with capitals)

transmitAllowed
transmitEnabled
transmitPending
transmitInProgress
etc.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64** *P* *L* # **99000**
Diab, Wael William Cisco Systems

Comment Type **TR** *Comment Status* **A** *D1.0*

There is no mention on the constraint for the local time stamping. I believe that there is an inherent assumption that the delay throuh the MAC & Phy is relatively constant. This needs to be explicitly stated in the draft.

SuggestedRemedy

Please add a timing constraint for the time stamping mechanism to eliminate any variability through the MAC and Phy. For instance, a min and max time between processing to trnsmition.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Transmission/reception delay can not be distinguished from propagation delay.
Specification needs to constrain delay variations not necesseraly delay.
D1.0 #672

Cl **64** *SC* **64** *P* **321** *L* **1** # **175**
Brown, Benjamin AMCC

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

Clause 31 is full of references to additional MAC Control functionality specified in Annexes to 31. It does not refer to Clause 64

SuggestedRemedy

Please reconcile the work in 64 without breaking 31.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See comment 647

Cl **64** *SC* **64.1** *P* **322** *L* **11** # **106**
Brown, Benjamin AMCC

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

This paragraph adds nothing

SuggestedRemedy

Remove this paragraph

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1** *P* **322** *L* **16** # **203**
Marris, Arthur Cadence

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

"at the leave" should read "at a branch"

SuggestedRemedy

Replace the text "at the leave" with "at a branch"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1** *P* **322** *L* **16** # **108**
Brown, Benjamin AMCC

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

This second sentence should refer to multiple DTEs

SuggestedRemedy

Replace the latter half of this sentence with "and the DTEs connected at the leaves of the trees are called Optical Network Units (ONU)."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1** *P* **322** *L* **24** # **109**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
replace "def-fer" with "defer"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1** *P* **322** *L* **4** # **107**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
PON is introduced in the next sentence. Use P2MP here.

SuggestedRemedy
Replace "the PON topology" with "a Point to Multi-Point (P2MP) medium"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1** *P* **323** *L* **1** # **110**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Master, bridge port, OLT?

Network interface, end stations, slave, ONU?

Why do we need to multiple names?

SuggestedRemedy
Choose 1 (I prefer OLT & ONU) and stick with it.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Use OLT and ONU.

Cl **64** *SC* **64.1** *P* **323** *L* **11** # **111**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
This paragraph adds nothing

SuggestedRemedy
Remove it

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1** *P* **323** *L* **8** # **113**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
I thought LLID was Logical Link ID

SuggestedRemedy
Replace "Link Layer ID" with "Logical Link ID"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1** *P* **323** *L* **8** # **736**
Bemmel, Vincent Alloptic

Comment Type **E** *Comment Status* **A**
definition of LLID is wrong

SuggestedRemedy
replace "Link Layer Identifier" with "Logical Link ID"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1** *P* **323** *L* **8** # **437**
Jaeyeon Song Samsung

Comment Type **E** *Comment Status* **A**
LLID is a Logical Link ID, not a Link Layer ID.

SuggestedRemedy
correct the sentence.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1** *P* **324** *L* **25** # **204**
Marris, Arthur Cadence

Comment Type **T** *Comment Status* **A**
The word "should" is inappropriate here as it implies the behaviour described is not mandatory. Also the word "defer" is spelt incorrectly.

SuggestedRemedy
Reword the sentences to read "An ONU defers transmission until its grant arrives. When the grant arrives, the ONU then transmits frames at wire speed during its assigned time slot."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.1** *P* **323** *L* **24** # **112**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Bullet a) uses P2PE before descibing what the acronym means

SuggestedRemedy
Replace "P2PE" with "Point to Point Emulation (P2PE)"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.1** *P* **323** *L* **25** # **328**
Hirth, Ryan Terawave Communica

Comment Type **T** *Comment Status* **A**
Capabilites vector and vendor extentions were removed from the draft and thus are no longer a goal or objective.

SuggestedRemedy
Items e and j should be removed as a goal.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.1** *P* **323** *L* **30** # **737**
Bemmel, Vincent Alloptic

Comment Type **E** *Comment Status* **A**
Term "Negotiating" is misleading... isn't this really a disclosure?

SuggestedRemedy
use "Disclosure" instead

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.2** *P* **124** *L* **53** # **99204**
I2R, Onfig Team Institute For Infocomm

Comment Type **TR** *Comment Status* **A** *D1.2 #409*
The number of MAC instances and clients supported for P2PE is N+1. However, for shared LAN emulation it is 2N+1

SuggestedRemedy
Add another passage or sentence to indicate this.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Add paragraph in compatibility considerations describing use of shared emulation

Cl **64** *SC* **64.1.2** *P* **323** *L* **46** # **114**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
Replace "extention" with "extension"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.2** *P* **323** *L* **5** # **117**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
A reference to clause 65 where the filter descptions exist would be useful here

SuggestedRemedy
Add reference to 65.1.3.2 at the end of this sentence.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.2** *P* **324** *L* **19** # **305**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
PHY is not indicated in Figure 64-2.

SuggestedRemedy
PHY should be indicated like other Figures such as Figure 56-1.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.1.2** *P* **324** *L* **50** # **116**

Brown, Benjamin AMCC

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

This paragraph is used to describe the number of MACs in an OLT. It says the total number is N+1. I was told in the January meeting that the number is 2N+1: N Unicast MACs, N Multicast MACs and 1 Broadcast MAC.

SuggestedRemedy

Beginning with the 3rd sentence, replace "An additional" with "This MAC is referred to as the Unicast MAC. A Multicast MAC per ONU is instantiated to support multicast transmissions to all ONUs except the one with the same LLID. Finally, one more"

Also, fix spelling of instanciate (should be instatiate) later in this same sentence.

Also, fix number of instances of MultiPoint in Figure 64-4

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove sentence on number of MACs from introduction, and expand explanation in section 64.3.4.3.

See also 821,947

Cl **64** *SC* **64.1.2** *P* **325** *L* **1** # **821**

Lynskey, Eric UNH-IOL

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

Clause 65 states that 2N+1 MACs are supported in the OLT, a unicast and multicast for each ONU and the broadcast.

SuggestedRemedy

Change N+1 to 2N+1. Add sentence to paragraph stating that "The OLT supports both a unicast and multicast MAC for each ONU.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 116 for exact solution.

Cl **64** *SC* **64.1.2** *P* **325** *L* **1** # **947**

Hidekazu Miyoshi Sumitomo Electric Indu

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

The number of MAC instances within the OLT is 2N+1 not N+1. Because there are two instances per LLID, an unicast instance and a broadcast (non unicast) instance, and there is one SCB MAC per OLT.

SuggestedRemedy

Change the expression, "N+1" -> "2N+1", in line 1 of page 325 and in line 18 of page 338.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 116 for resolution.

Cl **64** *SC* **64.1.3** *P* **125** *L* # **99205**

I2R, Onfig Team Institute For Infocomm

Comment Type **TR** *Comment Status* **A** *D1.2 #433*

From Fig 56-4, we can't see clearly the relationship between Mac Control Client and the OMP function block.

For example, as is known the Discovery Processing block needs to indicate the Mac Control Client the results(Ma_Control.indication(denied/accepted)) or states(Ma_Control.indication(in_progress)) of the discovery process.

On the other side the Mac Control Client generates Ma_Control.request() to control the transmit of the OMP function block.

And the OMP.request() and OMP.indication() can only be used within the OMP function block.

SuggestedRemedy

See the file: raymond_cmts_2_0103.pdf.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See kramer_cmts_3_0103.pdf for exact solution.

Cl **64** *SC* **64.1.3** *P* **325** *L* # **455**

Yoshimura, Minoru NEC

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

"MPC_LLID.request"used in clause 65 is not described in this clause.

SuggestedRemedy

Add description.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment is T not E

Description and interface shall be added based on other comments on this subject

Cl **64** *SC* **64.1.3** *P* **325** *L* **10** # **219**

Wu, Mingwei Institute for Infocomm

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

In Figure 64-4, the MAC client and MAC_Control client are lost on top of the MAC Control Service Interface of line 12.

SuggestedRemedy

Add MAC client and MAC_Control client in about line 10 on top of the MAC Control Service Interface of line 12 for consistency with the description in section 64.2 .

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The diagram did not include the Clients in order to reduce clutter.

The editor is open to suggestions for additing this information in a visually appealing fashion.

Cl **64** *SC* **64.1.3** *P* **325** *L* **21** # **220**

Wu, Mingwei Institute for Infocomm

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

Since in the following description one function block called OMP is mentioned, there should be a frame called OMP surrounding the OMP function block in figure 64-4.

SuggestedRemedy

Add a seperate frame with a name of OMP round the OMP function block .

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Separate comment asks for clarification of OMP block as alterative solution

Cl **64** *SC* **64.1.3** *P* **325** *L* **39** # **222**

Wu, Mingwei Institute for Infocomm

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

In figure 64-4, TransmitProgress[1] of line 39 should be TransmitInProgress[1] according to the following definition. And also the TransmitProgress[1] in line 43 should be TransmitInProgress[N].

SuggestedRemedy

Change TransmitProgress[1] of line 39 into TransmitInProgress[1]. And also change the TransmitProgress[1] in line 43 into TransmitInProgress[N].

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1.3** *P* **325** *L* **42** # **221**

Wu, Mingwei Institute for Infocomm

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

In figure 64-4, TransmitEnable[1] in line 42 should be TransmitEnable[N] for the Multi-point MAC Control instance n. The same with the TransmitPending[1] and TransmitProgress[1] in line 43.

SuggestedRemedy

Change TransmitEnable[1] in line 42 into TransmitEnable[N], change the TransmitPending[1] and TransmitProgress[1] in line 43 into TransmitPending[N] and TransmitInProgress[N] accordingly.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1.3** *P* **325** *L* **44** # **223**

Wu, Mingwei Institute for Infocomm

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

In figure 64-4, "Multi-point instance 1/.../N" in line 44 and line 45 should be "Multi-point MAC Control instance 1/.../N" for the consistency with that in line 20 of page 326.

SuggestedRemedy

Change "Multi-point instance 1/.../N" in line 44 and line 45 into "Multi-point MAC Control instance 1/.../N".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1.3** *P* **325** *L* **9** # **505**

Chan Kim ETRI

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

In most cases, the multiple MACs in OLT will be implemented in single MAC hardware and software with LLID-awareness at points where it's needed. Really implementing multiple MAC hardware or software blocks would be unnecessary because only one MAC is activated in RX and TX at a time not to mention it is ineffective in resource utility.
But to maintain classical MAC service interface with upper layer, we need separate client interfaces.
In Fig. 64-3, we already have multiple client interfaces with a single multi-point MAC control sublayer which has a conveniently merged form for many LLIDs not like multiple MAC sublayer entities in the same figure.
As we remember, representing multiple MAC entities were ony for maintaining classic MAC service interfaces upward and downward. Here are some points for wihch I think that the Fig. 64-4 does not appropriately represent real protocol nature in OLT side... not only in implementation but also in theory. By the way, the title of Fig. 64-4 should identify OLT only case.
Points to consider are
1. discovery process is not independent for LLIDs. It is common procedure for all LLIDs. LLID value is assigned from common LLID value pool and discovery gate is responded by possibly many unregistered ONUs at the same time. When having received multiple REGISTER_REQ, the OLT should process them one at a time. It's not LLID independent process but a common process.
2. report and gate processing is not LLID independent either. analyzing the report and assigning the gate from the usable window period should be a common process across all active LLIDs. looking at all LLIDs at the same time. Practically, in a real implementation, we cannot assign bandwidth to an ONU without looking at other ONU reports.
3. Also, this picture cannot represent the case of using SCB mode (anti-LLID). If we should have a MAC for any logical link, including SCB mode LLID(that is, LLID indicating all ONU's except amy specific ONU), we should have another N MACs. So we should have 2N+1 MACs to completely represent the case.

SuggestedRemedy

The better way to represent the situation is, as a conclusion, to think of LLID as just a parameter associated with every frame in EPON. in upstream and downstream. This LLID virtually represent the logical link but we don't need separate MACs for this purpose.
Other than that, the MAC entities in the figuare no longer represent the classical MAC specified in clause 4. we have a special requrement of constant delay path in transmit and receive path. So it already different MAC. Why do we have multiple MACs which is only conceptual and not real, and why do we separate the OMP processing for separate LLIDs which is also unreal and cannot nicely explain every processing and many discrepancy with real processing?
Rather than having separate MACs and separate OMP processing for LLIDs, just having a single MAC with added service parameter LLID would be nice. It will require a modification to clause 4 MAC definition with a couple of requirements(like time delay).
We should also consider to have single OMP with the same discoveyr, report, and gate processing as already in 64.3.8, 64.3.9, 64.3.10. The OMP processing blocks are not multiply instantiated for LLIDs. but the service interface is separate or merged with added parameter of LLID. separate presentation may be needed.

Proposed Response *Response Status* **C**

REJECT.
Layering structure is consistant with baseline and maintains MAC service interface.
Implementation is not restricted by this layering.
All MACs are real and maintain state and counters for every link following establishment of the link by the lower layers.

Commenter is encouraged to comment separatly on every subclause separtly in a manner that allows separate discussion on every recommendation.

Cl **64** *SC* **64.1.4** *P* **326** *L* **10** # **122**

Brown, Benjamin AMCC

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

spelling

SuggestedRemedy

Replace "indefinetly" with "indefinitely"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.1.4** *P* **326** *L* **3** # **121**

Brown, Benjamin AMCC

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

wrong word

SuggestedRemedy

Replace "comprised" with "comprises"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **15** # **123**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Wrong word

SuggestedRemedy
Replace "comprised" with "comprises"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **17** # **306**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
Typo

SuggestedRemedy
Replace "is responsible or synchronizing" with "is responsible for synchronizing".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **17** # **124**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
wrong words

SuggestedRemedy
Replace "blocks is responsible or" with "block is responsible for"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **20** # **125**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
Replace "instanciated" with "instantiated"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **20** # **224**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
As the Multi-point MAC Control instance n interface with both the MAC client and MAC Control client. So the whole sentence of this line should be changed into: This block is instanciated for each MAC and respective (MAC Control/MAC) clients associated with .... .

SuggestedRemedy
Change the whole sentence of line 20 into: This block is instanciated for each MAC and respective clients(MAC Control/MAC) associated with .... .

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **23** # **126**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Control Parser is unnecessary - see my comment on Fig 64-4

SuggestedRemedy
Remove bullet C

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Cleanup based on kramer_1.pdf

Cl **64** *SC* **64.2** *P* **326** *L* **25** # **226**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
As can be seen from figure 64-4, the source of forwarded frames by Control Multiplexer can be the MAC client, the Flow Control function block or the OMP block. So the sentence of line 25 should be changed into: This block is responsible for selecting the source of the forwarded frames: the MAC client, the Flow Control function block or the OMP block.

SuggestedRemedy
Change the sentance of into: This block is responsible for selecting the source of the forwarded frames: the MAC client, the Flow Control function block or the OMP block.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **25** # **127**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
The latter part of bullet d doesn't make much sense and is unnecessary

SuggestedRemedy
Remove everything after the colon.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2** *P* **326** *L* **29** # **128**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
This is the first use of the acronym OMP

SuggestedRemedy
Replace the opening of bullet f) with "Optical MultiPoint (OMP) processing blocks, including Discovey, Report and Gate. These blocks are responsible..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **33** # **307**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
The referred figure is not updated.

SuggestedRemedy
Replace Figure 56-4 with Figure 64-4.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **33** # **130**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
missing word / spelling

SuggestedRemedy
Replace "Multi-Point Control instanses" with "Multi-Point MAC Control instances"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **33** # **129**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Wrong reference

SuggestedRemedy
Replace the reference to 56-4 with 64-4

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **35** # **131**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
missing word

SuggestedRemedy
Replace "unique MAC" with "unique unicast MAC"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **36** # **132**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
wrong reference

SuggestedRemedy
Replace the reference to Clause 57 with Clause 65.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **36** # **308**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
The referred Clause is not updated.

SuggestedRemedy
Replace Clause 57 with Clause 65.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **39** # **227**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
The sentence in line 39 should be: ...a single instance of the Control Parser/Multiplexer function.

SuggestedRemedy
Change the sentence in line 39 into: ...a single instance of the Control Parser/Multiplexer function.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **45** # **133**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Clean up wording

SuggestedRemedy
Replace "Note that the receive enabled interface (j) is not required to coincide with the enabled transmit interface (i)." with "Note that the Multi-Point MAC Control sublayer need not receive and transmit packets associated with the same interface at the same time."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **326** *L* **54** # **134**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
31.3 explicitly states that "MA_DATA.request primitives may ... be delayed, discarded or modified in order to perform the requested MAC Control function."

SuggestedRemedy
Perhaps something closer to this could be written here.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **327** *L* **23** # **598**
williamsen, erica IOL/UNH

Comment Type **E** *Comment Status* **A**
MA_DATA.indicate primitives

SuggestedRemedy
should be changed to MA_DATA.indication primitives

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **327** *L* **33** # **135**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
This paragraph adds nothing. It is a repeat of the second paragraph in 64.1.2

SuggestedRemedy
Remove paragraph

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.1** *P* **327** *L* **39** # **136**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
This is a great summary of the receive operation

SuggestedRemedy
Move this paragraph earlier, between paragraphs 4 & 5 of this section.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.2** *P* **328** *L* **10** # **231**
Wu, Mingwei Institute for Infocomm

Comment Type **T** *Comment Status* **A**
Figure 64-5. transmission_in_progress[1...n] as an input should be at left hand side of block.

SuggestedRemedy
Change transmission_in_progress[1...n] to left hand side of block.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.2.2** *P* **328** *L* **49** # **137**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
This variable isn't used in the state diagram.

SuggestedRemedy
Modify the description of the "select" function to mention how this may be used.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Clarification to select function will be added.

Cl **64** *SC* **64.2.2.2** *P* **329** *L* **1** # **235**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
multipoint_transmit_pending doesn't appear at all in Multiplexing Control state diagram Figure 64-6 at P330.

SuggestedRemedy
Delete multipoint_transmit_pending

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.2.2** *P* **329** *L* **1** # **357**
Karasawa, Satoru Oki Electric Industry

Comment Type **E** *Comment Status* **A**
The variable, multipoint_transmit_pending, is not used in the state diagram Figure 64-6.

SuggestedRemedy
Remove multipoint_transmit_pending.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.2.3** *P* **329** *L* **13** # **138**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
Replace "forawarding" with "forwarding"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.2.6** *P* **330** *L* # **439**
Jaeyeon Song Samsung

Comment Type **T** *Comment Status* **A**
In Figure 64-6, the MAC instance is selected by select(). This MAC is allowed to send a frame. But, in this diagram, the action in the case of empty array is not defined.

SuggestedRemedy
solutions are :
1) add a condition of checking the array is empty or not before SELECT(like Draft v1.2)
2) add a loop condition in the SELECT state for the case of empty array(select()=NONE).

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
See 273 for exact solution.

Cl **64** *SC* **64.2.3** *P* **330** *L* **39** # **140**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Control Parser has been removed - see my comment on Fig 64-4 Control Multiplexer has been modified to use TransmitFrame function calls rather than MA_DATA.request and MA_CONTROL.request primitives

SuggestedRemedy
Remove all references to the Control Parser.
Modify all references to the Control Multiplexer to use TransmitFrame function calls rather than MA_DATA.request and MA_CONTROL.request primitives

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Cleanup based on kramer_1.pdf
Control parser will remain, incorporating non opcode specific elements of OMP parser

Cl **64** *SC* **64.2.3** *P* **330** *L* **44** # **143**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
The control multiplexer is different for OLT and ONU

SuggestedRemedy
This would be a good place to mention how and why they're different.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3** *P* **332** *L* **10** # **237**
Wu, Mingwei Institute for Infocomm

Comment Type **T** *Comment Status* **A**
Figure 64-9. Input LaserControl is not used in Control Multiplexer. Cannot find in state diagrams Figure 64-10,11,12.

SuggestedRemedy
Delete input LaserControl.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3.1** *P* **332** *L* **27** # **144**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
The /T/R/R/ is only 3 bytes, not 6.

SuggestedRemedy
Change the PCS trailer number from 6 to 3. Or perhaps it should be increased if you want to include the FEC extension.

Proposed Response *Response Status* **C**
ACCEPT.
Change 6 to 3 for normal case.

Cl **64** *SC* **64.2.3.2** *P* **333** *L* **9** # **145**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Each instance of the Control Multiplexer sees exactly one transmitEnable, it does not see the entire bus. There is no need to talk about the fact that only one bit of this bus should be valid at a time.

SuggestedRemedy
Remove the last line of this variable description.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3.3** *P* **333** *L* **32** # **600**
williamsen, erica IOL/UNH

Comment Type **E** *Comment Status* **A**
speci.ed parameters.

SuggestedRemedy
specified parameters.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3.3** *P* **333** *L* **32** # **146**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
Replace "speci.ed" with "specified"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3.4** *P* **333** *L* **36** # **309**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
Typo

SuggestedRemedy
Replace "ot" with "or".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3.4** *P* **333** *L* **39** # **599**
williamsen, erica IOL/UNH

Comment Type **E** *Comment Status* **A**
Control Parser ot

SuggestedRemedy
Control Parser or

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.2.3.6** *P* **334** *L* **14** # **602**

williamsen, erica IOL/UNH

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

Figure 64-10
MAC Control not defined

SuggestedRemedy

In 64.2.3.1 Constants, add constant:

MAC Control
The value of the length type field as defined in Clause 31.4.1.3.
TYPE: integer
DEFAULT VALUE: 8808

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.2.3.6** *P* **334** *L* **14** # **601**

williamsen, erica IOL/UNH

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

Figure 64-10
Page 334
Line 14 (Length_Type ==MAC Control)
Line 16 (Length_Type ==MAC Control)

SuggestedRemedy

Change == to symbol = (Alt-061)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.2.3.6** *P* **334** *L* **14** # **603**

williamsen, erica IOL/UNH

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

All state diagrams should follow state diagram conventions and use list of special symbols and operations. A boolean and should be represented with *.
(Length_Type==MAC Control) and (opcode not in {...})

Line 16
(Length_Type==MAC Control) and (opcode in {...})

Figure 64-11
Page 335
Line 18
MA_Control.request and (opcode in {..})
MA_Control.request and !(opcode in {...})

Line 19
MA_DATA.request and !MA_CONTROL.request

Figure 64-12
Page 336
Line 22
MA_DATA.request(DA,SA,m_sdu) and !MA_CONTROL.request(.....

64.3.7.6
Figure 64-14
Page 342 Line 15, 28,29
(Master and me==broadcast_ID)
(opcode==GATE) and (FLAG==Normal gate)
((opcode ==GATE) and (FLAG==Discovery gate))

SuggestedRemedy

In all cases replace and with * (Alt-042)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.2.3.6** *P* **334** *L* **15** # **604**

williamsen, erica IOL/UNH

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

Figure 64-10
(opcode not in {GATE,REPORT,REGISTER

The (not in) should be replaced with the symbol that indicates nonmembership.

SuggestedRemedy

change to (opcode (ALT-0207) {GATE,REPORT,REGISTER

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.2.3.6** *P* **335** *L* **1** # **310**

Ken, Murakami Mitsubishi Electric

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

Figure 64-11
More than one request primitives will arrive at the Control Multiplexer while the state transits from INIT to TRANSMIT READY.

SuggestedRemedy

The following cases should be added.
- MA_DATA.request event at SIGNAL DATA ' Stay in SIGNAL DATA
- MA_DATA.request event at SIGNAL CONTROL ' Stay in SIGNAL CONTROL
- MA_CONTROL.request event at SIGNAL CONTROL ' Stay in SIGNAL CONTROL

After transmitting frame, the existence of sequential request primitives should be checked. According to the existence of sequential request primitives and the type of primitive, the following state transition should be enforced.
- If the sequential primitive is MA_DATA.request, state transits to SIGNAL DATA.
- If the sequential primitive is MA_CONTROL.request, state transits to SIGNAL CONTROL.
- If no sequential primitive exists, state transits to INIT.

Proposed Response *Response Status* **C**

REJECT.
Looping back to INIT state following every frme transmission accoplished same objective in simpler form than as in suggested remedy.
While there are frames to transmit there will be a move from INIT to either SIGAL_DATA or SIGNAL_CONTROL, thus looping until all frames are sent.
This is stateless operation, as state is maintained by the unsatisfied .request signal, and not by internal state variables.

Cl **64** *SC* **64.2.3.6** *P* **336** *L* **1** # **311**

Ken, Murakami Mitsubishi Electric

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

Figure 64-12
The definition of remaining_time is not specified.
The update process of remaining_time is not described.

SuggestedRemedy

The definition of remaining_time should be added in section 64.2.3.2.
The update process of remaining_time should be added in Figure 64-12. After transmitting frame, remaining_time should be updated.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 276 for exact fix.

Cl **64** *SC* **64.2.3.6** *P* **336** *L* **1** # **312**

Ken, Murakami Mitsubishi Electric

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

Figure 64-12
sizeof(m_sdu)+tail_guard>remaining_time is wrong.

SuggestedRemedy

sizeof(m_sdu)+tail_guard<=remaining_time is correct.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 276 for exact correction.

Cl **64** *SC* **64.2.3.6** *P* **336** *L* **13** # **239**
Wu, Mingwei Institute for Infocomm

Comment Type **T** *Comment Status* **A**
Figure 64-12. remaining_time is not defined anywhere. Transmission should only proceed when there's enough remaining time to transmit the next frame.

SuggestedRemedy
Define remaining_time at 64.2.3.2 P333 L26 as:
This variable holds the time remaining for the present grant.
TYPE: 16 big unsigned
DEFAULT VALUE: 00-00

Figure 64-12 L12 transition condition should be:
MA_DATA.request(DA,SA,m_sdu)*(sizeof(m_sdu)+tail_guard<remaining_time)+...

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
See 276 for exact solution

Cl **64** *SC* **64.2.3.6** *P* **336** *L* **6** # **241**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
Figure 64-12. ONU has only 1 instance and no Multiplexing Control, so transmission_in_progress is not needed.

SuggestedRemedy
Delete:
L6: transmission_in_progress=false
L26-27 in 3 states: transmission_in_progress=true

Proposed Response *Response Status* **C**
ACCEPT.
Comment is T not E

Cl **64** *SC* **64.2.6.1.6** *P* **113** *L* **11** # **99002**
Bharati, Barnali Wipro Technologies

Comment Type **TR** *Comment Status* **A** *D1.0*
In 'PERIODIC TRANSMISSION' state should there not be a check if variable 'register == true'? So that no report is sent untill registration is complete or if the ONU has been deregistered.

SuggestedRemedy

Proposed Response *Response Status* **C**
ACCEPT.
D1.0 #188 discovery

Editor unable to track down commenter

Cl **64** *SC* **64.3** *P* **336** *L* **35** # **149**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
OMP Parser and Multiplexer blocks have been removed - see my comment on Fig 64-4

SuggestedRemedy
Remove all references to OMP Parser and Multiplexer.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Cleanup based on kramer_1.pdf
Control parser will remain, incorporating non opcode specific elements of OMP parser and multiplexer, OMP parser and multiplexer are to be removed

Cl **64** *SC* **64.3** *P* **336** *L* **37** # **148**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Figure 64-4 doesn't have a functional block labeled OMP.

SuggestedRemedy
Either draw a block around the OMP processing blocks and label it as the OMP functional block or change the wording of this sentence to "Optical Multi-Point processing blocks".

Same thing for line 51.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3** *P* **336** *L* **50** # **242**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
Clause re-numbered. Figure 56-2 wrong

SuggestedRemedy
Change to Figure 64-4

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3** *P* **336** *L* **50** # **313**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
The referred figure is not updated.

SuggestedRemedy
Replace Figure 56-2 with Figure 64-3.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3** *P* **336** *L* **50** # **150**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Bad reference

SuggestedRemedy
Replace the reference 56-2 with 56-3 or perhaps 65-1, I'm not sure which is correct.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Check with Ben for right reference in 65.

Cl **64** *SC* **64.3.10** *P* **356** *L* # **728**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **A**
For interoperability, the maximum number of outstanding grants in ONU should be specified.

SuggestedRemedy
Specify the maximum number of outstanding grants = 16

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
In 64.4.4 number of pending grants is advertised by ONU.
This value is implicitly limited to 255, as field size is byte.
Maximal number of grants supported up to this limit is left to the implementor.
Clarification should be added in 64.3.10 to this effect.

Cl **64** *SC* **64.3.10** *P* **356** *L* **45** # **178**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
wrong uppercase

SuggestedRemedy
Replace "achieved, Transmission" with "achieved, transmission"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.2** *P* **358** *L* **1** # **179**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Specify in each variable if if is used by ONU, OLT or both

SuggestedRemedy
Add the type that the variable is used by.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.2** *P* **358** *L* **23** # **180**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
LaserControl for the OLT is always on. Tha laset may be disabled for other purposes and by other means but as far as this variable goes, it is always on.

SuggestedRemedy
Replace "OLT, except when disabled, and" with "OLT. For the ONU, LaserControl"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.3** *P* **359** *L* **1** # **181**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Missing a function

SuggestedRemedy
Add min(A,B)

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.3** *P* **359** *L* **3** # **182**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Some functions have types in front of their names:

boolean empty(list)
element structure min_extract(field,list)

SuggestedRemedy
Remove these types before the function names.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.4** *P* **359** *L* **36** # **240**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
The periodic_timer in line 36 of page 359 is confusing with that defined in line 39 of page 354. Suggest changing it into gate_periodic_timer indicating it is used only for gate processing.

SuggestedRemedy
Change the periodic_timer in line 36 of page 359 into gate_periodic_timer. At same time change those two in line 15 and that one in line 11 of figure 64-27 in page 361.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.6** *P* **361** *L* **9** # **324**
Ken, Murakami Mitsubishi Electric

Comment Type **T** *Comment Status* **A**
Figure 64-27
At the completion of discovery, the GATE with null grant is issued. However, the necessity of this GATE is unclear.

SuggestedRemedy
At the completion of discovery, the OLT just starts the periodic_timer and transits to WAIT state.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.10.6** *P* **362** *L* **37** # **339**
Hirth, Ryan Terawave Communica

Comment Type **T** *Comment Status* **A**
provisions should be added to support back to back transfers where the laser does not need to be turned off.

SuggestedRemedy
On exit from START TX, check grant_list and transition to either TURN LASER ON or START TX.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
See attached diagram hirth_1.pdf

Cl **64** *SC* **64.3.10.6** *P* **362** *L* **6** # **338**
Hirth, Ryan Terawave Communica

Comment Type **T** *Comment Status* **A**
Sort function does not work. If an earlier grant is received after the transition to the SET START TIMER occurs, then the grant will expire before it is sent.

SuggestedRemedy
Remove the grant_start_timer and compare to grant start times to local time.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
See attached diagram Hirth_1.pdf

Cl **64** *SC* **64.3.2** *P* **337** *L* **26** # **141**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
Replace "inteface" with "interface"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.3** *P* **337** *L* **35** # **303**
Ken, Murakami Mitsubishi Electric

Comment Type **T** *Comment Status* **A**
No text is provided in section 64.3.3.

SuggestedRemedy
I prepare the initial text based on the state diagrams of D1.3. Please review the file murakami_p2mp_1_0303.doc. Many comments and appropriate modifications are appreciated.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Insert supplied text as section 64.3.3, updated for changes based on comments adopted in March 2003 meeting.

Cl **64** *SC* **64.3.4.2** *P* **338** *L* **12** # **142**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Change the heading name

SuggestedRemedy
Replace "Single copy bradcast suppport" with "Multicast and single copy broadcast support"

Also, add text descibing the use of the Multicast MAC. At the end of the second sentence in this subclause, replace "...the SCB support is introduced. At the OLT on of the MACs is marked as..." with "...the multicast and scb support is introduced. Each unicast MAC has a corresponding multicast MAC for broadcasting traffic to all ONUs except the one associated with that MAC. In addition, one more MAC is marked as..."

Then replace "N+1" with "2N+1"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.4.2** *P* **338** *L* **18** # **314**
Ken, Murakami Mitsubishi Electric

Comment Type **E** *Comment Status* **A**
Typo

SuggestedRemedy
Replace "on of the MACs" with "one of the MACs".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.4.2** *P* **338** *L* **20** # **151**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
The last sentence in this paragraph is confusing to me. If the SCB (and presumably multicast MACs as well) should not be connected to an 802.1D bridge port, what are they connected to? I haven't seen anywhere in this protocol that controls transmissions to these MACs. If this protocol doesn't describe it and they can't connect to a bridge port, how are packets transmitted through them?

SuggestedRemedy
Remove this sentence or descibe where the transmitted packets come trom.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Additional clarification will be added as to why SCB is not bridged.

Cl **64** *SC* **64.3.4.2** *P* **338** *L* **22** # **277**

Glen Kramer Teknovus

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

"sets mode parameter to 1" - mode parameter and LLID structure is not explained yet.

SuggestedRemedy

Exchange order of subclauses 64.3.4.2 and 64.3.4.3
Add cross ref to clause 65

Proposed Response *Response Status* **C**

ACCEPT.
See also 152

Cl **64** *SC* **64.3.4.2** *P* **338** *L* **22** # **152**

Brown, Benjamin AMCC

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

The details at this level are descibed in Clause 65. The text here should only refer to the generation of the MPC_LLID service primitives used by Clause 65.

SuggestedRemedy

Replace this text with a full description of the MPC_LLID service primitive.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.4.3** *P* **338** *L* **32** # **154**

Brown, Benjamin AMCC

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

For the purposes of this clause, what is the difference between bullets a & c, bullets b & d and bullets e & f? I understand that applications may want to know which MAC to use for its packet but any description of this should be left for the text books and not be a part of this standard.

SuggestedRemedy

All of this subclause should be combined into a section that descibes the MPC_LLID primitive.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
In the past comments called for explanations on Shared LAN Emulation.
Removing the description from the text would be counter to past comments accepted on this subject.

References to 65 should be added as well as cclarification on usage of MPC_LLID primitives, but descriptive and informative text should be left intact.
See 948

Cl **64** *SC* **64.3.4.3** *P* **338** *L* **42** # **153**

Brown, Benjamin AMCC

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

According to the style guideline, you can't start a numbered/lettered list over again within the same subclause. It makes it too hard to reference a particular list item

SuggestedRemedy

rework this subclause

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.4.3** *P* **338** *L* **44-47** # **948**

Hidekazu Miyoshi Sumitomo Electric Indu

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

It would be easier to understand the conditions of the rules for filtering incoming frames at the ONU, if one sentence such as "accept if the mode-bit is one and the LLID is the broadcast LLID" is added. Because on one hand, in clause 65 (line 22 through 24, page 380), three conditions of filtering incoming frames at the ONU are nicely described, on the other hand, in clause 64, only two conditions are described. Although the expression in clause 64 satisfies the proper condition, the expression in clause 65 is much easier to follow for many readers.

SuggestedRemedy

Change sentence b) as follows.
If mode-bit is one and the LLID is not this ONU, or the LLID is the broadcast LLID- Accept frame.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Use brief form instead of longer form for LLID/mode bit interaction.

Cl **64** *SC* **64.3.4.4** *P* **338** *L* **49** # **331**

Hirth, Ryan — Terawave Communica

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

A timing model of the system is not defined. P338 L54 states an ONU "shall maintain a delay variation of no more than 32 bit times" conflicts with P339 L9 Local_time "is periodically reset by the OMP functional block"

32 bit times implies that the ONU would have to have a PLL to lock to the downstream time reference in the MPCP messages. Since the time quata are in 16-bit times, meeting a 32 bit window would be next to impossible. The jitter transfer function for the MPCP timestamp would have to be defined.

Local_time being set by the OMP implies that the clocking difference will be compensated for in the guard time of the OLT. The ONU will simply correct its time on each MPCP message. If the maximum time between messages is defined as 10mS, with 200ppm delta between clocks, then the clock delta between ONU and OLT may be as large as 2uS or 250 byte times.

SuggestedRemedy

The portion of the guard window alloted for ONU time variance must be defined. A model describing the clocking references should be descided on and added to the specification.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change in 64.3.5 the definition for local_time as follows:
This variable holds the value of the local counter used to control OMP operation. This variable is advanced by a timer at 62.5MHz, and counts in time_quanta. At the OLT the counter shall track the transmit clock, while at the ONU the counter shall track the receive clock. At the ONU, it is periodically set by the OMP functional block on notification of the existence of a more accurate timebase.

Cl **64** *SC* **64.3.4.4** *P* **338** *L* **49** # **329**

Hirth, Ryan — Terawave Communica

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

The diagram from the baseline proposal showing the calculation of the delay compensation values should be added to the draft.

SuggestedRemedy

Add diagram and description.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Editor will add section on calibration of RTT to 64.3.3.4 and attach submitted diagram.

Cl **64** *SC* **64.3.4.4** *P* **338** *L* **51** # **716**

Pietilainen, Antti — Nokia

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

In last meeting it was agreed that processing delay of ONU is embedded in RTT by setting time stamp in report message as

time stamp = local time - processing delay

instead of

time stamp = local time

This solves some problems indicated earlier but also creates new ones. The main problem is delay jitter. The largest delay that packets will face is just after a registration period has occurred. Embedding processing delay in RTT will cause that the difference between maximum and minimum anticipated processing delay of an unregistered ONU has to be added to the length of registration period. The maximum is specified currently to 20 microseconds and the minimum is not specified resulting in an uncertainty of 20 microseconds. The effect is emphasized in a short length EPON where, in a steady state situation, registration window has been otherwise shortened to a minimum.

Another problem caused by the decision is that measuring fiber length with adequate accuracy using RTT value would not be possible anymore unless all ONUs support MIB variables which indicate the processing delay of each ONU. The capability of being able to create a one-dimensional topology view of the two-to-three-dimensional reality may prove to be an important competitive advantage of EPONs. Having to add higher layer functionalities to support this is an unnecessary complication in a device that should be of very low cost.

SuggestedRemedy

Use method where

time stamp = local time

The proposed method is probably more efficient than was agreed in last meeting in most cases. However, if only fast ONUs are allowed in a network, only few ONUs are allowed for achieving fast cycle time, the network is small in physical dimensions, and fast dynamic bandwidth allocation is used, the method agreed in last meeting would provide lower delays. However, the efficiency in majority of cases should not be compromized for achieving better performance in more rare cases.

If the proposed system is accepted, the problems indicated earlier have to be solved. The inevitable processing delay for interpreting gate messages has to be specified. In addition, the correspondence between time stamp and local time value has to be specified.

Proposed amendments into suitable places are as follows

Specifying effect of maximum processing delay:
Grant start time value given in a gate message shall be larger than the time stamp by more than 20 microseconds. (It may be agreed to shorten this time if 20 microseconds is assumed to be more than enough)

Specifying correspondence between time stamp and local time values:

Interpretation of receive and launch times
The moment when a time stamp is received by an implemented Ethernet stack is specified as the time when the leading edge of the first bit of the time stamp arrives in the stack.

The moment when a time stamp is sent by an implemented Ethernet stack is specified as the time when the leading edge of the first bit of the time stamp leaves the stack.

Specification of allowed deviations
a) The value of the local time of an ONU, upon setting a new time, shall be similar to the time of a clock that has been set to the time stamp value exactly when the corresponding time stamp was received. The maximum allowed deviation is 32 bit times.

b) Time stamp in a message sent by an ONU shall represent the local time of the ONU at the moment the time stamp is sent with a maximum deviation of 32 bit times.

The sum of the deviations given in a) and b) may not vary more than 32 bit times from occasion to occasion in the same device to ensure that variation of RTT measurement is not more than 32 bit times.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 330 for exact solution.

Cl **64** *SC* **64.3.4.4** *P* **338** *L* **54** # **359**

Karasawa, Satoru Oki Electric Industry

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

While the draft says that a delay variation specification is no more than 32 bit times, the frequency is not specified. This causes the misunderstanding of the specification.

SuggestedRemedy

Add the frequnecy (or bit rate) to the sentence.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Although bit-time is universally understood as relative to line rate for the PMD, mention of Gigabit line rate will be added in conjunction with Clause 58 PMDs.

Cl **64** *SC* **64.3.4.4** *P* **339** *L* **1** # **330**

Hirth, Ryan Terawave Communica

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

Description of the processing delay compensation of the ONU is weak.

SuggestedRemedy

Add diagram from hirth_p2mp_1_0103.pdf page 3 and description of how ONU processing delay is compensated for.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add in appropriate location:
The OLT shall not grant nearer than 1024 time_quantas into the future. The ONU shall process all messages in less than this period.

Cl **64** *SC* **64.3.4.4** *P* **339** *L* **1** # **278**

Glen Kramer Teknovus

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

"An OLT shall disregard any delay occuring by processing in the ONU assuming the ONU is capable of compensating for its processing delay using buffering and look ahead techniques."
This is a confusing statement. Either ONUs should use Ryan's compensation technique and it should be described in the draft, or OLT should allow at least 20 us between GATE arrival and grant start time.

SuggestedRemedy

Modify this statement as following:

"OLT must ensure that there is at least 20 us interval between GATE arrival and beginning of the grant. In other words, in any GATE message the following condition should hold: Grant[i].StartTime - Timestamp >= 1250 for each i (1250 TQ = 20 us)"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 330 for solution.

Cl **64** *SC* **64.3.6** *P* **339** *L* **27** # **279**

Glen Kramer Teknovus

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

The provided description for time comparison doesn't work

Example:
a = FF-FF-FF-FE
b = 00-00-00-01

(b-a) = 00-00-00-03

It returns MSB = 0 so (a < b) returns false, yet b is 3 TQ larger than a.

SuggestedRemedy

The following approach will work

1. Introduce "time_horizon" constant which tells how far into the future the schedule may exist
2. (a < b) is equivalent to the (b-a < time_horizon)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Actually function should return !(MSB), and not the value of MSB as specified in the function definition.
Simply there is an error in the function definition.
See 156 for exact correction.

Cl **64** *SC* **64.3.6** *P* **339** *L* **29** # **155**

Brown, Benjamin AMCC

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

spelling

SuggestedRemedy

Replace "arround" with "around"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.6** *P* **339** *L* **30** # **156**

Brown, Benjamin AMCC

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

I'm confused by the definition of a<b. If a = 0002 and b = 0003, b - a = 0003 - 0002 = 0001. a is less than b but according to the description, the answer returned is false. I think something is reversed

SuggestedRemedy

Either describe this as MSB(a-b) or reverse the "true" and "false" labels.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace with text:
The comparison is made by subtracting a from b and testing the MSB. When MSB(a-b) == 1 the value true is returned, else false is returned.

Cl **64** *SC* **64.3.6.1.6** *P* **155** *L* # **99206**

I2R, Onfig Team Institute For Infocomm

Comment Type **TR** *Comment Status* **A** *D1.2 #431*

Figure 56-22

1. There is only one instance, one LLID per ONU, therefore when an LLID is deregistered or reset, the MAC should not be destroyed, but rather become inactive.
2. The following timers are set but their timeouts are not checked anywhere: IDLE_timer, grant_window, wait_for_register_msg.
3. When an ONU does not receive REGISTER within max_register_wait, it should assume collision and wait for next discovery window. In the present state diagram, as long as the next discovery gate hasn't come, ONU will respond to any delayed REGISTER. wait_for_register_msg timer is not working.
4. Differences of reregister, Nack and unsupported capability are not shown.
5. When an ONU is asked to reregister at the next discovery window, i.e. Force registration flag is true, it should immediately go back to wait for next discovery gate rather than WAIT state.

SuggestedRemedy

1. For states UNICAST DISCOVERY and DEREGISTER, cancel checking of if(me==Broadcast_ID) and their "false" link to END state.
2. Check timeout(IDLE_timer) before START TX, check timeout(grant_window) before STOP TX.
3. Let state ARRIVING REGISTER follow STOP TX sequentially, rather than returning to REGISTERING. If timer wait_for_register_msg times out before receiving a REGISTER, go back to wait for next discovery window.
4. In ARRIVING REGISTER, check for the following possibilities separately: Force reregistration, capability not supported, Nack. The responses are shown in dotted box.
5. If ONU is forced reregistration, go to wait for next discovery window.

Please refer to file raymond_cmts_3_0103.pdf. The modified states/paths are highlighted. (raymond_cmts_4_0103.pdf is not highlighted).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Plese separate to multiple commetns in the future.

1. ACCEPT

2. ACCEPT IN PRINCIPAL, no need to check grant_window based on previous comments

3. ACCEPT

4. ACCEPT

5. ACCEPT

Cl **64** *SC* **64.3.6.1.6** *P* **156** *L* **10** # **99203**

I2R, Onfig Team Institute For Infocomm

Comment Type **TR** *Comment Status* **A** *D1.2 #430*

There is no explicit description about the process of deregister. Neither can we see clearly how the deregister process is done between ONU and OLT from figure 56-23.

SuggestedRemedy

(1) Add explicit text description like following for the deregister process into line 4 of page 146:

For the registered ONU, it can also send REGISTER_REQ (set the corresponding bit in it) message to OLT for deregistering itself. When the OLT receive such REGISTER_REQ it will deregister the associated ONU and send a REGISTER (set the corresponding “flag” field in REGISTER MPCPDU) message to inform this ONU that it has been deregistered. Upon receipt of this REGISTER message, the “registered” variable for this ONU is set to false. So the whole process of deregister is completed. This ONU will try to reregister at the earliest opportunity, once allowed.

(2) Change figure 56-23 in page 156 correspondingly.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Editor will add text to describe deregistration process to 56.3.6 header.

Cl **64** *SC* **64.3.7** *P* **339** *L* **33** # **157**

Brown, Benjamin AMCC

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

OMP Parser and Multiplexer have been removed - see my comment on Fig 64-4

SuggestedRemedy

Remove this entire subclause

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cleanup based on kramer_1.pdf

Control parser will remain, incorporating non opcode specific elements of OMP parser

Cl **64** *SC* **64.3.7.1** *P* **340** *L* **28** # **971**

Yokomoto, Tetsuya Japan

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

The old claus number is referred to.

SuggestedRemedy

Modify "Clause 57" into "Clause 65".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.7.4** *P* **341** *L* **10** # **256**
Wu, Mingwei Institute for Infocomm

Comment Type **T** *Comment Status* **R**
From pg 342 line 19, Figure 64-14, the omp_timer definition doesn't reflect its functionality.

SuggestedRemedy
Suggest changing it to:
"This timer is used to ensure that a logical link is maintained between the associated OLT MAC instance and the ONU. If an ONU only receives discovery gate frames and not other OMP frames destined to it over a long period of time, it means that the logical link between the associated OLT MAC instance and ONU is down. This is considered a fatal fault that will generate an OMPError message which requires a hard reset to the ONU OMP functional blocks. The timeout..."

Proposed Response *Response Status* **C**
REJECT.
Better text may be used for describing the timer, however supplied text is a description of the mechanism rather than the timer involved in the mechanism.

Cl **64** *SC* **64.3.7.6** *P* **342** *L* **19** # **243**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
Figure 64-14, in state UPDATE TIMER, equal condition should be == rather than =.

The whole condition is not easy to comprehend.

SuggestedRemedy
Change to
if !(opcode==GATE)+!(Flag==discovery gate)

!((opcode==GATE)*(Flag==discovery gate)) is more straight forward.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
First constract is more comfortable to readers - with less brackets

---

Cl **64** *SC* **64.3.7.6** *P* **342** *L* **20** # **315**
Ken, Murakami Mitsubishi Electric

Comment Type **T** *Comment Status* **A**
Figure 64-14
The definitions of timestamp_error and guard_threshold are not specified.

SuggestedRemedy
The definitions of timestamp_error and guard_threshold should be added in section 64.3.7.2 and section 64.3.7.1, respectively.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Definition for guard_threshold to be added to constants section - proposed value 64 bits
Definition of timestamp_error to be added to variables section - default value = false

---

Cl **64** *SC* **64.3.7.6** *P* **342** *L* **29** # **332**
Hirth, Ryan Terawave Communica

Comment Type **T** *Comment Status* **A**
The assignment of a MAC in the discovery process should be defined.

SuggestedRemedy
The Discovery Processing OLT Window Setup State Machine and Discovery Processing OLT Process Requests State Machine should only exist in the broadcast MAC.

A Register_Request must be assigned to a MAC before proceeding the to the Discovery Processing OLT Final Registration State Machine.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

See 950 for exact fix.

Cl **64** *SC* **64.3.8** *P* **343** *L* # **293**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **A**
There is no description in clause 64 explaining that the broadcast LLID is used as a default LLID during registration.

SuggestedRemedy
Add corresponding description to sub-clause 64.3.8

Proposed Response *Response Status* **C**
ACCEPT.

See 950 for exact fix.

Cl **64** *SC* **64.3.8** *P* **343** *L* # **950**

Hidekazu Miyoshi Sumitomo Electric Indu

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

There is an unclear point how llids are used in MPCP messages during the discovery process.

1) The LLID value used by the Register_req message is not clear. I think we need to define "default LLID", which is ALWAYS accepted by the OLT for this purpose.

2) The OLT needs to send the Gate message for allowing the ONU to send the Register_ack message. The LLID value used by this gate message is not clear. I see two possibilities. One is the gate message uses the newly assigned LLID to the ONU. This requires two constrains: a) the Gate message MUST be sent after the Register message is sent, b) the Gate message MUST reach to the ONU after the ONU successfully finishes to prepare for receiving MPCPDUs with the newly assigned LLID. The second option is that the Gate message uses the broadcast LLID.

3) The LLID value used by the Register_ack message is not clear: a newly assigned LLID or the default LLID?

SuggestedRemedy

Please clarify this in the text. Below is one idea for the usage of LLIDs.

x) Discovery Gate: the broadcast LLID (mode=1, logical_link_id=0x7fff) or an unicast LLID.

x) Register: the broadcast LLID (mode=1, logical_link_id=0x7fff)

x) Register_req: the default LLID (mode=0, logical_link_id = 0x7fff)

x) Gate for Register_ack: (mode=0, logical_link_id= a newly assigned LLID)

x) Register_ack: (mode = 0, logical_link_id = a newly assigned LLID)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clarifications as to the attachment of processes to active MACs would be added as follows:

Broadcast LLID:

Discovery:64-18, 64-19, 64-21, Gate:64-27, 64-28

Individual LLID:

Discovery:64-20, 64-22, Report: 64-24, 64-25, Gate:64-27, 64-28

See also 158,295,293,332

Cl **64** *SC* **64.3.8** *P* **343** *L* **26** # **158**

Brown, Benjamin AMCC

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

How many Discovery Processes are running? Figure 64-4 shows that there are N of them running. However, it certainly appears as though only one should exist, or at least there needs to be significant coordination between the N processes and this coordination isn't described.

SuggestedRemedy

Detail in this subclause what parts of this protocol are handled by a single entity/coordinated process and what parts are spread out across the N processes.

Proposed Response *Response Status* **C**

ACCEPT.

See 950 for exact fix.

Cl **64** *SC* **64.3.8** *P* **343** *L* **30** # **160**

Brown, Benjamin AMCC

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

missing commas, spelling, extra space

SuggestedRemedy

Line 30: Replace "by the OLT which" with "by the OLT, which"

Line 34: Replace

"Off-line ONUs upon receiveing this message, wait for the period" with

"Off-line ONUs, upon receiving this message, wait for the period"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **36** # **159**

Brown, Benjamin AMCC

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

This section talks about how to reduce the likelihood of a collision. It would be helpful to mention what is the result of a collision. Also, do collisions only occur at the beginning of a transmission window or will one device be transmitting and another device's back expire and allow it to transmit into the middle of the packet of the first device? In other words, is the granularity of the backoff such that there is plenty of time for a single device to transmit an entire packet (including all the startup delays)?

SuggestedRemedy

Add text to this section that discusses the issues raised above.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Clarification will be added.
Also, replace "collision" with "transmission overlap"

Cl **64** *SC* **64.3.8** *P* **343** *L* **40** # **316**

Ken, Murakami Mitsubishi Electric

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

Unnecessary parameters are described.

SuggestedRemedy

Remove "the ONU's Laser turn-on and turn-off parameters".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **41** # **294**

Glen Kramer Teknovus

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

"Included in the Register_Req message is the ONU's MAC address, the ONU's Laser turn-on and turn-off parameters."

Laser turn-on and turn-off parameters are not part of REGISTER_REQ message anymore, since the values are fixed and known to both OLT and ONU.

SuggestedRemedy

Remove reference to Laser turn-on and turn-off parameters from the above sentence

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **42** # **819**

Lynskey, Eric UNH-IOL

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

The paragraphs dealing with the discovery process, and subsequent state diagrams, do not describe what the default LLID to be used by the ONUs is. The Multi-Point MAC Control layer provides the RS with an LLID to be used in the preamble of every frame that is sent. However, when an ONU first powers up and before it has registered, it is not clear what the value should be. Clause 65 states that the OLT reject frames that contain LLIDs that do not match the logical_link_id parameters from the MPC_LLID.request primitive. Note that this comment seems to imply the creation of an additional MAC, and I'm not sure if this is the best way to do this. I am proposing that initially, all ONUs send frames with the default LLID to the OLT. Upon reception of a frame with the default LLID, the OLT will associate a new LLID with the source address of the received frame and send that information in a unicast frame to the ONU that contains the same default LLID. The ONU will then need to receive the frame with the default LLID and parse according to destination address. It will then use the new LLID for future transmissions. A similar comment has been submitted against Clause 65.

SuggestedRemedy

Add text here, or in the appropriate location stating: "The default value of each ONU's LLID before registration is 0x0000. Following the completion of a successful registration, the ONU will be assigned a new LLID by the OLT."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 950 for exact fix.

Cl **64** *SC* **64.3.8** *P* **343** *L* **42** # **244**

Wu, Mingwei Institute for Infocomm

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

"The OLT registers the ONU, allocating ... LLID and bonding reciprocal MACs to LLID"
The word "reciprocal" is confusing.

SuggestedRemedy

Change to bonding "corresponding" MACs to LLID.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **46** # **317**
Ken, Murakami Mitsubishi Electric

Comment Type **T** *Comment Status* **A**
Unnecessary parameter is described.

SuggestedRemedy
Remove "and supported capabilities".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **46** # **161**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Acronym used without being described

SuggestedRemedy
Replace "OLT's AGC" with "OLT's Automatic Gain Control (AGC)"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **47** # **318**
Ken, Murakami Mitsubishi Electric

Comment Type **T** *Comment Status* **A**
Unnecessary parameter is described.

SuggestedRemedy
Replace the sentence "Also, the OLT echoes Åc" with "Also, the OLT echoes the pending grants."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **47** # **282**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **A**
Capability vectors are not used

SuggestedRemedy
Remove "Also, the OLT echoes the ONU's capability vector and Laser turn-on, turn-off parameters."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8** *P* **343** *L* **48** # **289**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **A**
When OLT sends REGISTER to ONU followed by GATE (for REGISTER_ACK), the REGISTER_ACK may not be ready by the grant start time. Should ther be a time limit for processing REGISTER message, or how many times should the OLT keep sending grants to that ONU.

SuggestedRemedy
Specify maximum processing delay for REGISTER message at ONU

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
All protocol processing is bound by 1024 time_quantas.
See 330.

Cl **64** *SC* **64.3.8** *P* **343** *L* **50** # **319**
Ken, Murakami Mitsubishi Electric

Comment Type **T** *Comment Status* **A**
Unnecessary sentence is described.

SuggestedRemedy
Since the capability vector was removed, the sentence "It should be noted that Åc" should be removed.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Replace "capability" with "parameter"

Cl **64** *SC* **64.3.8** *P* **343** *L* **50** # **162**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
This sentence adds nothing

SuggestedRemedy
Remove the sentence starting with "It should be noted..."

Also, in the next sentence, remove the third word "also"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8** *P* **344** *L* **2** # **163**

Brown, Benjamin AMCC

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

Change wording

SuggestedRemedy

Replace "to deregister the ONU" with "of its desire to deregister"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **344** *L* **4** # **228**

Wu, Mingwei Institute for Infocomm

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

The Deallocate bit in REGISTER message for OLT is used for deregister the ONU. So the sentence in line 4 should be: ..., Force registration and Deallocate(deregister), that if... .

SuggestedRemedy

Change the sentence in line 4 into: ..., Force registration and Deallocate(deregister), that if... .

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **344** *L* **4** # **954**

Hidekazu Miyoshi Sumitomo Electric Indu

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

The flag field of the Register_ack message is defined as a bit-field, while the flag fields of the Register message and the Register_req message are defined as values. This inconsistent definition of the flag fields would probably causes readers' confusion. Thus getting rid of this inconsistency would cure this confusion. I think changing the meaning of the flag field of the Register_ack message would be easier

SuggestedRemedy

Do below modification in page 371
"an 8 bit bitfield flag" ->"an 8 bit flag register" at line 43
"Flag bitmap fields" -> "Flag field" at line 45
Change the names of the first row of Table 64-6 to "Value", "indication", and "Comment".
Change the meaning of the value as follows.
Value = 0: The requested registration attempt is denied by the higher-layer-entity
Value = 1: The registration process is successfully acknowledged.
Value = 2-255: Reserved (Ignored on reception)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **344** *L* **45** # **295**

Glen Kramer Teknovus

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

constant broadcast_ID was not used anywhere in discovery state diagrams.

SuggestedRemedy

We probably need to specify what LLID is used by default and show it somewhere in the diagrams, or otherwise, constant's description should be removed.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 950 for exact fix.

Cl **64** *SC* **64.3.8** *P* **344** *L* **5** # **164**

Brown, Benjamin AMCC

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

Destruction/Deallocation/Deregister - Can we find a longer name for this term?

SuggestedRemedy

Just call this Deregister.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **344** *L* **5** # **742**

Bemmel, Vincent Alloptic

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

The REGISTER_REQ message contains the "Destruction/Deallocation/Deregister bit..." - what is the real name of this bit?

SuggestedRemedy

use correct name as defined in 64.4.4

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8** *P* **346** *L* **40** # **296**

Glen Kramer Teknovus

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

1. the value of 624 ns for grant_window_timer should be explained.
2. it makes sense to include minimum IFG before the frame as well

SuggestedRemedy

Add the following sentence:

"The transmission during registration attempt is comprised of the following parts: IFG, preamble, REGISTER_REQ frame, closing sequence (/T/R/R/), a total of 90 bytes (720 ns).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

IFG is also added following frame, 696ns and not 720ns as corrected for exact length of /T/R/R/

Cl **64** *SC* **64.3.8.1** *P* **345** *L* **2** # **166**

Brown, Benjamin AMCC

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

There hasn't been a clear definition of what time_quanta is. It has been referred to before, but always immediately after talking about being advanced by a timer at 62.5 MHz.

SuggestedRemedy

Either add the reference to the timer here or, better, spend some time somewhere talking about what time_quanta means and that the values of many of the variables used throughout the entire clause are specified in terms of time_quanta.

There are many variables throughout this clause that use values with respect to time_quanta. The values specified would make more sense if the concept of time_quanta was more global.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.1.6** *P* **166** *L* # **99201**

I2R, Onfig Team Institute For Infocomm

Comment Type **TR** *Comment Status* **A** *D1.2 #432*

1. If ONU is in WAIT state waiting for timeout(IDLE_timer) while GATE messages keep coming in and being processed, START TX may be delayed. Effective grant length is reduced. In fact it is not necessary to update grants immediately during a grant execution, as long as the next grant is not chosen yet.
2. To choose the earliest grant, Gate processing must go through all existing grants every time. If the grant list is in a sorted order, read/comparison operations will be minimized.
3. Checking whether a grant is valid in state SORT is confusing. It can be simplified.
4. In SORT state, if the chosen grant is outdated, it should be removed from grant_list and then repeat SORT state.
5. If the grant list is empty, ONU should enter WAIT to wait for next incoming gate.
6. Since only normal grants are passed to Gate Processing, it is not necessary to check if (!discovery) in state PROGRAM

SuggestedRemedy

1. Execute TURN LASER ON, START TX, STOP TX in a sequential order. Grants can be updated while waiting for timeout(grant_start). It would give a clearer view of transmission sequence.
2. insert_list would first compare a new grant with the last grant in list and onwards and insert in a time order. The grant list would then be sorted. The next grant is just the next in the list.
3. In SORT state, check if (local_time < current_grant.start+current_grant.length-laser_on_time-IDLE_time-laser_off_time) would be sufficient to select the next valid grant.
4. In SORT, if the selected grant is not valid, remove it from grant list.
5. If grant list empty, go to WAIT for next incoming gate.
6. Delete if (!discovery) in state PROGRAM.

Please refer to file raymond_cmts_1_0103.pdf.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Check for discovery flag is redundant and should be removed.

Diagram is to be split to two sub diagrams:

1. control of grant window
2. protocol element

see diagram GATE-protocol.pdf and GATE-grant.pdf

Cl **64** *SC* **64.3.8.2** *P* **345** *L* **23** # **283**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **A**
variable "me" is not used anywhere in the discovery state diagrams

SuggestedRemedy
Remove "me"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8.2** *P* **345** *L* **35** # **246**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
Variable name inside_register is misleading. It is used to indicate discovery window. Rename as inside_discovery_window

SuggestedRemedy
Rename as inside_discovery_window.
Rename accordingly at:
64.3.8.6 P349 Figure 64-18 L7, L25,
64.3.8.6 P350 Figure 64-19 L9, L10,

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8.2** *P* **345** *L* **37** # **167**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
spelling

SuggestedRemedy
Replace "flase" with "false"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8.3** *P* **345** *L* **43** # **168**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
END function isn't necessary

SuggestedRemedy
Remove this function and modify the state machine to go to a END state and stay there until reset.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8.3** *P* **345** *L* **48** # **169**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Don't italicize variables

SuggestedRemedy
If there is a need to differentiate between a generic term and a specific variable or parameter, change the name of one or the other.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8.3** *P* **345** *L* **49** # **230**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
There is a redundant "MAC address" in line 49.

SuggestedRemedy
Delete one of them.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.8.4** *P* *L* # **286**
Glen Kramer Teknovus

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

Registration processing (including authentication, authorization) is done by MAC Control Client at the OLT.
Timer "wait-for_register_msg_timer" puts unnecessary time constraint on the MAC Control client in the OLT.

SuggestedRemedy

Remove "wait-for_register_msg_timer".
Specify operation as following:

1. OLT MAC Control client issues request to send DISCOVERY GATE
2. All successfully received REGISTER_REQs are indicated to the client
3. MAC CONTROL client does not issue another DISCOVERY GATE until it processes all the pending REGISTER_REQs.

In ONU the logic becomes very simple: If ONU receives a DISCOVERY GATE after sending REGISTER_REQ, that means the REGISTER_REQ has collided. In other words, ONU should always respond to each DISCOVERY GATE until registered.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
In order to allow response at the ONU for every GATE used for discovery add the follows:
Looping based on inside_register from state REGISTER_REQ to itself through a RETRY state that contains an indication to the Client, reseting the value of inside_register as the last action inside the REGISTER_REQ state in Diagram 64-22.
In order to allow the MAC Client to abort registration:
Add MA_CONTROL.request(register=false) transition to WAIT state in Diagram 64-22.
In order to allow OLT not to be constrained by time:
Remove TIMEOUT state and all relevant transitions, timers and variables from Diagram 64-22.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **10** # **247**
Wu, Mingwei Institute for Infocomm

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

Timer name register_window_size_timer is misleading. It is used to signal end of discovery window.
Suggest standardizing naming of "discovery window".

SuggestedRemedy

Change register_window_size_timer to discovery_window_size_timer.
And change accordingly at 64.3.8.6 P349 Figure 64-18 L29.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **19** # **170**
Brown, Benjamin AMCC

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

There should not be a "shall" in this sentence. Just because an ONU doesn't register, doesn't mean it shall try to register again. It may choose to do so but it should not be required to do so.

SuggestedRemedy

Remove the "shall" from this sentence.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace "shall" with "may".

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **25** # **253**
Wu, Mingwei Institute for Infocomm

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

VALUE .... not easy to read.

SuggestedRemedy

Change to:
VALUE: A random value less than the net discovery window less ...
The timer value is set dynamically based on ...

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **32** # **171**

Brown, Benjamin AMCC

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

This talks about a deferral process though such a thing hasn't been mentioned before.

SuggestedRemedy

Either remove this or descibe it in an earlier section.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Deferral is not performed, text is legacy of earlier version and should be remove.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **32** # **229**

Wu, Mingwei Institute for Infocomm

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

The sentence of "As a result, ..." in line 32 should be deleted.

SuggestedRemedy

Delete the sentence of "As a result, ..." in line 32.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **34** # **257**

Wu, Mingwei Institute for Infocomm

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

IDLE_timer is not self explanatory and a general term which can be easily referenced by future suggested timers or other clauses of the same draft.

SuggestedRemedy

Suggest changing IDLE_timer to clk_sync_setup_timer.
Other locations that needs changing are 64.3.8.6 Figure 64-21 P352 line 28 and 30, 64.3.10.4 page 359 line 28 , 64.3.10.6 P362 Figure 64-29, line 25 and 28.

Proposed Response *Response Status* **C**

REJECT.

The definition of the IDLE_timer explains the usage of the timer in allowing IDLEs to be geenrated.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **36** # **258**

Wu, Mingwei Institute for Infocomm

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

.. where no PDUs are allowed .. is a bit ambiguous.

SuggestedRemedy

Suggest changing it to
.. period till PDUs are allowed ...

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.4** *P* **346** *L* **43** # **172**

Brown, Benjamin AMCC

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

Where does the 78 bytes come from for the grant_window_timer value?

SuggestedRemedy

Explain where this 78 bytes comes from.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clarification to be added as per comment 296.

Cl **64** *SC* **64.3.8.5** *P* *L* # **265**
Tan, Chik Liang I2R

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

The functional definition of the following message which appeared in Fig 64-20 is not available in the list of message descriptions for the Discovery Process in page 346-347

MA_CONTROL.request(register,register_status) which appears in Fig 64-20 on page 351 in lines 30 and 32.

SuggestedRemedy

Suggest the following as a functional definition for the above mentioned message:

MA_CONTROL.request(DA,register,register_status)
The service primitive used by a client to request the Discovery Process to reregister or deregister a registered ONU.
The DA parameter is the MAC address of the ONU requested to reregister or deregister.
The parameter register_status hold the values reregister or deregister.
When register_status = reregister, and the function invoked, the ONU addressed to DA would be sent a REGISTER message with its reregister flag set and it would have be reregistered through the Discovery Process again.
When register_status = deregister, and the function invoked, the ONU addressed to DA would be sent a REGISTER message with its deregister flag set, therefore signifying to te ONU that it has been deregistered.

Further note: The DA (destination address) parameter was further added to the message function definition to contain the MAC address of the ONU for reregistration or be deregistered. This was deemed necessary in order to ascertain which ONU to address.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.5** *P* **346** *L* **45** # **174**
Brown, Benjamin AMCC

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

All of these messages my be better introduced in a dedicated space outside the state diagram section. There are quite a few and using the common subclauses for each of them would be very useful

SuggestedRemedy

Move all of these messages, and probably all the messages in this clause into a dedicated subclause, using the common subclauses of:

a.b.c Mapping of XX_YY.request/indication
a.b.c.1 Function
a.b.c.2 Semantics of the service primitive
a.b.c.3 When generated

See 35.2.1 or numerous other places for examples

Be careful not to change the definitions of the MA_CONTROL primitives from how they're already defined in Clause 2

It would also be very helpful to describe how they might be different for the OLT and ONU.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.5** *P* **346** *L* **45** # **506**
Chan Kim ETRI

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

It would be easy to understand if the text contains whether each message is used in OLT or ONU or both.

SuggestedRemedy

add "used in OLT", "used in ONU" or "used in OLT and ONU" at the beginning of the message description.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.5** *P* **346** *L* **52** # **173**

Brown, Benjamin AMCC

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

This description is very confusing. What is the default or non-default port?

SuggestedRemedy

Clarify this description, using terms already introduced.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Covered by comment 950

Cl **64** *SC* **64.3.8.5** *P* **347** *L* **27** # **320**

Ken, Murakami Mitsubishi Electric

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

Grant is issued with the relevant grant_start and grant_length parameters.

SuggestedRemedy

Replace "length" with "grant_length".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.5** *P* **347** *L* **31** # **507**

Chan Kim ETRI

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

The MPCP message to be transmitted by MA_CONTROL.request(DA,register_ack,ID,register_status) is REGISTER, not REGISTER_ACK. It's confusing. So, the parameter name should be the same as the actual MPCP message to be transmitted in MA_CONTROL.request message definition. This holds true for MA_CONTROL.request(DA,register,start_time,grant_length,length) in line 11(register should better be changed to "discover").

SuggestedRemedy

change "register_ack" to "register" in line 31. change "register" to "discovery gate" in line 11. These generates the named MPCP frame in OLT as I understand. It would be easier to understand for all.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Clarifications for primitive names should be made to be more consistant with generated message and context and corrected based on earlier comments resolved.

Cl **64** *SC* **64.3.8.5** *P* **347** *L* **31** # **245**

Wu, Mingwei Institute for Infocomm

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

Primitive MA_CONTROL.request(register_ack) name is similar to PDU REGISTER_ACK, which is quite confusing.

It is used by MAC Control client to initiate acceptance of an ONU's registration request.

SuggestedRemedy

Change to MA_CONTROL.request(reg_req_ack)
The service primitive used by the MAC Control client to initiate acceptance of an ONU's registration request.

And rename accordingly at 64.3.8 P344 L11 Figure 64-16, 64.3.8.6 P 351 L7 Figure 64-20.

Proposed Response *Response Status* **C**

REJECT.

Similar name is intentional

Cl **64** *SC* **64.3.8.6** *P* *L* # **953**

Hidekazu Miyoshi Sumitomo Electric Indu

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

Due to a inconsistent usage of flag fields of Register, Register_req and Register_ack messages, some confused expression of OMP.indication() and OMP.request() can be seen in figure 64-20 and figure 64-22. For example, "flags = success" in the ACK block in Figure 64-22 should be "success = true", and "register = false" in the LOCAL DEREGISTER block in Figure 64-22 should be "flag = deregister"

SuggestedRemedy

I see two possibilities to solve this problem.
A) For Register and Register_req messages, "flag = ***" should be used, and for the Register_ack message, "success=true/false" should be used.
B) Change the meaning of the flag field of Regiter_ack to a value, and we use only the expression of "flag = ***."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Second option is consistant with comment 954

Cl **64** *SC* **64.3.8.6** *P* **349** *L* # **438**

Jaeyeon Song Samsung

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

In SEND REGISTER WINDOW state, there is MA_CONTROL.request primitive, "MA_CONTROL.request(grant, own_id, start_time, grant_length, discovery flag=true)". But, the request primitive of Discovery process is OMP.request(), not MA_COMTROL.request().

SuggestedRemedy

Correct the primitive name.
MA_CONTROL.request(grant, own_id, start_time, grant_length, discovery flag=true)
--> OMP.request(grant, own_id, start_time, grant_length, discovery flag=true)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See correction at 945

Cl **64** *SC* **64.3.8.6** *P* **349** *L* **11** # **262**

Tan, Chik Liang I2R

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

In reference to Figure 64-18, the format of the message MA_CONTROL.request(register,DA,start_time,grant_length,length) is not consistent with the format of the corresponding message notation in the message description displayed in Clause 64.3.8.5 Pg 347 Line 11. In the latter, the format of the message is MA_CONTROL.request(DA,register,start_time,grant_length,length)

SuggestedRemedy

Suggest replacing the message MA_CONTROL.request(register,DA,start_time,grant_length,length) with MA_CONTROL.request(DA,register,start_time,grant_length,length).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **349** *L* **14** # **248**

Wu, Mingwei Institute for Infocomm

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

State name SEND REGISTER WINDOW is misleading.
Suggest standardizing naming of "discovery window".

SuggestedRemedy

Change state name to SEND DISCOVERY WINDOW

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **349** *L* **15** # **225**

Wu, Mingwei Institute for Infocomm

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

The message MA_CONTROL.request(grant,own_id,start_time,grant_length,discovery_flag=true)in line 15 of figure 64-18 in page 349 is not defined in previous section.

SuggestedRemedy

Suggest changing it into:
OMP.request(grant,own_id,start_time,grant_length,discovery_flag=true) and adding text description for it in page 347.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **349** *L* **15** # **945**

Hidekazu Miyoshi Sumitomo Electric Indu

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

Comment 169, which I submitted in the last meeting, was accepted. But draft 1.3 does not include the modification I suggested. Thus I am submitting a similar comment again.

The OLT has a capability to send the discovery gate messages with the broadcast and multicast addresses and unicast addresses. But it seems to me that the current state diagram shows no evidence of this capability. In addition, since the discovery gate message is issued from the discovery processing to the OMP multiplexer, MA_CONTROL.request() in the SEND REGISTER WINDOW block in Figure 64-18 needs to be OMP.request()

SuggestedRemedy

Change the second argument of MA_CONTROL.requst() as shown below, and change MA_CONTROL.request() to OMP.request() in the SEND REGISTER WINDOW block.
MA_CONTROL.request(grant, own_id,,,) -> OMP.request(grant, DA,,,)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **349** *L* **23** # **249**

Wu, Mingwei Institute for Infocomm

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

State name INSIDE REGISTER WINDOW is misleading.
Suggest standardizing naming of "discovery window".

SuggestedRemedy

Change state name to INSIDE DISCOVERY WINDOW

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **13** # **250**

Wu, Mingwei Institute for Infocomm

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

Condition register_status=accept+register_status==reregister is difficult to read

SuggestedRemedy

Change to
(register_status==accept)+(register_status==reregister)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **21** # **336**

Hirth, Ryan Terawave Communica

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

contents of echoed parameters should also be verified

SuggestedRemedy

change if(success_flag) to if(success_flag & echoed_good)

Proposed Response *Response Status* **C**

REJECT.
Commenter is encouraged to propose a complete solution to the group for further discussion.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **28** # **251**

Wu, Mingwei Institute for Infocomm

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

Primitive MA_CONTROL.indication(accepted, state.MAC, state.ID, RTT) format doesn't fit its notation at 64.3.8.5 P347 L36

SuggestedRemedy

Change to MA_CONTROL.indication(register_ack, state.MAC, state.ID, status=accepted, RTT)

Proposed Response *Response Status* **C**

ACCEPT.
Comment is T not E

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **30** # **264**

Tan, Chik Liang I2R

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

The following messages are not defined and do not have a prior functional description in the list of message descriptions for the Discovery Process in page 346-347.

MA_CONTROL.request(register, register_status = reregister) line30
MA_CONTROL.request(register,register_status = deregister) line31

These two messages have the same functional description.

SuggestedRemedy

A complete functional description of the message MA_CONTROL.request(register,register_status) should be defined and placed alongside the rest of the Discovery Process message descriptions listed in subclause 64.3.8.5 pages 346-347.

Suggest the following as a functional definition for the above mentioned message:

MA_CONTROL.request(DA,register,register_status)
The service primitive used by a client to request the Discovery Process to reregister or deregister a registered ONU.
The DA parameter is the MAC address of the ONU requested to reregister or deregister.
The parameter register_status hold the values reregister or deregister.
When register_status = reregister, and the function invoked, the ONU addressed to DA would be sent a REGISTER message with its reregister flag set and it would have be reregistered through the Discovery Process again.
When register_status = deregister, and the function invoked, the ONU addressed to DA would be sent a REGISTER message with its deregister flag set, therefore signifying to te ONU that it has been deregistered.

Further note: The DA (destination address) parameter was further added to the message function definition to contain the MAC address of the ONU for reregistration or be deregistered. This was deemed necessary in order to ascertain which ONU to address.

Proposed Response *Response Status* **C**

ACCEPT.
Duplicate 265

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **39** # **321**

Ken, Murakami Mitsubishi Electric

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

Figure 64-20
In case of de-register from ONU, the ONU transits to WAIT state after transmitting the REGISTER_REQ with deregister flag as shown in Figure 64-22.
On the other hand, if the OLT receives the REGISTER_REQ with deregister flag in REGISTERED state, it returns the REGISTER with deregister flag as shown in Figure 64-20.
However, the ONU takes no action at the receipt of the REGISTER at WAIT state.

SuggestedRemedy

Since the REGISTER with deregister flag that is the response to the REGISTER_REQ with deregister flag is ignored, this REGISTER can be omitted.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correction should be wait for acknowledge state in ONU this will insure proper deregistration and reduce network faults resulting from BER.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **5** # **333**

Hirth, Ryan Terawave Communica

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

The allocation of MACs at the OLT needs be defined.

SuggestedRemedy

Add a Mac_Free signal to the IDLE state of figure 64-20.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Appropriate status should be indicated using an indication signaling primitive.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **7** # **334**

Hirth, Ryan Terawave Communica

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

The transition from IDLE to REGISTER should occur on a register_req.

SuggestedRemedy

Change register_ack to register_req.

Proposed Response *Response Status* **C**

ACCEPT.
See 440 for fix

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **7** # **335**

Hirth, Ryan — Terawave Communica

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

match register status to message status

SuggestedRemedy

change register_status == deny to Nack on REGISTER to IDLE change register_status == accept to success on REGISTER to WAIT for REGISTER_ACK

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **7** # **440**

Jaeyeon Song — Samsung

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

In fig 64-20(line 7), the condition from IDLE state to REGISTER state is a reception of the registeration primitive from higher layer to Discovery processing block.
However, there is the MA_CONTROL. request(register_ack, ...).

SuggestedRemedy

Correct the primitive.
MA_CONTROL. request(register_ack, ...) --> MA_CONTROL. request(register, ...)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **351** *L* **7** # **263**

Tan, Chik Liang — I2R

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

In reference to Figure 64-20, the message MA_CONTROL.request(register_ack,ID,register_status) is not consistent with the format of the message description in Subclause 64.3.8.5 Page 347 Line 31. The message notation should be MA_CONTROL.request(DA,register_ack,ID,regiter_status)

SuggestedRemedy

Suggest changing the above message to MA_CONTROL.request(DA,register_ack,ID,register_status)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **11** # **605**

williamsen, erica — IOL/UNH

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

The two transitions out of the CHECK UNICAST state are both true.

SuggestedRemedy

Change the transition condition from CHECK UNICAST to WAIT for WINDOW UNICAST to false.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **14** # **233**

Wu, Mingwei — Institute for Infocomm

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

The condition "true" in line 14 should be "false".

SuggestedRemedy

Change the condition "true" into "false".

Proposed Response *Response Status* **C**

ACCEPT.
Comment is T not E

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **14** # **442**

Jaeyeon Song — Samsung

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

In fig 64-21, there is CHECK UNICAST state. if True, transfer to WAIT for WINDOW UNICAST state, if False, goes to WAIT for WINDOW state.
But, the condition is not correct. Both of them is True, in the figure.

SuggestedRemedy

Correct the condition.
The condition from CHECK UNICAST to WAIT for WINDOW state is False(not unicast DA).

Proposed Response *Response Status* **C**

ACCEPT.
T not E

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **22** # **252**

Wu, Mingwei — Institute for Infocomm

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

Figure 64-21. Maximum random delay must take into account of IDLE_time, laser_off_time, laser_on_time and sizeof(MPCPDU)

SuggestedRemedy

Change to random(length-IDLE_time-laser_off_time-laser_on_time-sizeof(MPCPDU))

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 297 for exact fix

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **9** # **946**

Hidekazu Miyoshi — Sumitomo Electric Indu

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

Comment 173, I submitted at the last meeting, was accepted, but the text has not been modified.

The discovery gate message is passed from the OMP parser to the discovery process in the form of OMP.indication. In this sense, the arrow below the WAIT block in figure 64-21 should be represented by OMP.indication().

SuggestedRemedy

Change MA_CONTROL.request() to OMP.indication() in the figure.

Proposed Response *Response Status* **C**

ACCEPT.

See 443

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **9** # **443**

Jaeyeon Song — Samsung

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

In fig 64-21, the state diagram shows the procedure of setting up the Discovery window of ONU.

The first stage should be the reception of Discovery_Gate message from OLT. from the message, ONU knows parameters for window set up such as start time, length.

So, the condition from WAIT state to CHECK UNICAST state is not appropriate.

In addition, the primitive MA_CONTROL.request(create_discovery_window, DA, start, length) is not in the message list.

SuggestedRemedy

The condition should be changed.

MA_CONTROL.request(create_discovery_window, DA, start, length)

--> OMP.indication(DA, SA, subtype=GATE, flag=discovery, start, length)

(Parameters of OMP.indication may be not accurate. Because the whole parameters is not defined yet in Draft.)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Create_discovery_window was never defined, and is actually relic of previous draft version

see 946

Cl **64** *SC* **64.3.8.6** *P* **352** *L* **9** # **232**

Wu, Mingwei — Institute for Infocomm

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

There is no such message as MA_CONTROL.request(create_discovery_window,DA,start,length) in line 9 defined in the privious section. So change this message into MA_CONTROL.request(register,DA,start_time,grant_length,length) accordingly.

SuggestedRemedy

Change the message of line 9 in figure 64-21 into:
MA_CONTROL.request(register,DA,start_time,grant_length,length).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **14** # **337**

Hirth, Ryan — Terawave Communica

Comment Type **T** *Comment Status* **D**

An ONU could hang if the OLT and ONU got out of sync in the registered state.

SuggestedRemedy

Transitions for Reregister and Deregister should be defined in the REGISTER_REQ state.

Proposed Response *Response Status* **Z**

WITHDRAWN.
Re-register is performed by the ONU repeatedly on timeout of wait_for_register_msg_timer
De-register is not necessary, as the ONU is not registered at that point.
No new text is generated from the comment, so it is rejected.

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **23** # **951**

Hidekazu Miyoshi — Sumitomo Electric Indu

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

There is an inconsistent behavior between OLT and ONU when the Register message with Nack is sent. On one hand, the ONU sends the Register_ack message with unsuccess when it receives the Register message with Nack, on the other hand, the OLT goes to the IDLE state after sending the Register message with Nack. This means that the OLT does not expect to receive the Register_ack message with unsuccess (no particular processes are defined when it receives the Register_ack message with unsuccess). Thus this Register_ack message with unsuccess is not necessary, and this message just causes complexity.

SuggestedRemedy

Get rid of the procedure of sending the Register_ack message with unsuccess. Delete one sentence, OMP.request (SA, DA, opcode=REGISTER_ACK, success = false), from the NACK block in Figure 64-22.

Proposed Response *Response Status* **C**

ACCEPT.
Further complication is issuance of REGISTER_ACK from ONU as LLID was not assigned, and ONU does not have uplink

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **25** # **322**

Ken, Murakami — Mitsubishi Electric

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

Figure 64-22
The process "registered=true" is duplicate.

SuggestedRemedy

The process "registered=true" in REGISTERED state should be removed.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 255 for exact fix.

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **25** # **255**

Wu, Mingwei — Institute for Infocomm

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

Repetition of "registered=true" at state ACK and REGISTERED.

SuggestedRemedy

Delete "registered=true" at state ACK.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Further reduce diagram by unifying ACK into REGISTERED state.
Renaming NACK state to DENIED.

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **32** # **261**

Wu, Mingwei — Institute for Infocomm

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

Figure 64-22

It is shown in the figure that when omp_timer_done is activated, the ONU state will jump to the LOCAL DEREGISTER state. This would mean that every state of the ONU will have some lines of code to check and jump to this state when the omp_timer is up. This can slow down the system execution. Another possibility of the omp_timer going off could be due to a hang in the ONU which make the system unable to execute this instruction.

SuggestedRemedy

I suggest taking out the omp_timer_done from the state diagram but add a sentence in the omp_timer that the omp_timer_done message is used to trigger a system reset which involves both hardware and firmware.

Proposed Response *Response Status* **C**

REJECT.

The IEEE standard does not assume serial implementations, all transmitions occur in parallel and do not cost computing resources.

As suggested remedy has same affect as corrent standard, no new text is generated.

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **32** # **949**

Hidekazu Miyoshi — Sumitomo Electric Indu

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

In draft 1.3, when the omp_timer expires, the ONU sends the Register_req message with deregister and then transits to the WAIT state. But since the expiration of the omp_timer of the ONU means no reception of the gate message in a certain period of time, which is probably due to an unrecoverable error, it is almost certain that the ONU is not able to send the Register_req message at this situation. In addition, it is likely that the OLT also encounters omp timeout since it has not received any Report messages from the ONU. Thus, when the omp_timer expires, trying to send the Register_req with deregister by the ONU would probably ended in failure, additionally the Register_req with deregister message is not necessary to reach to the OLT. This suggests that when omp_timer expires, the Register_req with deregister is not necessary.

SuggestedRemedy

Three modifications are needed in Figure 64-22.

a) Delete the arrow of omp_timer_done entering to the LOCAL DEREGISTER block.
b) Add a new block where MA_CONTROL.indication (register_ack, status = deregistered) is issued
c) Add the arrow of omp_timer_done from the Registered block to the new block.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add UCT transition to WAIT state at end of operation.

Cl **64** *SC* **64.3.8.6** *P* **353** *L* **7** # **254**

Wu, Mingwei — Institute for Infocomm

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

MA_CONTROL.request(register=true) doesn't easily map into any primitive defined in 64.3.8.5

SuggestedRemedy

Change to MA_CONTROL.request(DA, register_req, register=true)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.9** *P* **353** *L* **44** # **176**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Change wording

SuggestedRemedy
Replace "layers, implementing the MAC Control clients indicating their status. Typically status reports" with "layers and passed to the MAC Control sublayer by the MAC Control clients. Typically queue reports"

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.9** *P* **353** *L* **46** # **234**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
The "in word multiples" is quite misleading because a word sometimes can be 4 bytes long. So it's clearer to put as "in 2-byte multiples".

SuggestedRemedy
Change "in word multiples" in line 46 into "in 2-byte multiples".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.9** *P* **353** *L* **48** # **177**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
This paragraph is confusing the way it is written

SuggestedRemedy
Replace entire paragraph with the following:

"Queue reports must be generated periodically, even when no request for bandwidth is being made. This keeps a watch dog timer in the OLT from expiring and deregistering the ONU."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.9** *P* **353** *L* **48** # **259**
Wu, Mingwei Institute for Infocomm

Comment Type **T** *Comment Status* **A**
The paragraph is a bit difficult to understand.

SuggestedRemedy
Suggest changing it to
"In order to reset a watchdog timer in the reciprocating OMP entity, the REPORT processing functional block will generate report messages autonomously on a periodic fashion. The periodic report messages will maintain a minimal rate OMP message flow ensuring the network is functioning properly. These report messages have no contents."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.9.4** *P* **354** *L* **39** # **238**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
Since there is a periodic_timer defined both for Report processing and Gate processing(in line 36 of page 359) with different meanings. So suggest changing the name of periodic timer in line 39 into report_periodic_timer.

SuggestedRemedy
Change the periodic timer in line 39 into report_periodic_timer. And change those two in line 34 and that one in line 30 of figure 64-25 in page 356 accordingly.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.9.4** *P* **354** *L* **41** # **236**
Wu, Mingwei Institute for Infocomm

Comment Type **E** *Comment Status* **A**
".. periodicity of at least .." is not accurate

SuggestedRemedy
Should be ".. periodicity of less than the timeout_value."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **64.3.9.5** *P* **355** *L* **7** # **260**

Wu, Mingwei — Institute for Infocomm

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

The 2 mentioned parameters valid and status is not very clear and the ~parameter[8] mentioned might be confused with the 8th byte of the frame which is the format used in other parts of the clause.

SuggestedRemedy

Suggest changing it to
"A queue status report has two parameters, valid(italic) and status(italic). The parameter valid is a boolean array with a length of 8, "0" or false indicates that the corresponding queue is empty while "1" or true indicates that the queue has some data. The parameter status is a short integer (2 bytes) array of length 8...."

If accepted, apply same changes to next paragraph on MA_CONTROL.indication.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.9.6** *P* **356** *L* **29** # **323**

Ken, Murakami — Mitsubishi Electric

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

Figure 64-25
At the completion of discovery, the REPORT with null queue report is issued. However, the necessity of this REPORT is unclear.

SuggestedRemedy

At the completion of discovery, the ONU just starts the periodic_timer and transits to WAIT state.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.3.9.6** *P* **356** *L* **30** # **325**

Ken, Murakami — Mitsubishi Electric

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

The REPORT message including no queue report is issued at the event of periodic_timer_done as shown in Figure 64-25. For this purpose, it is necessary to assign the grant periodically to send this REPORT message. This means that the GATE messages should be issued periodically.
On the other hand, the current draft specifies the GATE message including no grant for the MPCP keep alive from the OLT to the ONU. However, since the GATE messages including at least one grant should be issued periodically as mentioned above, the GATE message with no grant becomes meaningless.
Since the above REPORT message is issued by the MAC Control not Client, the grant for this REPORT message cannot be reported. Therefore, in the OLT, the MAC Control Client should perform grant assignment in consideration of the grant for the periodic REPORT message.

SuggestedRemedy

Add the note that the transmission of the periodic REPORT message from ONU assumes that the GATE message including at least one grant is issued periodically.
Remove the GATE message with no grant.
Remove the periodic_timer at the OLT side.

Proposed Response *Response Status* **C**

REJECT.
Periodic zero-grant ensure that the ONU is aware that MPCP is operational at the OLT.
Periodicity of report, and grant are much higher than OMP timeout.

Add the note that the transmission of the periodic REPORT message from ONU assumes that the GATE message including at least one grant is issued periodically.
Do not remove GATE message with no grant.
Do not remove the periodic_timer at the OLT side.

Cl **64** *SC* **64.4** *P* *L* # **955**

Hidekazu Miyoshi Sumitomo Electric Indu

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

The baseline, gaglianello_1_0302.pdf, implies that the discovery gate message uses multicast MAC address as the MAC DA address, but the current draft does not define the address.

SuggestedRemedy

Please clarify what MAC DA address the discovery gate uses.

Additionally, why don't we clarify in the text what MAC DA addresses are used in MPCPDUs. Below is my understanding.

x) Discovery Gate: multicast address (???) or ONU MAC address
x) Normal Gate: ONU MAC address
x) Register_req: OLT MAC address
x) Register: ONU MAC address
x) Register_req: OLT MAC address

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Text similar to Clause 31 should be added or referencfed for usage of DA.
In general, except for Register messgae, all MPCPDUs use the MAC Control multicast address as the destination address.

Cl **64** *SC* **64.4.1** *P* **363** *L* **1** # **290**

Glen Kramer Teknovus

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

"Destination Adddress (DA). The DA in MPCPDU is the MAC_Control Multicast address, or the individual MAC address associated with the port to which the MPCPDU is destined."

Currently MAC Address 01-80-C2-00-00-01 is assigned to PAUSE operation.
Annex 31B: "The globally assigned 48-bit multicast address 01-80-C2-00-00-01 has been reserved for use in MAC Control PAUSE frames for inhibiting transmission of data frames from a DTE in a full duplex mode IEEE 802.3 LAN."

SuggestedRemedy

If we use the same well-known multicast address, Annex 31B should be modified, otherwise we need to specify a new 48-bit value

Proposed Response *Response Status* **C**

REJECT.

Cl **64** *SC* **64.4.1** *P* **363** *L* **12** # **185**

Brown, Benjamin AMCC

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

Clause 31 says new opcodes are defined in annexes to 31.

SuggestedRemedy

Reconcile Clause 31 with this clause.

Proposed Response *Response Status* **C**

ACCEPT.
See comment 647 for exact solution

Cl **64** *SC* **64.4.1** *P* **363** *L* **27** # **186**

Brown, Benjamin AMCC

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

This section talks about being compatible with this version of MPCP.

SuggestedRemedy

Is there a version field so that an ONU can tell what version the connected OLT is running? What does this vesion mean? Please explain.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
'version' text shall be removed.

Cl **64** *SC* **64.4.1** *P* **363** *L* **6** # **184**

Brown, Benjamin AMCC

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

Is it MPCPDU or MPCP PDU?

SuggestedRemedy

Choose one and stick with it.

Proposed Response *Response Status* **C**

ACCEPT.
Use MPCPDU

Cl **64** *SC* **64.4.1** *P* **364** *L* **13** # **340**

Hirth, Ryan — Terawave Communica

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

Adding a sequence number to the MPCP PDU would allow the protocol to detect missing frames thus making it more robust and manageable.

Curently there is no way to tell if MPCP frames have been lost, dropped, or errored in the system.

SuggestedRemedy

Add a sequence number to the PDU.

Proposed Response *Response Status* **C**

REJECT.

MPCP is stateleful with no meaning to lost frames. So no information is gained be sequencing the frames.

So for example, the ONU does not know what to do with a lost GATE, nor the OLT with a lost REPORT. Always the last message is the most valid one.

Cl **64** *SC* **64.4.1** *P* **364** *L* **32** # **291**

Glen Kramer — Teknovus

Comment Type **TR** *Comment Status* **D**

DISCOVERY_GATE and GATE messages are processed in different functional blocks within Multi-Point MAC Control. Because of desire to share the same opcode we have more complicated structure:

1. AGC and CDR fields are present only in DISCOVERY_GATE. ONU should read NumberOfGrants value to calculate the offset to access AGC and CDR fields
2. OMP Parser should look at opcode and then at Discovery_gate flag to determine where to forward the frame (see Figure 64-14)

SuggestedRemedy

Make a DISCOVERY_GATE a separate message type (opcode = 00-07)

Make AGC and CDR fields present only in DISCOVERY_GATE message, but not in regular GATE.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Simplicity of the protocol is maintained by a single gate message.

A flag indication allows unregistered ONUs to contend for the uplink, but gate operation remains identical.

Baseline adopted by 802.3 plenary specified 5 opcodes for MPCPs.

Nothing is gained by deviating from the baseline and creating a new opcode that is not realy needed.

For simplicity of definition, move processing of incoming GATE with discovery flag to GATE processing block.

Accept comment response:

Y: 6

N: 5

A: 8

Cl **64** *SC* **64.4.2** *P* **146** *L* # **99102**

Miyoshi, Hidekazu — Sumitomo Electric Indu

Comment Type **T** *Comment Status* **D** *gate D1.1 #634*

When ONU reports multiple boundaries for each queue, and OLT and ONU use different scheduling algorithms for selecting transmission packets, ONU may not decide the bandwidth allocation properly as expected by OLT, which can cause policy violation and/or slot assignment loss.

For example, if we assume that (1) ONU sends a report of QH={300,100} and QL={350,150}, (2) OLT chooses 300 for QH and 150 for QL, and (3) OLT grants 450 (300+150=450) to ONU, there would be no way for the ONU to send packets properly: ONU may interpret 450 as 100 from QH and 350 from QL. In addition, OLT never knows its policy was violated: OLT doesn't know the ONU's decision for selecting transmission packets.

A file, miyoshi_p2mp_qgrant.pdf, is attached for discussion.

SuggestedRemedy

Add an optional field indicating grant length per queue as shown below.

Grant bitmap. This is an 8 bit flag register that indicates which queues are represented in this REPORT MPCPDU.
Queue_grant[i]. Length of the signaled grant for priority queue #i, this is an 16 bit unsigned field. The length is counted in 16 bit time increment.

This mechanism works as follows.
1. Scheduler (MAC Control Client) in OLT creates a GATE message with 8 slot lengths, QUEUE_GRANT[0..7], each indicates grant length for a priority queue, and total grant length.
2. ONU receives the GATE. MPCP will read the TOTAL_GRANT and program aggregated slot. MPCP indicates GATE message to MAC Control Client.
3. MAC Control Client makes sure (optionally) that each queue transmits what is specified by QUEUE_GRANT[i].

Proposed Response *Response Status* **Z**

WITHDRAWN.
Mechanisms in MPCP should remain independent of specific DBA algorithms.
Comment suggests a modification that is removed from Ethernet norm. Manipulation of queues and transmission order are not the subject of an 802.3 standard, and are clearly out of scope.

Cl **64** *SC* **64.4.2** *P* **364** *L* **53** # **508**

Chan Kim — ETRI

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

It is not clear if the force_report flag is to ask the ONU to issue a REPORT message at the end of the corresponding grant period, or after the corresponding grant period ends.

SuggestedRemedy

cleary explain if the report is in the end of the corresponding grant and at the start of the the next grant.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
No intention is made to specify location of report within grant.
See 304 for exact fix.

Cl **64** *SC* **64.4.2** *P* **364** *L* **54** # **304**

Ken, Murakami — Mitsubishi Electric

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

This comment relates to the comment #204 on D1.2.
In Table 64-2, the description "at the next transmission opportunity" is not suitable.

SuggestedRemedy

Replace it with "at the corresponding transmission opportunity indicated in this GATE".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.4.2** *P* **365** *L* **30** # **187**

Brown, Benjamin — AMCC

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

Both AGC Settling time and CDR Lock time allow only 4 options. Why are these fields 16 bits wide?

SuggestedRemedy

Change these fields to use fewer bits or open up more options.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 341 for solution

Cl **64** *SC* **64.4.2** *P* **365** *L* **31** # **326**
Ken, Murakami Mitsubishi Electric

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

According to the current descriptions about the AGC settling time and the CDR lock time, it seems that each of them can take one of four values shown in the draft.

SuggestedRemedy

It is better to describe that the sum of AGC and CDR is at the maximum of 800ns.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 341 for solution.

Cl **64** *SC* **64.4.2** *P* **366** *L* **15** # **509**
Chan Kim ETRI

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

how about putting a reserved byte after number of grants/flags?
This will make the boundaries of the fields 16 bit aligned. Same comment applies to register_req message.

SuggestedRemedy

put a reserved byte after the "number of grants/flags" field of GATE message or make that field 16 bit wide.

Proposed Response *Response Status* **C**

REJECT.
It is intended to be as economical as possible with usage of the limited frame size. For this reason no internal padding is introduced inside the frames.
Also precedent in 802.3 shown byte oriented protocols for best performance.

Cl **64** *SC* **64.4.2** *P* **366** *L* **32** # **341**
Hirth, Ryan Terawave Communica

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

AGC Settling Time and CDR Lock time should be combined along with the Sync state machine lock time.

SuggestedRemedy

change AGC settling time and Cdr Lock time to Idle time where Idle time defines the number of Idle patterns to be sent prior to transmition of data frames.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Following discussion jointly with the PMD group, the following was recommended:
The two values are to be combined into a single value to be advertised to the ONU. The new value are not to be quantized.
The PCS sync time in the precense of FEC or not is to be added as well.

Cl **64** *SC* **64.4.3** *P* **366** *L* **50** # **292**
Glen Kramer Teknovus

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

Currently we have specified maximum GATE processing time at 20 us. That time includes the parsing, verifying, and setting the first grant. However, if forceReport bit is true, the time required to generate a REPORT message may be larger.

What if REPORT is not ready before the grant with "forceReport = true" is ended?

If its OK that a grant with "forceReport = true" will have no REPORT, then we don't need to specify forceReport flag for each grant (ONU will just prepare a REPORT as fast as it can and send it in next available grant). If its not OK have a grant without REPORT if forceReport is true, then the maximum REPORT generating time should be specified.

SuggestedRemedy

Maximum REPORT generating time should be specified. Minimum interval between GATE arrival and beginning of grant with "forceReport = true" should be set at maximum GATE processing time (20 us) plus maximum REPORT generating time.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
See 330.

Cl **64** *SC* **64.4.3** *P* **367** *L* **1** # **188**
Brown, Benjamin AMCC

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

"ONUs shall issue REPORT message occasionally."

This is not testable. What does occasionally mean?

SuggestedRemedy

Remove this line or get more specific.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Text should be added to describe periodic behavior as reference to 64.3.9

Cl **64** *SC* **64.4.3** *P* **367** *L* **37** # **189**

Brown, Benjamin AMCC

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

Number of queue sets comes just after the timestamp in figure 64-32. It's desciption (bullet d) is out of order.

SuggestedRemedy

Move bullet d to after bullet a.

Also, 31.4.1 limits MAC Control frames to 64 bytes. This limits the number of queue sets to either 1 or 2. Is this useful? Do you intend to change the length limit on these packets?

Proposed Response *Response Status* **C**

ACCEPT.
No intention of changing limit of packet length

Cl **64** *SC* **64.4.5** *P* **370** *L* **19** # **342**

Hirth, Ryan Terawave Communica

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

The flag "success" is a misnomer since the Register_ack has not been received and thus registration has not been completed successfully.

SuggestedRemedy

Rename success to Ack.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.4.5** *P* **370** *L* **25** # **191**

Brown, Benjamin AMCC

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

If AGC Settling Time and CDR Lock Time are exchanged at registration time, why are they exchanged again with each gate?

SuggestedRemedy

Either don't bother exchanging these with registration or don't send them as part of the gate.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
These parameters are sent only when GATE is used for discovery, at other times parameters are not sent.
Clarification should be added to text.

Cl **64** *SC* **64.4.6** *P* **176** *L* **6** # **99202**

I2R, Onfig Team Institute For Infocomm

Comment Type **TR** *Comment Status* **R** *D1.2 #429*

The "Success" flag in this page is not necessary. Because for the simplification of the discovery process, when the ONU's registration is denied by OLT, the OLT don't need to send a GATE to the ONU for the transmission of the REGISTER_ACK . That is to say when the ONU is informed by the REGISTER message that its registration is denied for whatever reasons it does not need to send any REGISTER_ACK message to OLT.

SuggestedRemedy

Take out the "Success" flag field in the REGISTER_ACK MPCPDU and delete the sentence of OMP.REQUEST (SA,DA,opcode=REGISTER_ACK,success=false) in line 7-8 of figure 56-22 in page 155 correspondingly.

Proposed Response *Response Status* **C**

REJECT.
Success=1 flag informs OLT that registration is complete fr the ONU.
Success=0 flag informs OLT that in spite of sucessful REGISTER, ONU is NACKing the registration.

Cl **64** *SC* **64.4.6** *P* **371** *L* # **952**

Hidekazu Miyoshi Sumitomo Electric Indu

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

The flag field of the Register_ack message is defined as a bit-field, while the flag fields of the Register message and the Register_req message are defined as values. This inconsistent definition of the flag fields would probably causes readers• f confusion. Thus getting rid of this inconsistency would cure this confusion. I think changing the meaning of the flag field of the Register_ack message would be easier.

SuggestedRemedy

Do below modification in page 371
"an 8 bit bitfield flag" -> "an 8 bit flag register" at line 43
"Flag bitmap fields" -> "Flag field" at line 45
Change the names of the first row of Table 64-6 to "Value", "indication", and "Comment".
Change the meaning of the value as follows.
Value = 0: The requested registration attempt is denied by the higher-layer-entity
Value = 1: The registration process is successfully acknowledged.
Value = 2-255: Reserved (Ignored on reception)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **64.5** *P* **374** *L* **48** # **653**
Maislos, Ariel Passave

Comment Type **T** *Comment Status* **A**
PICS not done yet

SuggestedRemedy
Collect mandatory and optional elements from text to build PICS for Draft 1.4

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **Fig 64-12** *P* **336** *L* **1** # **147**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Missing function & variable

SuggestedRemedy
Add description of the function "sizeof" and variable "remaining_time"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Add description of sizeof function, and for stop_time variable

Cl **64** *SC* **Fig 64-16** *P* **344** *L* **10** # **165**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Wrong/missing MA_CONTROL.requests & MA_CONTROL.indications

SuggestedRemedy
In Figure 64-16, replace "MA_CONTROL.request(register_ack)" with "MA_CONTROL.request(discovery_gate)". This is necessary to tell the ONU it's time to register.

In Figure 64-17, add MA_CONTROL.request(register_ack). Replace "MA_CONTROL.indication(register_req)" with "MA_CONTROL.indication(discovery_gate)" and replace "MA_CONTROL.indication(register_ack)" with "MA_CONTROL.indication(register)"

I'm not sure discovery_gate is the right term but I don't know what to call it.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Clarifications should be added
see 507

Cl **64** *SC* **Fig 64-2** *P* **324** *L* **1** # **115**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Why does this figure only show 1 MAC?

SuggestedRemedy
Replace with something similar to Figure 65-1

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **Fig 64-29** *P* **362** *L* **1** # **183**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Does this stage diagram really need to be this cryptic? Can't we find a simpler method to descibe what this machine is doing?

What does case 1 mean vs. case 2 in SORT state?
What is effective_length START TX state?

SuggestedRemedy
Simplify this state diagram or add some desciption on a state by state basis to explain what's going on.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Clarification text and diagrams are to be added per resolution of comments 338, 339.

Cl **64** *SC* **Fig 64-32** *P* **368** *L* **14** # **190**
Brown, Benjamin AMCC

Comment Type **E** *Comment Status* **A**
Number of queue sets is in a different font

SuggestedRemedy
Use the right font

Proposed Response *Response Status* **C**
ACCEPT.
Same font, different horizontal stretch - FrameMaker quirks.

Cl **64** *SC* **Fig 64-4** *P* **325** *L* **10** # **120**

Brown, Benjamin AMCC

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

Subclauses 2.3.3.2 and 2.4.4.2 reference Clause 31 and its annexes for the desciptions of new opcodes and how they effect the MA_CONTROL service primitives.

SuggestedRemedy

Change Clause 2 to reference this clause as well.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 647

Cl **64** *SC* **Fig 64-4** *P* **325** *L* **10** # **118**

Brown, Benjamin AMCC

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

Are the Control Parser and OMP Parser really necessary?

SuggestedRemedy

* Remove the Control Parser and replace it with a block that references Figure 31-4.
* Remove the Flow Control Annex 31A block and replace it with a block that references Figure 31B-2.
* Remove the OMP Parser Clause 64.3.7 block and pass the arrow with the label "Opcode-specific function activation" to all the OMP processing blocks.

The only difference is that your Control Parser passes unrecognized opcodes to the MAC Client using MA_DATA.indication. If you want to do this, you should change Clause 31 so everyone can see what you're really doing.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cleanup based on kramer_1.pdf

Control parser will remain, incorporating non opcode specific elements of OMP parser

Cl **64** *SC* **Fig 64-4** *P* **325** *L* **10** # **119**

Brown, Benjamin AMCC

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

The transmit direction doesn't work according to the functions already defined in 802.3.
* MA_DATA.request and MA_CONTROL.request(...,pause_command,...) go into the state diagram in Figure 31B-1
* The pause function chooses one of these and calls the TransmitFrame function within the MAC to begin immediate transmission

The Control Multiplexer block currently takes in both MA_DATA.request and MA_CONTROL.request, requests a transmit slot, waits for a grant and then calls the TransmitFrame function. This block attempts to displace the state diagram in Figure 31B-1 without actually performing the PAUSE function.

The OMP Multiplexer doesn't do much. I already expects only one OMP.request to be active at a time from the OMP processing blocks. It simply converts the OMP.request to a MA_CONTROL.request (though I don't like this name).

SuggestedRemedy

* Make no changes to Annex 31B
* Remove the OMP Multiplexer block. Outputs of OMP Processing blocks should be TransmitFrame.
* Add a block that takes in both MA_CONTROL.request and MA_DATA.request and puts out TransmitFrame. This block references Figure 31B-1
* Modify Control Multiplexer to take in multiple TransmitFrame function calls and outputs TransmitFrame to the MAC.

The Control Multiplexer block would parse these TransmitFrame requests enough to know if they contain a data frame or a MAC Control frame (check the Length/Type field). It would then use this information to request a transmit slot from the Multiplexing Control block then, when it gets a grant, passes the TransmitFrame call on to the MAC.

I don't know if this works because I don't think the TransmitFrame function call is a request in the same way that a service primitive is but it's closer to working with the current standard that what is there right now.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cleanup based on kramer_1.pdf

Control parser will remain, incorporating non opcode specific elements of OMP parser. Incoming interfaces will use TransmitFrame instead of MA_CONTROL.request

Cl **64** *SC* **Figure 64-11** *P* **108** *L* # **99006**

Bharati, Barnali — Wipro Technologies

Comment Type **TR** *Comment Status* **A** *D1.0*

OMP indication REGISTER_ACK can arrive in the 'INSIDE REGISTER WINDOW' state before timeout of 'register_window_size'. This is missing.

SuggestedRemedy

Arrival of REGISTER_ACK in the 'INSIDE REGISTER WINDOW' state, should trigger a state change to 'COMPLETE DISCOVERY'

Proposed Response *Response Status* **C**

ACCEPT.
See #181
D1.0 #182 discovery

Editor unable to track down commenter

Cl **64** *SC* **Figure 64-11** *P* **108** *L* # **99007**

Bharati, Barnali — Wipro Technologies

Comment Type **TR** *Comment Status* **A** *D1.0*

State 'CHECK DESTRUCT ID' can appear before 'INDICATE DEREGISTER', otherwise it might lead to unnecessary indication.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.
D1.0 #185

Editor unable to track down commenter

Cl **64** *SC* **Figure 64-11** *P* **108** *L* **25** # **99008**

Bharati, Barnali — Wipro Technologies

Comment Type **TR** *Comment Status* **A** *D1.0*

ONU_timer[SA] can expire in the 'INSIDE REGISTER WINDOW' state.

SuggestedRemedy

On expiry of 'ONU_timer' in state 'INSIDE REGISTER WINDOW', state can change to IDLE state.

Proposed Response *Response Status* **C**

ACCEPT.
Comment is valid.
Solution confuses IDLE state which is an OLT state (performing discovery or not) with the ONU state goverened by the timer.
Should consider adding additional state-machine with ONU perspective
D1.0 #181 discovery

Editor unable to track down commenter

Cl **64** *SC* **Figure 64-11** *P* **108** *L* **35** # **99009**

Bharati, Barnali — Wipro Technologies

Comment Type **TR** *Comment Status* **R** *D1.0*

If OLT ever receives an OMP.indication (subtype=REGISTER_REQ, destruct_flag=true, SA=broadcast_ID), OLT need not call END function. As this would require a reset of the state machine.

SuggestedRemedy

OLT can just ignore the indication and transit to 'IDLE' state.

Proposed Response *Response Status* **C**

REJECT.
This is exactly what happens in state CHECK DESTRUCT ID in figure 56-11
D1.0 #184

Editor unable to track down commenter

Cl **64** *SC* **Figure 64-12** *P* **336** *L* # **276**
Glen Kramer Teknovus

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

1. "remaining_time" variable is not defined
2. "remaining time should be constantly updated synchronously with local_time

SuggestedRemedy

1. instead of "remaining_time" use "stop_time"
2. "stop_time" variable should be set in "Gate Processing ONU Activation State Diagram"
3. transition from GATED to TRANSMIT READY in Fig 54-12 should be as following: (local_time + sizeof(m_sdu) + tail_guard <= stop_time)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct 64-12, not 54-12

Cl **64** *SC* **Figure 64-12** *P* **336** *L* # **275**
Glen Kramer Teknovus

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

1. Both MA_DATA and MA_CONTROL frames should be checked on fitting in the remaining slot
2. In transition from GATED to TRANSMIT READY comparison ">" should be "<="

SuggestedRemedy

modify transition from GATED to TRANSMIT READY as follows
(MA_DATA.request(DA,SA,m_sdu) *(sizeof(m_sdu) + tail_guard <= remaining_time) +
(MA_DATA.request(DA,opcode, operands) *(sizeof(MPCPDU) + tail_guard <= remaining_time)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Correct for stop_time instead of remaining_time

Cl **64** *SC* **Figure 64-13** *P* **340** *L* # **280**
Glen Kramer Teknovus

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

Figure 64-13 does not match Figure 64-4

SuggestedRemedy

Split Figure 64-13 into separate figures for Parser and Multiplexer

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **Figure 64-14** *P* *L* # **281**
Glen Kramer Teknovus

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

Before receiving REGISTER_REQ message, the ONU's RTT is not known, so the "timestamp - local_time" value will be very large and timestamp error will be asserted every time REGISTER_REQ is received.

SuggestedRemedy

1. Split OMP parser into OLT and ONU versions
2. In OLT UPDATE TIMER state should be split into UPDATE RTT and MEASURE RTT
3. MEASURE RTT is entered when opcode in {REGISTER_REQ}, otherwise UPDATE RTT is entered
4. In ONU this state should be called UPDATE LOCAL CLOCK

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **Figure 64-20** *P* **351** *L* # **284**
Glen Kramer Teknovus

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

Variable success_flag is not defined

SuggestedRemedy

Define success_flag
Probably should be "flag == success"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **Figure 64-20** *P* **353** *L* **1** # **650**
Maislos, Ariel Passave

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

Use of MPC_LLID[j].request primitive is missing

SuggestedRemedy

Add support for primitive in diagram

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Perform deregister at IDLE state, and register at REGISTER state

Cl **64** *SC* **Figure 64-21** *P* **352** *L* # **285**
Glen Kramer Teknovus

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

1. Transition from CHECK_UNICAST to WAIT for WINDOW should be marked "false"
2. Transition from WAIT to CHECK_UNICAST should be marked "OMP.indication(..)"
3. Value for IDLE timer should be calculated based on received GATE paremeters
4. A state showing parsing of DISCOVERY GATE should be added

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **Figure 64-21** *P* **352** *L* # **297**
Glen Kramer Teknovus

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

In the state RANDOM WAIT the upper bound for the delay is wrong.
The value of random delay should be limited by the length of the slot minus the transmission size.

SuggestedRemedy

1. add variable max_delay
2. when parsing DISCOVERY GATE calculate max_delay as
max_delay = length - laser_on - sizeof(IDLE_time) - IFG - preamble - sizeof(MPCPDU) - sizeof(/T/R/R/) - laser_off
3. in RANDOW WAIT change the code to
[start random_delay_timer. random(max_delay)]

Proposed Response *Response Status* **C**

ACCEPT.
See 252

Cl **64** *SC* **Figure 64-22** *P* **355** *L* **39** # **652**
Maislos, Ariel Passave

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

Use of MPC_LLID[j].request primitive is missing

SuggestedRemedy

Add support for primitive in diagram

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Using REGISTERED state for registration and WAIT state for deregistration.

Cl **64** *SC* **Figure 64-22** *P* **355** *L* **39** # **651**
Maislos, Ariel Passave

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

Figure name is not descriptive

SuggestedRemedy

Change figure name to "Discovery Processing ONU Registration State Diagram"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **Figure 64-28** *P* **361** *L* # **727**
Glen Kramer Teknovus

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

It would considerably simplyfy GATE processing at ONU if grants arrive in order of their start times. It is highly inefficient if scheduler comes back (in time) to fill the gaps.

SuggestedRemedy

1. Specify that grants should arrive in order of their start times.
2. Remove extract_min function from GATE processing diagram

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Specification to be added that grants within GATE message are to be in sequential order.

Cl **64** *SC* **Figure 64-4** *P* **325** *L* # **272**
Glen Kramer Teknovus

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

Signals to and from Multi-Point instance N should have subscript N instead of 1

SuggestedRemedy

change 1 to N

Proposed Response *Response Status* **C**

ACCEPT.

Cl **64** *SC* **Figure 64-6** *P* **330** *L* # **273**
Glen Kramer Teknovus

Comment Type **T** *Comment Status* **A**
Transition from SELECT to ENABLE happens only when at least one of TransmitPending[i] is not NONE, otherwise it remains in SELECT state

SuggestedRemedy
Transition from INIT to SELECT should be marked "UCT"
Transition from SELECT to ENABLE should be marked "OR(TransmitPending[i] != NONE)"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
With addition of moving "j = select()" to ENABLE state.
Rename SELECT state to WAIT PENDING
Rename WAIT state to WAIT PROGRESS
See also 439

Cl **64** *SC* **Figure 64-6** *P* **330** *L* **1** # **139**
Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A**
Missing transition label

SuggestedRemedy
Add "UCT" label on transition from INIT to SELECT

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **Figure 64-8** *P* **100** *L* **11** # **99010**
Bharati, Barnali Wipro Technologies

Comment Type **TR** *Comment Status* **A** *D1.0*
In state 'OMP TIMEOUT', the condition 'if not (Master and me == broadcast_ID)' would force OLT to go to ERROR state in case only one ONU was present and this ONU has sent a REGISTER_ACK with destroy flag set. So no more messages would come from the ONU. This would result in timeout of omp_timer and OLT would transit to ERROR STATE. Not desirable (I presume, variable 'me' would have proper MAC address)

SuggestedRemedy
Could 'me == broadcast_ID' be removed from the condition?

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.
Change UCT transition to True, change else transition to False
Condition is required as OLT would not terminate it's broadcast-llid where is performs discovery. All other LLIDs are currently terminated.
Under proposed layering models, END state would be replaced with 'return to available LLID pool' state
D1.0 #177 discovery

Editor unable to track down commenter

Cl **64** *SC* **Figure 64-9** *P* **332** *L* # **358**
Karasawa, Satoru Oki Electric Industry

Comment Type **E** *Comment Status* **A**
LaserControl is not used in the Control Multiplexer.

SuggestedRemedy
Remove the LaserControl signal from Figure 64-9.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **64** *SC* **Figure64-21** *P* **352** *L* **14** # **269**
Terayama, Hisanori Panasonic Mobile Com

Comment Type **E** *Comment Status* **A**
The change state condition from CHECK UNICAST state to WAIT FOR WINDOW state is wrong.

SuggestedRemedy
Change "true" to "false".

Proposed Response *Response Status* **C**
ACCEPT.
Comment is T not E

Cl **64** *SC* **Figure64-4** *P* **325** *L* **42** # **268**

Terayama, Hisanori
Panasonic Mobile Com

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

The interface signals name between Multi-Point instance N and Multiplexing Control block are wrong.

SuggestedRemedy

Change "TransmitEnable[1]" to "TransmitEnable[N]".
Change "TransmitPending[1]" to "TransmitPending[N]".
Change "TransmitProgress[1]" to "TransmitProgress[N]".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.1.1** *P* **376** *L* **54** # **738**

Bemmel, Vincent
Alloptic

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

I don't see why we now need 2 MACs per LLID in the OLT (seperate for unicast vs. multicast) plus one for broadcast. This seems redundant.

Also refer to 64.1.2, p 325 line 1

SuggestedRemedy

Use the (single) broadcast MAC for both broadcast and multicast.

Recall that the broadcast MAC is a special MAC that allows us to implement single copy broadcasts. This MAC allows the bridge to achieve the efficient equivalent of 'flooding' in a P2MP topology.

From the perspective of the bridge there should be no difference. A standard bridge floods broadcast and multicast packets in a similar way.

And just like with a standard bridge, the destination hosts should be responsible for filtering frames based on multicast group membership. This should be transparent to the bridge in the OLT.

I.e, the total number of MACs at the OLT (for N ONUs) should be N+1, not 2N+1 as suggested

Proposed Response *Response Status* **C**

REJECT.

How does the RS know when to insert the broadcast LLID or a specific LLID if all the packets come from the same MAC?

This is how we descibe it in the standard, not necessarily how eveyone will implement it.

Cl **65** *SC* **65.1.1** *P* **377** *L* **2** # **435**

Daido, Fumio — Sumitomo Electric Indu

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

In draft 1.3, the multicast MAC and the broadcast MAC can not receive packets. In this case, the OLT can not receive the Register_Req MPCPDU from ONU which does not have own LLID. Because the LLID for ONU has not been assigned yet, when ONU issues the Register_Req MPCPDU.

SuggestedRemedy

The broadcast MAC should be able to receive only the MPCPDU packets. When the ONU issues the Registe_Req, the ONU uses the LLID of mode=0 and logical_link_id=0x7fff for transmission.

Proposed Response *Response Status* **C**

ACCEPT.

The change necessary for Clause 65 is to modify the definition of the broadcast MAC so that it can receive packets with MODE=0 and LLID=0x7fff. Assign this default value in the ONU's variable.

Cl **65** *SC* **65.1.2** *P* **377** *L* **1** # **441**

Jaeyeon Song — Samsung

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

Multicast in 'Multicast MAC' means SCB except the corresponding ONU? if so, Destination MAC address is Broadcast MAC address or SCB multicast address EFM defined? The meaning is not clear.

SuggestedRemedy

Clarify the meaning.

Proposed Response *Response Status* **C**

REJECT.

Unicast MAC sets MODE=0 and LLID=logical_link_id
Multicast MAC sets MODE=1 and LLID=logical_link_id
Broadcast MAC sets MODE=1 and LLID=0x7fff

This is an overview section that merely introduces the concept of multiple MACs in the OLT. Details on the information transmitted by the individual MACs is provided in 65.1.3.1. If you feel the information in this section is incomplete or misleading, please provide a detailed coment and suggested remedy.

Cl **65** *SC* **65.1.2** *P* **377** *L* **13** # **743**

Bemmel, Vincent — Alloptic

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

The description of the MPC_LLID[j].request service primitive is not clear.
Appears to be a request at the OLT from the Multipoint MAC Control layer to the RS layer to get LLID vs. MAC info.

Why do we need it?
Where is this info used?
Why does it exist at all for an ONU?

SuggestedRemedy

Be more specific

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace the paragraph in 65.1.2 with the following:

The MPC_LLID[j].request service primitive is generated from the Multi-Point MAC Control sublayer and provides a mapping between multiple MACs and their associated MODE and LLID parameters. While the usage of this mapping is less interesting in the ONU, it is critical in the OLT. This mapping is used to replace transmitted preambles with MODE and LLID fields as well as to steer received packets to the appropriate MAC[j].

Cl **65** *SC* **65.1.2** *P* **377** *L* **20** # **327**

Ken, Murakami — Mitsubishi Electric

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

"Multiplexing Control Sublayer" is not suitable.

SuggestedRemedy

"Multi-Point MAC Control Sublayer" is suitable.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.1.2** *P* **377** *L* **20** # **739**

Bemmel, Vincent — Alloptic

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

"Multiplexing Control Sublayer" is really a 'block' in the Multipoint MAC control sublayer

SuggestedRemedy

Correct accordingly...

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to Multi-Point MAC Control Sublayer
See comment #327

Cl **65** *SC* **65.1.2.1** *P* **377** *L* **26** # **444**

Jaeyeon Song — Samsung

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

1) MPC.LLID[j].request is not appreared in Clause 64 for connecting each MAC and Multi-point MAC Control.
2) In addition, there is not MPC.LLID[j].indication primitive in anywhere.

SuggestedRemedy

1) The relationship should be defined.
2) We should define MPC.LLID[j].indication primitive and add these into the layer block diagram in Clause 64, too.

- MPC.LLID[j].indication(type, mode, LLID) for OLT
  (type - OLT or ONU, mode-unicast or multicast, LLID - LLID of ONU who sent frame)

- MPC.LLID[j].indication(type, mode, LLID) for ONU
  (type - OLT or ONU, mode-unicast or multicast, LLID - destination LLID)

I will prepare a presentation about it.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove all concepts of MPC_LLID primitive. Replace with variables associated with each MAC. Pervasive management controls these variables.

Coordinate with Clause 64 to use appropriate variable names.

Cl **65** *SC* **65.1.2.1** *P* **377** *L* **34** # **820**

Lynskey, Eric — UNH-IOL

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

It seems that there should be a default value for the LLID of the ONU. If I understand the procedure properly, the OLT will assign a new LLID to the ONU during the registration process. But in order for the OLT to receive a frame, the LLID of the received frame must match a known value. How does the ONU know what to put here before the OLT tells it? The Multi-Point MAC Control layer provides the RS with an LLID to be used in the preamble of every frame that is sent. However, when an ONU first powers up and before it has registered, it is not clear what the value should be. Clause 65 states that the OLT reject frames that contain LLIDs that do not match the logical_link_id parameters from the MPC_LLID.request primitive. Note that this comment seems to imply the creation of an additional MAC, and I'm not sure if this is the best way to do this. I am proposing that initially, all ONUs send frames with the default LLID to the OLT. Upon reception of a frame with the default LLID, the OLT will associate a new LLID with the source address of the received frame and send that information in a unicast frame to the ONU that contains the same default LLID. The ONU will then need to receive the frame with the default LLID and parse according to destination address. It will then use the new LLID for future transmissions. A similar comment has been submitted against Clause 64.

SuggestedRemedy

Add text to the primitive: The default value of each ONU's LLID before registration is 0x0000. Following the completion of a successful registration, the ONU will be assigned a new LLID by the OLT.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #435 suggests that the ONU use the broadcast value until it is registered. Until it is registered, it can only send MPCPDUs and it will use MODE=0 and LLID=0x7fff. This comment also suggested to allow the OLT's Broadcast MAC to receive these packets from unregistered ONUs.

Cl **65** *SC* **65.1.3.2** *P* **379** *L* **23** # **270**

Terayama, Hisanori — Panasonic Mobile Com

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

I think that replacement of a normal preamble of discard the entire paket does not have necessity.

SuggestedRemedy

Delete description " replacing it with normal preamble ".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace "normal preamble" with "normal interframe"

Cl **65** *SC* **65.1.3.2.1** *P* **380** *L* **4** # **740**

Bemmel, Vincent Alloptic

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

Which octet is the SPD field really in... 2nd or 3rd?

SuggestedRemedy

Correct and allign sections 65.1.3.2.1 nd 65.1.3.2.2

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The SPD is always transmitted in the 3rd octet of preamble. However, since the first octet can be discarded by the Transmit PCS, the SPD can appear in the 2nd or 3rd octet of preamble at the receiver.

I agree that this is confusing. I recommend modifying the receive description to use the following:

Octets 1&2 are {discarded,/S/} or {/S/,0x55}
Octet 3 is SPD
Octets 4 & 5 are 0x5555
Octets 6 & 7 are MODE/LLID
Octet 8 is CRC-8 - covers octets 3 - 7

Grant the editor license to make any necessary changes.

Cl **65** *SC* **65.2.1** *P* **381** *L* **2** # **436**

Daido, Fumio Sumitomo Electric Indu

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

Regading the rate adaptation at MAC layer, the referred subclause should be specified.

SuggestedRemedy

Append the following phrase to the sentence at line 2, ", as described in 4.2.8."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.1** *P* **381** *L* **5** # **822**

Lynskey, Eric UNH-IOL

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

Do we want to be a little stronger with the sentence "The FEC functionality and FEC sublayer are optional" Should we specifically state that if someone is going to use FEC on an EPON that they need to implement it this way? This would prohibit implementations of other forms of FEC from being used.

SuggestedRemedy

Add sentence: "A FEC sublayer implemented for operation over a multi-point optical link shall behave as specified in 65.2.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.3.3** *P* **383** *L* **1519** # **972**

Yokomoto, Tetsuya Japan

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

Spelling error: "occuring"

SuggestedRemedy

Change to "occurring".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.3.3** *P* **383** *L* **18** # **823**

Lynskey, Eric UNH-IOL

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

When /T_FEC_E/ is compared against the normal end delimiter it appears that over the whole /T_FEC_E/ only 10 bits are different. The first column contains the /T_FEC_E/ codes (/T/R/I2/T/R/), the second column contains what would be the non-FEC transmission (/T/R/I2/I2/), and the third column is the number of bits different between each 10-bit code.

/T_FEC_E/	Normal end delimiter	Bits different
/K29.7/ -1011101000-	/K29.7/ -1011101000-	0
/K23.7/ -1110101000-	/K23.7/ -1110101000-	0
/K28.5/ -0011111010+	/K28.5/ -0011111010+	0
/D16.2/ +1001000101-	/D16.2/ +1001000101-	0
/K29.7/ -1011101000-	/K28.5/ -0011111010+	3
/K23.7/ -1110101000-	/D16.2/ +1001000101-	7

SuggestedRemedy

Change d=12 to d=10.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.3.3** *P* **383** *L* **34** # **502**

Khermosh, Lior Passave

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

"The /I/ in both the /T_FEC_E/ and the /T_FEC_O/ ordered_sets can be either an /I1/ (a disparity correcting IDLE) or an /I2/ (a disparity neutral IDLE)"

I think that we can match the disparity only one time after all the parity data is sent, maybe not even at the marker but at the first Idle in the IPG afterwards.

SuggestedRemedy

Delete this line

Proposed Response *Response Status* **C**

REJECT.

While I agree with the comment in general, allowing either form of /I/ supports the direct forward of the /T/R/I/ or /T/RR/I/ from the PCS when generating the /T_FEC_E/ or /T_FEC_O/ as shown in Figure 65-9.

Cl **65** *SC* **65.2.3.3** *P* **383** *L* **4** # **815**

Lynskey, Eric UNH-IOL

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

The Ethernet frame markers need to be protected. If the PCS doesn't receive valid /S/ and /T/R/ then the frame will not be accepted. It seems that there are two logical ways to protect the delimiters. They can be explicitly included in the FEC (preferred method) or the receiver can take care of it by passing up valid S_FEC and T_FEC to the PCS even if they were received with some errors.

SuggestedRemedy

Remove the sentence starting with "Therefore, the Ethernet frame markers..." Additionally, modify Figure 65-9 to include /S/ and /T/R/I/ or /T/R/R/I/ in the FEC algorithm (see related comment for exact changes).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

I think the reason the packet delimiters are not protected by FEC is that it operates only on the 8 bits of data and not the 1 bit of control. If all the control bits are the same for the protected data, then FEC can do its job, as is true when FEC covers only the data of the packet.

I'd prefer your second option. If an /S_FEC/ or /T_FEC_x/ is detected with fewer than d/2 errors then they are replaced with perfectly clean /S/ and /T/R/. . ./ ordered_sets towards the PCS. Changes need to be made to the state machine to accomplish this but I like this better.

Cl **65** *SC* **65.2.4.1** *P* **383** *L* **50** # **343**

Hirth, Ryan Terawave Communica

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

FEC should be an autonegotiated parameter on the link.

An PHY Receiver which supports FEC will incure a 2,389 byte (19 uS) delay on all frames even if FEC is not used. This is significant latency and should be disabled if not used.

A PHY Transmiter will waist overhead if FEC is used and the receiver does not support it.

SuggestedRemedy

Allow the PHYs to negotiate this parameter.

Proposed Response *Response Status* **C**

REJECT.

This sounds like a modification to Clause 37. I'm not sure that is part of the PAR of this project.

Cl **65** *SC* **65.2.4.1** *P* **385** *L* **52** # **824**

Lynskey, Eric UNH-IOL

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

How is 1553-octet buffer calculated? Frame size is 1518 bytes, S_FEC is 5 bytes, Preamble and SFD account for 7 bytes, T_FEC_E is 6 bytes, and parity is 16 bytes. That puts the total at 1552.

SuggestedRemedy

Change 1553 to 1552.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See related comment #207

Cl **65** *SC* **65.2.4.1** *P* **385** *L* **52** # **825**

Lynskey, Eric UNH-IOL

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

PON does not prohibit the use of tagged frames.

SuggestedRemedy

Add 4 octets to the buffer size.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See related comment #207

Cl **65** *SC* **65.2.4.2** *P* **385** *L* **30** # **818**

Lynskey, Eric UNH-IOL

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

This is a comment against Figure 65-5. This figure shows that tx_code-group is passed from the FEC layer to the PMA. The state diagrams use ftx_code-group to do this.

SuggestedRemedy

In the figure, replace tx_code-group with ftx_code-group in the interface between the FEC and PMA layers.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.2.2** *P* **384** *L* **53** # **973**

Yokomoto, Tetsuya Japan

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

Spelling error: "descibed"

SuggestedRemedy

Change to "described".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.2.2** *P* **385** *L* **52** # **207**

Marris, Arthur Cadence

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

It is too prescriptive to specify a 1553-octect buffer here. It is not clear how the value of 1553 is arrived at and it makes no allowance for VLAN-tagged and jumbo frames. The size of this buffer should be left up to the implementor.

SuggestedRemedy

Delete the text "1553-octect".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

A proposal would be useful for the appropriate minimum buffer size, including a desciption of where the numbers come from. Until that is available, this text should be deleted.

Add text to describe the fields that must be minimally buffered in order to properly perform the decoding.

Cl **65** *SC* **65.2.4.2.2** *P* **385** *L* **52** # **581**

Tom Mathey Independent

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

If a 1553-octet buffer exists in the receive path, and possibly some additional delay in the transmit path, then some words need to be added to Annex 31B, clause 31B.3.7.

SuggestedRemedy

Discuss.

Proposed Response *Response Status* **C**

REJECT.

Good point. This has a significant impact on round trip latency, which impacts the amount of buffering required to perform 802.3x flow control. If P2MP networks intend to support 802.3x flow control, a change needs to be implemented. I agree that a discussion needs to take place.

A larger issue of concern regarding round trip latency is the additional delay of other MAC Control frames from the Discovery, Gate and Request processes and even more so by the delay while the other MACs in the OLT are enabled while this one waits. I might even venture to guess that this time has become close to the point where PAUSE round trip latency results in non-realistic memory sizes. Controlling an ONU's GATE may be a more realistic solution for limiting its transmissions.

A discussion around Pause and P2MP is worth putting into Clause 66. The commentor is encouraged to submit such a comment.

Cl **65** *SC* **65.2.4.2.2** *P* **385** *L* **52** # **974**

Yokomoto, Tetsuya Japan

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

"1553-octet buffer" is better to unify with the block diagram of Figure 65.

SuggestedRemedy

Change to "A one packet buffer".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See related comment #207

Cl **65** *SC* **65.2.4.2.2** *P* **386** *L* **12** # **975**

Yokomoto, Tetsuya Japan

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

Missing

SuggestedRemedy

Modify "Packetthat" into "Packet that".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace with "Packets that"

Cl **65** *SC* **65.2.4.2.2** *P* **386** *L* **16** # **208**

Marris, Arthur Cadence

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

Figure 65-8 needs to be made clearer. Also I believe the delay for the non-FEC frames does not need to be balanced with the FEC encoded data as either all or none of the data on a link will be FEC encoded.

SuggestedRemedy

Delete delay box for non-FEC data. Delete "Selector" and "FIFO" boxes at bottom of diagram. Add text "rx_code_group<9:0>" underneath arrow at the bottom of the diagram.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Keep the delay box for non-FEC data. Remove selector and fifo blocks. Replace numbers in delay box with "matching". Don't apply rx-code_group label.

Cl **65** *SC* **65.2.4.3.2** *P* **386** *L* **37** # **831**

Lynskey, Eric UNH-IOL

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

parity[x] needs to be defined and should be renamed to reflect its size in both text and state diagram.

SuggestedRemedy

parity<D7:D0>
An 8-bit array that contains the current parity bits to be encoded in the FEC Transmit Process. The elements within the array are updated with the next 8-bits to be encoded upon each entry into the XMIT_PARITY state.

For each element within the array: Values:ZERO;Data bit is a logical zero.
ONE;Data bit is a logical one.

Additionally, in Figure 65-9, change parity[x] to parity<D7:D0>.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.2** *P* **386** *L* **37** # **828**

Lynskey, Eric UNH-IOL

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

The variable fec_encode needs to be defined.

SuggestedRemedy

fec_encode
A boolean set by the FEC Transmit process to indicate the status of the RS_Encode(Data) function.

Values: TRUE; data is acted upon by the RS_Encode(Data) function.
FALSE; data is not being acted upon by the RS_Encode(Data) function.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.2** *P* **386** *L* **37** # **830**

Lynskey, Eric UNH-IOL

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

parity_buffer_empty needs to be defined

SuggestedRemedy

parity_buffer_empty
A boolean set by the FEC Transmit process to indicate if more parity bytes need to be encoded.
Values:TRUE;No more parity bytes need to be encoded.
FALSE;More parity bytes need to be encoded.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.2** *P* **386** *L* **37** # **826**

Lynskey, Eric UNH-IOL

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

The variable ftx_code-group needs a definition.

SuggestedRemedy

ftx_code-group<9:0>
A vector of bits representing one code-group,as specified in Tables 36–1a or 36–2, which has been prepared for transmission by the FEC Transmit process. This vector is conveyed to the PMA as the parameter of a PMD_UNITDATA.request(ftx_bit)service primitive. The element ftx_code-group<0> is the first ftx_bit transmitted; ftx_code-group<9> is the last ftx_bit transmitted.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.2** *P* **386** *L* **37** # **827**

Lynskey, Eric UNH-IOL

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

Need to define ftx_bit and place the appropriate reference to clause 58.

SuggestedRemedy

ftx_bit
A binary parameter used to convey data from the PMA to the PMD via the PMD_UNITDATA.request service primitive as specified in 58.1.4.1. Values:ZERO;Data bit is a logical zero.
ONE;Data bit is a logical one.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.3** *P* **387** *L* **1** # **812**

Lynskey, Eric UNH-IOL

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

Need to add a function for check_ahead.

SuggestedRemedy

check_ahead: Prescient function used by the FEC Transmit process to find the Start_of_Packet in order to replace the Start_of_Packet and its two preceding IDLE ordered_sets with S_FEC.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.3** *P* **387** *L* **4** # **829**

Lynskey, Eric UNH-IOL

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

RS_Encode(Data) function should state that it does an 8B/10B decode.

SuggestedRemedy

Add as a second sentence: Before being passed to the Reed Solomon encoder, this function passes the data through DECODE([/x/]).

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.4** *P* **387** *L* **18** # **834**

Lynskey, Eric UNH-IOL

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

loop_count not defined

SuggestedRemedy

loop_count: A 3-bit counter used to keep track of the number of loops in the receive byte alignment process.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.7** *P* **388** *L* **1** # **816**

Lynskey, Eric UNH-IOL

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

This is a comment against Figure 65-9. The state diagram should be modified to include the start and end delimiters within the FEC boundaries. I believe that the XMIT_ENCODE state, as it is currently written, will include the /S/ in the FEC. The setting of tx_code-group sets up the next 10 bits that will be transferred to the PMA during the next PUDR. So, once tx_code-group is set to /S/ in the XMIT_S_FEC_3, it will not be transferred until the next PUDR, which happens in the XMIT_ENCODE state. Since fec_encode gets turned on in the XMIT_ENCODE state, the /S/ should be covered. The end delimiter of /T/R/I/ or /T/R/R/I/ is not currently included in the FEC boundaries.

SuggestedRemedy

Remove from the XMIT_T_FEC1_TRRI state the action fec_encode<=FALSE. Add to the XMIT_T_FEC1_T state the action fec_encode<=FALSE. This should allow the end delimiter to be included in the FEC calculation.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The intent was to not include /S/ in the FEC. I'd rather change the state diagram so that /S/ is not part of FEC. See comment #815

Cl **65** *SC* **65.2.4.3.7** *P* **388** *L* **1** # **811**

Lynskey, Eric UNH-IOL

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

This comment is against Figure 65-9. This state diagram uses PUDR as an exit condition for all states. Previous state diagrams, such as 36-6 use PUDR as an action taken within the state. It seems that the PUDR is something the PCS can do, whereas the PUDI is something the PCS needs to wait for, which is why PUDI is used as the exit condition in Figure 65-10.

SuggestedRemedy

Bring all occurrences of PUDR inside the states for which they exist as exit conditions. In order to clock between states, add the cg_timer as done in Figure 36-6.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The intent was to use the "clock" generated by the PCS TX state diagram (PUDR) as the input clock here. Then, since this is all a synchronous path, PUDR would continue to be used by the PMA and this state diagram would not need to generate its own clock.

I don't think we can change the fact that this state diagram runs off PUDR as this is the clock generated by Figure 36-6. I would be open to generating yet another clock (PFUDR?) for use by the PMA.

Provide a better description for where PUDR comes from and that it is also passed to the PMA using ftx-code_group as its parameter.

Cl **65** *SC* **65.2.4.3.7** *P* **388** *L* **18** # **814**

Lynskey, Eric UNH-IOL

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

This comment is against Figure 65-9. It's not clear if the /S/ is included in the FEC. Subclause 65.2.3.3 says that "the ethernet frame markers are not protected by the FEC code and are exposed to higher BER." The XMIT_ENCODE state of Figure 65-9 shows that the /S/ is covered by the FEC. The /T/R/ or /T/R/R/ are not covered by the FEC, and this agrees with the text.

SuggestedRemedy

Make text and state diagram agree by adding a new state, XMIT_S_FEC_4 that transmits the /S/ before entering into the XMIT_ENCODE state.

Proposed Response *Response Status* **C**

ACCEPT.

See comments #815 & #816

Cl **65** *SC* **65.2.4.3.7** *P* **388** *L* **31** # **817**

Lynskey, Eric UNH-IOL

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

This comment is against Figure 65-9. If PUDR is pulled within the states, then you need to make sure you transition from XMIT_T_FEC1_TRRI to XMIT_T_FEC1_T when tx_code-group = /T/ and not /D/.

SuggestedRemedy

Modify the exit condition on XMIT_T_FEC1_TRRI to be tx_code-group = /T/.

Proposed Response *Response Status* **C**

REJECT.

See comment #811

Cl **65** *SC* **65.2.4.3.7** *P* **388** *L* **6** # **810**

Lynskey, Eric UNH-IOL

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

This comment is against Figure 65-9. On the exit condition from XMIT_IPG, it is not clear what happens when both exit conditions are satisfied at the same time, which would always be the case when the check_ahead condition is satisfied.

SuggestedRemedy

On the exit condition that loops back to XMIT_IPG, replace with:
PUDR*(check_ahead != /K28.5/D/K28.5/D/S)

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.7** *P* **388** *L* **8** # **813**

Lynskey, Eric UNH-IOL

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

This comment is against Figure 65-9. The XMIT_S_FEC_x states need to be modified for the new S_FEC. When the check_ahead function sees the /K28.5/D/K28.5/D/S/, the two /D/ codes need to be replaced with /D6.4/.

SuggestedRemedy

XMIT_S_FEC_1 state should have following action: ftx_code-group <= tx_code-group
XMIT_S_FEC_2 should have following action: ftx_code-group <= /D6.4/
Need to add XMIT_S_FEC_3 and XMIT_S_FEC_4 that are identical to XMIT_S_FEC_1 and XMIT_S_FEC_2, respectively. The exit condition from XMIT_S_FEC_4 to XMIT_ENCODE only needs to be PUDR since you already know it's an /S/.

Proposed Response *Response Status* **C**

ACCEPT.

Does this mean that the additional state requested in comment #814 should be called XMIT_S_FEC_5?

Cl **65** *SC* **65.2.4.3.8** *P* **389** *L* **26** # **832**

Lynskey, Eric UNH-IOL

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

It seems like the COMMA_DETECT_5 state is redundant, in that all of it's functionality is handled in the COMMA_DETECT_1234 state.

SuggestedRemedy

Delete COMMA_DETECT_5 state
Rename COMMA_DETECT_1234 to COMMA_DETECT_12345
The exit conditions from COMMA_DETECT_12345 will be to ACQUIRE_SYNC_1234 on PUDI([/D/)*loop_count!=5, and to SYNC_ACQUIRED on PUDI([/D/])*loop_count=5. In the ACQUIRE_SYNC_1234 state, the exit condition into COMMA_DETECT_5 goes away and remove the loop_count!=4 in the arc back to COMMA_DETECT_12345.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **65.2.4.3.8** *P* **389** *L* **44** # **835**

Lynskey, Eric UNH-IOL

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

The Reed Solomon code being implemented has the ability to correct 8 bits in any given 239-byte block. We should allow for up to 8 errors to occur in the receive byte alignment process, since that is what we can correct up to.

SuggestedRemedy

Change diagram to reflect that 8 errors can be tolerated. Change SYNC_ACQUIRED state names to 1THRU8 and 1ATHRU8A. Exit conditions become *loop_count=8.

Proposed Response *Response Status* **C**

ACCEPT.

RS cleans up 8 symbols of 239 symbols.

Cl **65** *SC* **65.2.4.3.8** *P* **389** *L* **46** # **833**

Lynskey, Eric UNH-IOL

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

This is a comment against Figure 65-10. Currently, there is no use of good_cgs in the state diagram. In previous sync state diagrams from Clause 36 and 48 the good_cgs count kept the device in the SYNC_ACQUIRED_A states for an additional 2 PUDIs.

SuggestedRemedy

Add an arc that loops back into the SYNC_ACQUIRED_1ATHRU7A on the condition cggood*good_cgs!=3. On the two exit conditions that have a cggood, add the term *good_cgs=3.

OR

Remove all references to good_cgs in the state diagram and text.

Proposed Response *Response Status* **C**

ACCEPT.

I think your first option is the most appropriate.

Cl **65** *SC* **65.2.5.2.1** *P* **171** *L* **46** # **99105**

Brown, Benjamin AMCC

Comment Type **T** *Comment Status* **A** *D1.1 #385*

It is customary to provide a reference (Clause 3's MAC CRC) or a shift register implementation (Clause 49's scrambler & descrambler) when specifying a polynomial

SuggestedRemedy

Add an implementation shift register figure to show how the preamble bits get passed through and the CRC-8 gets generated.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Attempt to create a figure based on suzuki_2_0901.pdf, slide 9, referencing an ITU document.

Comment from old database, closed in D1.1

Cl **65** *SC* **65.3.1** *P* **391** *L* **14** # **976**

Yokomoto, Tetsuya Japan

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

Spelling error: "aquisition"

SuggestedRemedy

Change to "acquisition".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **65** *SC* **Figure 65-6** *P* **385** *L* **1** # **361**

Kawaguchi, Kazuho Oki Electric Industry c

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

In figure 65-6 the output of packet boundary detector ,which is the FEC packet boundary symbols are extracted from transmit data, and multiplexed by selector with packet frame and FEC parity octet. However, I think that the output of packet boundary detector should be multiplexed with the output of 8B/10B Encoder block, because the FEC packet boundary symbols are constructed from 10B code-group.

SuggestedRemedy

The fig.65-6 should be revised so that the output of packet boundary detector is multiplexed with the output of 8B/10B Encoder block under the 8B/10B Encoder block.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

I think the output of the Packet Boundary Detector is used to control the selector, not necessarily as another data path. I could be convinced otherwise but this is my opinion.

Would it be more clear if this arrow went into the right side of the selector rather than the top?

Cl **66** *SC* **66** *P* **393** *L* **1** # **882**

Daines, Kevin World Wide Packets

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

Extra word in clause title.

SuggestedRemedy

Change to read "System considerations for Ethernet subscriber access networks"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **66** *SC* **66.1** *P* **394** *L* **15** # **885**

Daines, Kevin World Wide Packets

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

Extra word.

SuggestedRemedy

Remove 2nd "with" from last sentence of paragraph.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **66** *SC* **66.1** *P* **394** *L* **3** # **883**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Extra word.

SuggestedRemedy
Change to read "This clause provides information on building Ethernet subscriber access networks, also referred to as ..."

Proposed Response *Response Status* **C**
ACCEPT.

Cl **66** *SC* **66.1** *P* **394** *L* **41** # **941**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
Both the rate and reach for the two copper PHYs may vary.

The nominal rate should be quoted for the nominal reach.

SuggestedRemedy
In Table 66-1

Change the rate column for 10PASS-T to "10 (nominal)"
Change the span column for 10PASS-T to "0.75 (nominal)"

Change the rate column for 2BASE-T to "2 (nominal)"
Change the span column for 2BASE-T to "2.7 (nominal)"

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Will indicate this via a footnote

Cl **66** *SC* **66.1** *P* **394** *L* **7** # **884**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
Plural

SuggestedRemedy
Change "in networks of one or multiple EFM media type" to "in networks of one or multiple EFM media type(s)".

Proposed Response *Response Status* **C**
ACCEPT.

Cl **66** *SC* **66.4** *P* **395** *L* **28** # **942**
Barrass, Hugh Cisco Systems

Comment Type **T** *Comment Status* **A**
Some mention of spectral compatibility for subscriber access copper is needed.

SuggestedRemedy
Add a new subclause (after 66.4):

66.5 Deployment restrictions for subscriber access copper

10PASS-T and 2BASE-TL PHYs have been specified to allow deployment on public access networks, however many local regulations apply to such networks. It is important that systems are designed and configured to comply with all appropriate regulatory, governmental and regional requirements. Refer to Annex 62A (10PASS-T) and Annex 63A (2PASS-TL) for further information regarding configuration profiles.

Proposed Response *Response Status* **C**
ACCEPT.

Cl **66** *SC* **66.5** *P* **395** *L* **30** # **886**
Daines, Kevin World Wide Packets

Comment Type **E** *Comment Status* **A**
System consideration candidate: Ideally, one would not set "OAM Unidirectional Enable" (Clause 22 PHY management register bit 1.7) without an OAM sublayer present and enabled. If the bit was sent _without_ an OAM sublayer either present or enabled, all types of traffic would be allowed to traverse the one-way link. This would break some L2 protocols at least.

SuggestedRemedy
Add OAM as a sub-clause. This sub-clause could become the repository for OAM-related system considerations like the one suggested in the comment.

If the chief editor agrees, the OAM editor will supply needed text.

Proposed Response *Response Status* **C**
ACCEPT IN PRINCIPLE.

Please provide text to be reviewed by the group.

Cl **66A** *SC* **66A.2** *P* **460** *L* **8** # **99208**

Thatcher, Jonathan World Wide Packets

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

Extended temperature support for [100,1000]BASE-[LX10,BX10-U,BX10D] is mandatory.

Temperature range must be -40 to +85 degrees C. It is critical that our optical specifications be consistent with this range.

It is not clear that this information should be part of C59 / C60. There appears to be no tie between these clauses.

SuggestedRemedy

Add these specifications to 64A.
Clarify document structure and add references as needed.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment has been resolved by the motion of Scott Simon.

Text that reflects the motion will be incorporated in the next draft.

Cl **66A** *SC* **66A.2.1** *P* **416** *L* **7** # **380**

Dawe, Piers Agilent

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

Restating the obvious: 802.3 doesn't do environmental specs, including temperature specs. An informative annex does not contain 'Explicit requirements'

SuggestedRemedy

Please remove mention of 'Explicit requirements'.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment has been resolved by the motion of Scott Simon.

Text that reflects the motion will be incorporated in the next draft.

Cl **66A** *SC* **66A.2.1** *P* **416** *L* **7** # **620**

Radcliffe, Jerry Hatteras Networks

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

There is a statement that explicit temperature ranges are given. This is in conflict with the objective to write an informative appendix. In general, temperature does not affect interoperability, and is therefore out of scope. The maximum operational temperatures have been considered in the design of the optical specifications. It is this consideration that constitutes the extended temperature support required by the objective.

An informative appendix to document the temperature assumptions is all that is needed.

SuggestedRemedy

Adopt radcliffe_optics_1_0303.pdf, or other text that treats temperature as informative, as draft text for this appendix.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The text will be changed based on the resolution of other temperature comments

Cl **66A** *SC* **66A.2.1** *P* **458** *L* **7** # **99209**

Dawe, Piers Agilent

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

802.3 doesn't do temperature specs. They are out of scope.

Note comment # 565 to D1.1.

SuggestedRemedy

Delete 'Explicit requirements for the operating temperature range are given for 1000BASE-LX10.' Change 'Other values' to 'Specific requirements and values'.

If this section is expanded, make the distinction between the temperature of the terminals (could be inside or outside) and of the outside plant (cabling) itself - outside by definition, but temperature range varies by geography.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment has been resolved by the motion of Scott Simon.

Text that reflects the motion will be incorporated in the next draft.