Cl **00** *SC* *P* *L* # **527**

Thompson, Geoffrey Nortel Networks

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

Regarding response to my D2.0 comment 952
I consider the rejection to be non-responsive in the question as to what consititutes the "non-peer proposals". The answer to this is obvious to all informed participants in the 802.3 WG. Further, additional detail was provided in my D2.0 comment #975 as well as (for example) the text which sets this forth:
30.5.1.1.15 aPhySide
ATTRIBUTE
APPROPRIATE SYNTAX:
An ENUMERATED value that has one of the following entries:
subscriber subscriber mode of operation
office office mode of operation

SuggestedRemedy

Implement my original requests

Proposed Response *Response Status* **U**

REJECT.

This issue was previously discussed and voted on for D2.0. Below is some additional text to substantiate the previous response.

The commenter refers to a behavior of a physical layer to justify the claim that IEEE Draft P802.3ah/D2.1 contains "non-peer" proposals. This is misleading. IEEE Std 802.3 contains numerous precedents for physical layers that have different characteristics at each end of the link. See for instance the MDI and MDI-X port appearance in Clause 14. As previously asserted in the response to comment 975 from D2.0:

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

Cl **22** *SC* **22.2.4.1.12** *P* **19** *L* **9** # **516**

Thompson, Geoffrey Nortel Networks

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

I am having great difficulty reviewing the changes in the draft.
The version labeled 8023ahD2_1_DIFF.pdf seems to not show the complete differences. In particular in this clause the deleted text is not shown. This makes it exceedingly difficult to track the changes put into the text. It also makes it difficult to determine what is in scope for commenting.

SuggestedRemedy

Show all changes between drafts in underline blue for inserts and blue strikeout for deletions. Black stikeouot and underline would be reservered for the changes to be made against 802.3.

Proposed Response *Response Status* **U**

REJECT.

Removing all deleted text is consistent with prior projects (10G). There are no plans to show deleted text in future drafts.

Cl **22** *SC* **22.2.4.2.8** *P* **19** *L* **36** # **518**

Thompson, Geoffrey Nortel Networks

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

Bit 1.7 label was changed from "Unidirectional OAM Ability" in D2.0 to "Unidirectional Ability" in D2.1.

I object to the change.
I object to the fact that the change was not labeled as a change.

This is not a satisfactory resolution to my D2.0 comment #966

SuggestedRemedy

Show all changes between drafts as changes.
Undo this particular change.
Implement the original remedy in D2.0 #966

Proposed Response *Response Status* **U**

REJECT.

This comment is a reiteration of comment 966 from D2.0 and is rejected for the same reasons.

Cl **22** *SC* **22.2.4.3** *P* **20** *L* **24** # **517**

Thompson, Geoffrey — Nortel Networks

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

Bit 1.7 label was changed from "Unidirectional OAM Ability" in D2.0 to "Unidirectional Ability" in D2.1.

I object to the change.
I object to the fact that the change was not labeled as a change

SuggestedRemedy

Show all changes between drafts as changes.
Undo this particular change.

Proposed Response *Response Status* **U**

REJECT.

This comment is a reiteration of comment 966 from D2.0 and is rejected for the same reasons. The change doesn't show up since there is only deleted text and deleted text differences are noted.

Cl **45** *SC* **45.2.1.6** *P* **71** *L* **1** # **488**

Booth, Brad — Intel

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

Duplicate table number. This clause really needs to be properly numbered and proper editing instructions should be inserted as there is nothing to indicate the correct numbering of tables and subclauses (and possibly figures).

SuggestedRemedy

I know I commented about this in D2.0, but considering that there is a duplicate table number in D2.1, I believe that this highlights the complexity of the problem. Considering that there will be an addition of subclauses and renumbering of tables and figures required, plus all the required editing instructions, I believe that it would be in the Task Force's best interest to address this issue now. Delaying until Sponsor ballot is likely to make Clause 45 the tall pole in the tent.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

The editor will repair the table numbers and editing instructions as appropriate.

Cl **56** *SC* **56.1** *P* **158** *L* **49-54** # **62**

Shimon Muller — Sun Microsystems, Inc

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

This paragraph strongly implies that half-duplex operation in the MAC is an absolute requirement for 10PASS-TS and 2BASE-TL. Also, it does not adequately address the new requirement for half-duplex operation in the MAC for EPONs.

SuggestedRemedy

Change the paragraph to read as follows:
"An important characteristic of EFM is that only full duplex links are supported. The timing constraints of the CSMA/CD protocol make it impractical to build subscriber access networks of reasonable extent. To perform MAC-PCS rate matching for 10PASS-TS and 2BASE-TL, the MAC may be configured in the half duplex mode to enable the use of carrier sense by the PCS (Clause 61) to defer transmission by the MAC. Also, for P2MP network topologies the MAC must be configured in the half duplex mode in order to be able to enforce the required minimum inter-packet gap (IPG) on the medium. All the PHYs defined for EFM perform simultaneous transmission and reception of frames, allowing for full duplex communication at the MAC sublayer to be accomplished by the rapid exchange of frames."

Proposed Response *Response Status* **U**

REJECT.

No change to be made on the Cu section. Clause 61 does not make a requirement on the MAC. It assumes half-duplex but does not preclude full duplex operation.

On P2MP: The duplex of P2MP was changed back to full duplex so there is no issue there.

Cl **60** *SC* **60.4.1** *P* **292** *L* **40** # **426**

Bemmel, Vincent — Alloptic

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

Table 60-5
Extinction ration (min) 6 dB is too low

SuggestedRemedy

Change to 8.5 dB

Proposed Response *Response Status* **U**

REJECT. The comment is made against material that was previously approved and is unchanged in this draft.

Cl **60** *SC* **60.4.1** *P* **293** *L* **11** # **534**

Brand, Richard
Nortel Networks

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

I agree with Meir (comment # 858) that these values are too high. Ref the GPON doc G.984.3 that has just been consented in the ITU with support from the optical vendors like Zonu.

SuggestedRemedy

Proposed Response *Response Status* **U**

REJECT.

This comment is identical to #858 of D2.0 which was rejected.

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

Cl **61** *SC* **61.1.4.1.1** *P* **320, 321** *L* **48-51, 1-3** # **68**

Shimon Muller
Sun Microsystems, Inc

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

The main problem that I have with this subclause is that it does not adequately address the issue of how MAC-PHY rate matching is supported in implementations that have MACs that are not capable of half duplex operation. Since half duplex operation is no longer mandatory for the Ethernet MAC, it is important to provide the necessary guidance to implementors that chose to implement their MAC without this capability. There are some other minor problems with the text in this subclause, primarily related to its structure and style (see SuggestedRemedy).

SuggestedRemedy

Change the text in subclause 61.1.4.1.1 to read as follows:
"The 10PASS-TS and 2BASE-TL PCS is specified to work with a 100Mb/s MAC operating in both the half duplex and full duplex modes, using the MII as defined in Clause 22. Depending on the MAC's capabilities the Rate Matching function is defined as follows:

a) A MAC that supports half duplex operation is configured for the half duplex mode, and the PCS matches the MAC's data rate to that of the medium using the deference process as defined in Clause 4.

Prior to transmission, the MAC checks CRS and does not transmit another frame as long as CRS is asserted. In order to prevent its buffer from overflowing, the PCS keeps CRS asserted until it has enough space to accept the next frame from the MAC. Once CRS is deasserted, the MAC sends the next frame to the PCS at the rate of 100Mb/s. The MAC-PHY Rate Matching function strips the Preamble and SFD fields from the MAC frame, and forwards the resulting data frame to the PMI Aggregation function or to the TPS-TC sublayer. The PCS always forces the COL signal to logic zero.

On receive, the PCS prepends the Preamble and SFD fields to the data frame received from the medium, and sends it to the MAC at the rate of 100Mb/s.

It is important to note that Clause 4 does not prohibit the MAC from simultaneously receiving and transmitting frames when it is configured for half duplex operation. However, it is recognized that some older MAC implementations may not be capable of doing that. In order to allow for interoperability with these MACs, the PCS has an operating mode where the MAC's transmission is deferred using CRS when received data is sent from the PHY to the MAC. This gives receive frames priority over transmit frames, to ensure that the receive buffer does not overflow. This mode of operation is defined in Figure 61-8.

The MAC-PHY Rate Matching function may cause excessive deferrals to be counted in the excessive deferral counter (see 30.3.1.1.20).

The precise definition of the MAC-PHY Rate Matching function is provided in subclause 61.2.1.

b) A MAC that does not support half duplex operation may be configured for the full duplex mode, and the rate matching function can be accomplished by using the IFS Stretch Mode as defined in Clause 4. In this mode of operation, the MAC lowers it own average data rate (with frame granularity) by extending the minimum inter-frame gap (IPG) with a number of octets that is proportional to the size of the previously transmitted frame, including the

Preamble.

The IFS Stretch Mode requires that a management entity provide a parameter (ifsStretchRatio) which is programmed into the MAC. This parameter determines the number of octets in a frame that require one octet of IPG extension, and its value is determined using the following formula:

ifsStretchRatio = PHY_Speed / (MAC_Speed - PHY_Speed)

The precise definition of the MAC-PHY Rate Matching function using the IFS Stretch Mode is provided in subclauses 4.2.7.2 and 4.2.8.

Note---For the purposes of this specification it is recommended that implementors consider the inverse value of the ifsStretchRatio parameter, namely the number of IPG extension octets required for one octet in a frame, including the Preamble.

Note---If at any time the MAC is configured such that its average data rate is faster than the data rate of the PHY, the PHY's data buffer may overflow and it's behavior is undefined.

It is also important to note that the two mechanisms for the MAC-PHY Rate Matching function described above are fully compatible. In other words, implementations that use a PHY described in a) will interoperate with a MAC described in b)."

Proposed Response *Response Status* **U**

REJECT.
The current method for MAC-PHY Rate Matching works with existing 100 Mb/s MACs. The specification of the PCS does not preclude the use of IPG stretching with MACs that support this feature. The existing text recognizes that IPG stretch may be used for MAC-PHY Rate Matching (see NOTE).

Cl **61** *SC* **61.2.1.3.4** *P* **329** *L* **22-54** # **74**

Shimon Muller Sun Microsystems, Inc

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

This state machine is more complicated than necessary.
I would like to respectfully suggest the following simplifications:
1. The only thing the crs_and_tx_en_infer_col variable does is delay the setting of crs_tx to true until TX_EN becomes false only for "some cases" (whatever they might be). However, there is no harm in ALWAYS having this delay. The MAC only "looks" at CRS after it finished transmitting the frame. Also, keep in mind that all state machine transitions and actions are immediate and instantaneous (i.e. there is no clock or other time delay involved).
2. The "IF" statement in state TX_BUFFER_NOT_EMPTY is not needed. If tx_buffer_available is true when TX_EN becomes false, a direct transition can be made to state IDLE.

SuggestedRemedy

1. Delete all actions in state TX_EN_ACTIVE.
2. Delete the "IF" statement in state TX_BUFFER_NOT_EMPTY. The action in this state becomes: crs_tx <= TRUE
3. Add a transition from state TX_EN_ACTIVE to state IDLE with the following condition: (TX_EN = FALSE) * (tx_buffer_available = TRUE).
4. Change current condition for the transition from state TX_EN_ACTIVE to state TX_BUFFER_NOT_EMPTY to be:
(TX_EN = FALSE) * (tx_buffer_available = FALSE).

Proposed Response *Response Status* **U**

REJECT.
The current specification is correct; the suggested changes 2-4 seem to be cosmetic only. The actions in state TX_EN_ACTIVE must not be removed; if a reduced pin interface is not present it is necessary to drive crs_tx to avoid 'carrier sense errors' as defined in 30.3.1.1.13. 'carrier sense errors' do not occur with reduced pin interfaces as the interface drives crs when tx_en is active.

Cl **61** *SC* **Figure 61-18** *P* **350** *L* **1** # **93**

Brown, Benjamin Independent

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

Issues with the new state diagram...

SuggestedRemedy

k doesn't have a value assigned at initialization - give it one - this may require an additional state before "IDLE" that only assigns a value to k. I finally noticed this in the text at the end of the variables list but it would be helpful to have it in the state diagram

"transmitS" needs a variable definition

need transition conditions leaving IDLE_TO_DATA and ALL_DATA states, even if they are simply "UCT" (see 1.2.1 in 802.3-2002)

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
See resolution of comment #464.
Add UCT as exit condition for IDLE_TO_DATA.

Cl **61** *SC* **Figure 61-19** *P* **352** *L* **1** # **94**

Brown, Benjamin Independent

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

Issues with the new state diagram...

SuggestedRemedy

It is not obvious where this state diagram "begins" as there are no global inputs to any state the might imply "whenever this external condition occurs, always go back here and start over". I finally noticed this in the text at the end of the variables list but it would be helpful to have it in the state diagram.

k and B don't have values assigned at initialization - give them values. I finally noticed this in the text at the end of the variables list but it would be helpful to have it in the state diagram.

replace logical "AND" with * (see states CHECK_SYNC2 & CHECK_SYNC3)

Make the indent a little more obvious between "THEN" and "ELSE" and between "ELSE" and "ENDIF" in states to indicate that all of the assignments are to be executed based on the result of the IF evaluation. By the way, ENDIF is not part of typical IEEE 802.3 convention. If you want to use it, I'm afraid you'll have to define it (even though it is probably obvious to most). Alternatively, you could do something similar to state AN_ENABLE in Figure 37-6, 802.3-2002.

Spelling error within codingViolation definition "detectino"

TC_coding_error is not in alphabetical order with the other variables

Misspelling of "TX_synhronized" in variable list

"240" and "15" aren't typical values of type "octet". Are these decimal represenations of the typically hexadecimal (2-nibble) content?

Many states don't put spaces before and after the "<=" assignment symbol.

Proposed Response *Response Status* **U**

ACCEPT IN PRINCIPLE.
State diagram issues need to be discussed in detail in the Copper Sub Task Force.

replace logical "AND" with * (see states CHECK_SYNC2 & CHECK_SYNC3)

Editor to modify use of IF/ENDIF to comply with state diagram conventions.

Spelling error within codingViolation definition "detectino"

TC_coding_error is not in alphabetical order with the other variables

Misspelling of "TX_synhronized" in variable list

Cl **62** *SC* **62.3.4.1** *P* **416** *L* **4** # **473**

Behrooz Rezvani — Ikanos Communication

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

Attention is called to the following where the tone spacing for 10PASS-TS of 4 KHz and 8 KHz are discussed
- Data rate performance: 4 KHz and 8 KHz tone spacings are about the same;
- Delay: 8 KHz has half the delay compared to 4 KHz;
- Burst noise protection: 125 usec symbol is better suited to protect against some class of burst noise, specifically those that are greater than 125 usec and less than 250 usec;
- Power consumption: Because the 8 KHz tone spacing results in smaller geometry due to smaller block size (memory), better power efficiency is achieved;
- Support of 100/100 Mbps up to 300 meters: This would require an extension of bandwidth up to 25 MHz. Because the number of tones are now set to 4000, 8 KHz becomes mandatory.

Conclusion: Both 4 and 8 KHz tone spacing need to be supported in the 10Pass-TS EFM PHY.

SuggestedRemedy

(1) In SC 62.3.4.1, in the reference to Subsection 8.2.1.1 of MCM-VDSL, ADD: "Additionally, 8.625 kHz tone spacing shall be supported as specified in 62.4.4.2."
(2) In SC 62.4.4.2, line 8 ADD "Section 14" to the list.

Proposed Response *Response Status* **U**

REJECT.
Approve: 14 Don't Approve: 2 Abstain: 2

To be discussed with comment #327 (TR).
Support for 8.625 kHz tone spacing was removed from the draft in resolution of comments #622/D2.0 (TR), #621/D2.0 (TR), #824/D2.0 (T) and #1244/D2.0 (T), accepted by the Copper Sub Task Force at the Ancona meeting (Y:12, N:3, A:2).

This was done to avoid the following problems:
- The 8.625 kHz spacing provides only 50% of the cyclic extension provided by the 4.3125 kHz systems. This creates additional ISI and performance degradation for loops longer than 700 meters.
- Complications in interoperability of systems from different vendors: The two tone spacing will result in twice the number of interoperability tests to be performed (unless the standard clearly specifies when and where each one shall be used).
- Avoid unnecessary increased crosstalk when mixing systems of 4.3125 kHz and 8.625 kHz tone spacing in the same cable (this scenario is explained in Annex C of T1.424/Trial-Use)

There is no new information or change to the draft that would necessitate the introduction of 8.625 kHz tone spacing at this point.

Cl **62B** *SC* **3** *P* *L* # **416**

Bernard, Debbasch — GlobespanVirata

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

Based on the draft P802.3ah/D2.2, 12 dB Gap and 0 back-off tone in the band-transition areas, the transceiver compliant with the definition in clauses 62 and 62B cannot physically meet the bit rate objectives in test case #10 and #20 in table 62B-1.

SuggestedRemedy

Test cases #10 and #20 shall be deleted from the specification.

Proposed Response *Response Status* **U**

REJECT.

MOTION TO ADJOURN
Eckert/Langston
Approve: 8 Don't Approve: 2 Abstain: 1 PASS

MOTION TO POSTPONE AND MAKE A SPECIAL ORDER FOR 3PM.
(Eckert/Fanfoni)
Approved by voice vote.

MOTION TO ACCEPT COMMENT IN PRINCIPLE, ACCEPT RESULTS AS PRESENTED, INCLUDING THE TEST ASSUMPTIONS USED.
(Simon/Sorbara)
AMENDMENT: And direct the Editor to remove references to 100 Mbps Downstream, 75 Mbps Downstream and 35 Mbps Upstream from Annex 61A.
FRIENDLY

PROPOSED ACCEPT IN PRINCIPLE.
See resolution of comment #505.

Cl **62B** *SC* **3** *P* *L* # **417**

Bernard, Debbasch — GlobespanVirata

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

Based on the draft P802.3ah/D2.2, 12 dB Gap and 0 back-off tone in the band-transition areas, simulation results for test #'s 2, 19, 21, 25, 29, and 30 show test results that fall excessively short of the objectives specified in Table 62B-1.

SuggestedRemedy

We recommend that these test be either removed or modified such that the performance objective in each test is achievable considering reasonable implementation losses. We are planning to present our simulation results at the task force meeting.

Proposed Response *Response Status* **U**

REJECT.
See discussion of comment #416.

Cl **64** *SC* **64.2.2.2** *P* **454** *L* **11** # **89**

Brown, Benjamin Independent

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

Default values are being used inappropriately. The text from 36.2.5 states:

"The notation used in the state diagrams in this clause follow the conventions in 21.5. State diagram variables follow the conventions of 21.5.2 except when the variable has a default value. Variables in a state diagram with default values evaluate to the variable default in each state where the variable value is not explicitly set."

This implies a couple of things:

default values are only used on outputs of state machines
default values are only used for variables that change value implicitly, when the state diagram changes state

The state diagrams in Clause 64 violate both of these conventions.

SuggestedRemedy

Apply default values only to variables that are outputs of state diagrams
Apply default values only to variables that are not explicitly assigned when changing state.

Proposed Response *Response Status* **U**

REJECT.
Commenter agreed to submit a complete list of variables to be modified

Cl **64** *SC* **64.2.3.2** *P* **458** *L* **49** # **90**

Brown, Benjamin Independent

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

Variables are defined for each state machine they appear in (e.g., transmitEnable, transmitInProgress, transmitPending). This is confusing at least and is very prone to mistakes. The majority of these state diagrams have interdependencies and it is very confusing to look at one definition for an input to state diagram A and another definition for an output of state diagram B, when in reality these 2 variables are exactly the same thing.

SuggestedRemedy

Combine all of the Constants, Variables, Functions, Timers & Messages for the various state diagrams and reconcile the numerous copies of the individual variables.

Proposed Response *Response Status* **U**

REJECT.

Commenter agreed to submit a list of state diagrams whose definitions should be combined

Cl **65** *SC* **65.2.2.1** *P* **509** *L* **26** # **425**

Bemmel, Vincent Alloptic

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

At the ONU the laser_control signal is driven by the presence of non-Idle characters in a delay buffer. This approach was chosen as alternative to the signal from the Multi-point MAC control layer, that was crossing several layers (layering violation).

This approach seems to force the ONU to pay for the {T_ON + T_ACG + T_CDR} overhead more than once, i.e., it unnecessarily limits the available upstream bandwidth.

SuggestedRemedy

Don't rely on buffer length to drive laser_control

Proposed Response *Response Status* **U**

REJECT.
When buffer is empty laser is turned off, and on again once a symbol is transmitted. This means that there is no added inefficiency, as the line would have been idle for max(T_ON+T_AGC+T_CDR,T_OFF) which is the size of the buffer.

Cl **66** *SC* **66.3.2.1** *P* **538** *L* **28** # **400**

Dawe, Piers Agilent

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

So you want to allow a 10G DTE to transmit when it can't receive anything (RS receives LF). But if the RS receives RF, I think this means that the far DTE is saying it can't receive. So what's the point of transmitting then? We need a clear consensus and a reason before messing with rather expensive legacy silicon, so I've made this a TR to provoke a discussion.

SuggestedRemedy

Don't allow transmission of frames when receiving RF.

Proposed Response *Response Status* **U**

REJECT.

This comment is a reiteration of comment 1230 submitted by Pat Thaler against D2.0 and is rejected for the same reasons.