IEEE P802.3at Task Force

Power Via MDI Enhancements

Draft 1.0 Midspan Related Comment Resolution Proposal

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Rev 001

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Objectives

- Resolving comments #85, #232 ,#220 and #155

Comment #85

Cl **33** *SC* **32** *P* **18** *L* **32** # 85

Darshan, Yair — Microsemi Corporation

Comment Type **TR** *Comment Status* **D** *midspan*

Draft 1.0:
The note here is redundant due to the fact that the Midspan is required to meet 33.4.8 requirements in page 72.

SuggestedRemedy

Remove Note in lines 32-34

Proposed Response *Response Status* **O**

see 232

Proposed Remedy:

Accept In Principle.

Comment #232 analyze in details the redundant parts of the note and explains what should be added. See 232.

Comment #232

Cl 33 *SC* 33.2.1 *P* 18 *L* 32 # 232

Law, David 3Com

Comment Type TR *Comment Status* D *midspan*

This note states that 'Midspans implementing Alternative A are not allowed to interfere with the data performance of a 100BASE-TX link. While true it is also true that Midspans implementing Alternative B are also not allowed to interfere with the data performance of a 100BASE-TX link, nor for that matter are Midspans in general allowed to interfere with the data performance of the link. This note however makes that fact unclear by specifically mentioning on 100BASE-TX.

The note then goes on to state 'Refer to Clause 25 for 100BASE-TX compatibility requirements.' If Clause 25 is examined, and in particular its requirement to comply with TP-PMD, two sets of requirements will be found. Set [1] is the channel requirements and set [2] is the MDI requirements. Now I believe that the channel requirements will be met by the conformance requirements found in subclause 33.4.8 'Midspan PSE device additional requirements' and its subclauses so set [1] is covered.

This leaves set [2] and since they are related to the MDI they would not normally apply to the midspan PI. I do believe however in the case of 100BASE-TX there is a requirement that need to be carried over to the PI. This requirement is found in ANSI X3.263-1995 (TP-PMD) subclause 9.1.7 'Worst case droop of transformer' which states:

Baseline Wander tracking by the receiver is dependent on the worst case droop that can be produced by a transmitter. Droop is directly related to the Open Circuit Inductance (OCL) which varies with temperature, manufacturing tolerance, and bias current.
Worst case Baseline Wander Frames vary the transformer bias which causes the droop to change with data content. This variation must be accounted for by the receiver to track the Baseline Wander over long frames. Variation in inductance caused by bias of the transformer can be on the order of 2:1.
The minimum inductance measured at the transmit pins of the AOI shall be greater than or equal to 350 uH with any DC bias current between 0 mA and +8 mA injected as shown in figure 13.

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So in summary:

[a] The note is misleading as it seems to imply that the requirement for no interference only applies to Alternative A 100BASE-TX Midspans.
[b] There is no need to reference the entire Clause 25 as most of the requirements there are also found in subclause 33.4.8
[c] There is one normative requirement which should be carried across to Midspans that support 100BASE-TX, the 350uH requirement. This however is not made mandatory for 100BASE-TX Midspans since this is only a note.

SuggestedRemedy

Add the following new subclause under 33.4.8:

33.4.8.2 Worst case droop of transformer

The Midspan shall meet the inductance requirements of ANSI X3.263-1995 (TP-PMD) subclause 9.1.7 at the pins of the PI used as 100BASE-T transmit pins with the additional requirement that the minimum inductance be meet with any DC bias current between 0 mA and TBD mA.

Editors note to be removed before publication
The need for the additional requirement and related DC bias current range are the subject of discussion in the 350uH adhoc.

Proposed Response *Response Status* **O**

Comment #232

- Discussion on the suggested remedy

- The note is misleading as it seems to imply that the requirement for no interference only applies to Alternative A 100BASE-TX Midspans.
- There is no need to reference the entire Clause 25 as most of the requirements there are also found in sub clause 33.4.8 (Similar to comment #85)
- There is one normative requirement which should be carried across to Midspans that support 100BASE-TX, the 350uH requirement. This however is not made mandatory for 100BASE-TX Midspans since this is only a note. *On the other hand mandating 350uH as a requirement to guarantee performance at the TX output is repeating the same mistake that the 350uH ad hoc is trying to fix i.e. mandating implementation.*

  In addition, if the Midspan is using Inductance to keep the droop unaffected, the Midspan inductance may be affected by the signal source inductance therefore specifying inductance is system dependant.

  The objective is: When a Midspan is connected to a signal source which meets the inductance requirements as specified in ANSI X3.263-1995 (TP-PMD) subclause 9.1.7, the Midspan shall not increase the droop by more than TBD% at the pins of the PI used as 100BASE-T transmit pins with the additional requirement that the droop requirements will be met with any DC bias current between 0 mA and TBD mA.

  (The suggested wording objective is meeting the BER objectives which may affected by the droop regardless of the implementation being used)

- **Proposed Remedy (under discussion):**

Accept In Principle.

1) Delete the note in line 32 page 18.

2) Add the following new subclause under 33.4.8**:**

- 33.4.8.2 Worst case signal droop of Midspan signal path **(option 1)**

When a Midspan is connected to a signal source which meets the inductance requirements as specified in ANSI X3.263-1995 (TP-PMD) subclause 9.1.7, the Midspan shall not increase the droop by more than TBD% at the pins of the PI used as 100BASE-T transmit pins with the additional requirement that the droop requirements will be met with any DC bias current between 0 mA and TBD mA.

3) 350uH ad hoc to direct the editor were to find a definition for the droop or generate such and add to 3.4.8.2.

- 33.4.8.2 Channel Requirements from TBD Hz up to 1MHz **(option 2)**

When a Midspan connected to a signal source which meets the inductance requirements as specified in ANSI X3.263-1995 (TP-PMD) subclause 9.1.7, the Midspan gain/frequency shall meet the following TBD curve/Table at the pins of the PI used as 100BASE-T transmit pins with the additional requirement that the gain/frequency requirements will be met with any DC bias current between 0 mA and TBD mA.

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- 33.4.8.2 Channel Requirements from TBD Hz up to 1MHz **(option 3)**

When a Midspan connected to a signal source which meets the inductance requirements as specified in ANSI X3.263-1995 (TP-PMD) subclause 9.1.7, the Midspan shall not increase the BER by more then TBD% compared to a channel without a Midspan, at the pins of the PI used as 100BASE-T transmit pins with the additional requirement that the BER requirements will be met with any DC bias current between 0 mA and TBD mA.

Proposed remedy for #232 Drat D1.0

Accept In Principle.

1) Delete the note in line 32 page 18.

2) Add the following new subclause under 33.4.8**:**

33.4.8.2 Midspan signal path requirements

When a Midspan is connected to a signal source which meets the inductance requirements as specified in ANSI X3.263-1995 (TP-PMD) subclause 9.1.7, the Midspan shall meet the following Table TBD requirements at the pins of the PI used as 100BASE-T transmit pins with the additional requirement that the requirements will be met with any DC bias current between 0 mA and TBD mA.

The following test conditions shall be used for compliance of Table TBD:

Test conditions: TBD

Note: Midspan adhoc to work on the details

- Discussion

Comment #220

Cl **33** *SC* **4.8** *P* **72** *L* **52** # 220

Law, David 3Com

Comment Type **T** *Comment Status* **D** *midspan*

This subclause states that 'A Midspan PSE inserted into a channel shall provide continuity for the signal pairs.'. I'm not too sure what the term 'continuity' is mean to mean here - if it is an uninterrupted connection I don't think that is true anymore in the case of a Alternative B midspan which will have to use some form of DC blocking to ensure that power can only be sourced in one direction. That of course is covered on the next line which states 'Midspan PSE shall not provide DC continuity between the two sides of the segment for the pairs that inject power.'.

A?

SuggestedRemedy

I suspect that the best approach is simply to delete the text 'A Midspan PSE inserted into a channel shall provide continuity for the signal pairs.' now that Alternative B Midspans are permitted. The line before it still requires that the channel characteristics be maintained.

Proposed Response *Response Status* **O**

It is intended to point out that they must provide continuity for the data. Perhaps this is obvious and we should delete the text.
This is baseline text…

Propose to Accept.

Delete: 'A Midspan PSE inserted into a channel shall provide continuity for the signal pairs'

Comment #155

Cl **33** *SC* **Figure 33-4** *P* **19** *L* **54** # 155

Sanita', Gianluca Nokia Siemens Networ

Comment Type **E** *Comment Status* **D** *midspan*

Missing Midspam PSE, Altenative A.
It seems that this is not allowed from the standard.

SuggestedRemedy

Insert Midspam PSE, Alternative A figure

Proposed Response *Response Status* **O**

presently 10/100Mb alt A midspans are disallowed. With the allowance of 1000Mb alt A midspans that could conceivably be used in a 10 or 100Mb link, this needs reviewed. CE feels it needs allowed and yet another informative drawing added.

- Propose to Accept:

Accept.