8802-3/802.3 REVISION REQUEST 1175

DATE: 11th Nov, 2005
NAME: Marc Kimpe
COMPANY/AFFILIATION: ADTRAN Inc.
E-MAIL: marc.kimpe@adtran.com

REQUESTED REVISION:
STANDARD: IEEE std 802.3-2005
CLAUSE NUMBER: 57
CLAUSE TITLE: Operations, Administration and Maintenance (OAM)

PROPOSED REVISION TEXT:

a) sec. 57.4.2.2 Code Field
Modify Table 57-4 OAMPDU Codes by adding a new row:

Code	OAMPDU	Comment	Source
05	Per Loop OAM	Sends OAM frame on a particular loop of an aggregate	OAM Client

b) Add sec. 57.4.3.7 Per Loop OAMPDU

The Per Loop OAMPDU is used in conjunction with the optional PME aggregation functions described in sec. 61.2.2. It allows an OAMPDU to be sent on a specific PME of an aggregate. The loop ID variable contains the ID of the loop the OAM cell will be sent on. The loop ID of a given loop is a number between 0 and 31 and corresponds to the bit in the CPE PME_aggregate_register that corresponds to that loop. As the CO sets the aggregation during discovery, the CPE will return the value of its PME_Aggregate_register from which the CO can learn the CPE IDs of the various loops.

The Per Loop OAMPDU TLVs are summarized in the following table:

Per Loop Type	Per Loop TLV Name
0x00	End of TLV marker
0x01	Error Threshold reached
0x02	PME Aggregation -CO commands
0x03	PME Aggregation -CPE commands
0x04-0xFD	Reserved
0xFE	Organization Specific Per Loop TLV
0xFF	Reserved

The Per Loop Type are defined below

Octets	Field	Fixed Value
1	Error Threshold reached	0x01
1	Length	0x03
1	Bit 7:2 Reserved Bit 0: CRC errors alert	

A type 0x01 OAMPDU is sent When the code violation errors on that PME

exceed the code violation threshold (see 63.2.2.3).

Octets	Field	Fixed Value
1	PME Aggregation -CO commands	0x02
1	Length	0x03
1	Bit 7:5 Reserved	
	Bit 4: PME_aggregate Flag	
	Bit 3: PME_Available Flag	
	Bit 2: UnSet Flag	
	Bit 1: Set Flag	
	Bit 0: Get Flag	

Octets	Field	Fixed Value
1	PME Aggregation -CPE commands	0x03
1	Length	0x0B
1	Bit 2:8 Reserved	
	Bit 1: Unable to Comply	
4	PME_Available Register Content	
4	PME_Aggregate Register Content	

Once Discovery has occurred, the use of the OAMPDU types 0x02 and 0x03 allows dynamic reconfiguration of the links at the CPE end from the CO end. The CO shall ignore any type 0x02 Per Loop OAMPDU received from the CPE. The default value of the Flags defined in Bits 0-4 of the type 0x02 OAMPDU is zero.

The CO can issue a Get command to the CPE by setting the Get Flag in a 0x02 message to "1". The CPE must then reply with the 0x03 message and list the contents of both the PME_Available (Table 45-42c - 10P/2B PME Available register bits definition) and PME_Aggregate (Table 45-42d - 10P/2B PME Aggregate register bits definition) registers.

The CO can operate on both the CPE PME_Available and PME_Aggregate registers. A Set command is issued to the CPE by setting the Set Flag in a 0x03 message to "1". If the PME_Available flag is set to "1", then the CPE must set the bit corresponding to the PME on which the OAMPDU was received to "1" and reply with a 0x03 message containing the updated content of both PME_Available and PME_Aggregate registers. If the PME_Aggregate is set to "1", then the CPE must set the bit corresponding to the PME on which the OAMPDU was received to "1" and reply with a 0x03 message containing the updated content of both PME_Available and PME_Aggregate registers.

A similar process is performed when the "UnSet" flag is set to "1". However the CPE must zero the bit corresponding to the PME on which the OAMPDU was received and reply with a 0x03 message containing the content of both PME_Available and PME_Aggregate registers.

If, for some reason, the CPE is unable to comply, then it can set the Unable to Comply flag to "1" in a 0x03 reply along with the content of both PME_Available and PME_Aggregate registers.

RATIONALE FOR REVISION:

Althought this maintenance request could be considered on its own, the signalling part of per loop OAMPDUs is proposed in a companion maintenance request to clause 61.

Once applied to an aggregate, OAMPDUs do not have the same visibility to PMEs as when those PMEs are not part of an aggregate. Since 2BASE-TL or 10PASS-TS loops might be part of the access network and not easily accessible, the ability to do diagnostic on a per loop basis while not disrupting the other loops is valuable. The ability to do continuity testing on a per loop basis is also valuable.

Changes a and b define some functionality that can be associated with a per loop OAMPDU. One application is an alarm function. Another is the dynamicreassignement of loops after discovery. Taking a loop out of service and reassigning it currently involves restarting the loop in G.hs mode. This will cause a retrain and variable noise in the bundle. It is more elegant to solve a PME aggregate reassignement at layer 2 thanlayer 1. The current definition of the OAM frame does not allow an easy implementation of dynamic pair reassignement since there is no control over which pairs the request are sent on.

IMPACT ON EXISTING NETWORKS:

There is no impact on existing networks. Legacy equipment will ignore the new OAMPDU type.

Please attach supporting material, if any		
Submit to:- Bob Grow, Chair IEEE 802.3		
E-Mail: Bob.Grow@intel.com		
+------- For official 802.3 use ----------+		
| REV REQ NUMBER: 1175 |		
| DATE RECEIVED: 11th Nov, 2005 |		
| EDITORIAL/TECHNICAL |		
| ACCEPTED/DENIED |		
| BALLOT REQ'D YES/NO |		
| COMMENTS: 11-Nov-05 Ver: D1.0 Status: R |		
For information about this Revision Request see -		
http://www.ieee802.org/3/maint/requests/revision_history.html#REQ1175		