Discovery for 10G

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Background

1. 802.3av Task Force previously indicated support for a 10G discovery scheme (http://www.ieee802.org/3/av/public/2007_07/3av_0707_mandin_2.pdf)

   - Consequently, we assume that two new values shall be defined for the *Flags* field of the REGISTER_REQ PDU. The 10G/10G or 10G/1G ONU shall set the value of the *Flags* field in REGISTER_REQ to indicate the particular upstream and downstream that it requires as depicted in slides 7-9 of that presentation.

2. The Task Force indicated a preference for a new Discovery GATE format that would signal the rate (or rates) at which the OLT is capable of receiving data in a particular window.

10G_GATE MPCPDU

- Unique Opcode (00-07)
- Same format as legacy GATE PDU
- Distinct *SyncTime* for 10G

Destination address	6
Source address	6
Length/Type == 88-08	2
Opcode == *00-07*	2
Timestamp	4
Number or grants/Flags	1
Grant #1 Start time	0/4
Grant #1 Length	0/2
Grant #2 Start time	0/4
Grant #2 Length	0/2
Grant #3 Start time	0/4
Grant #3 Length	0/2
Grant #4 Start time	0/4
Grant #4 Length	0/2
SyncTime	0/2
Pad/Reserved	13-39

Summary of 10G Discovery Sequence

1. In a deployment supporting 10G/10G ONUs, the 10G downstream carries *10G_GATE* PDUs (*Discovery* and *Normal*) to describe grants pertaining to the 10G upstream.

2. The original *GATE* PDU (*Discovery* and *Normal*) is used on the 10G downstream to describe grants that pertain to the 1G upstream (if present).

    - OLT can include a particular grant window in both types of Discovery GATEs if it can actually receive at both rates

3. 1G Downstream always carries the original *GATE* PDU.

4. ONUs use the information from the appropriate discovery *GATE* - so they will attempt to register in a Discovery window where the OLT is receiving at the appropriate upstream rate.

Adjustments to State Diagrams

1. Figure 64-26 (OLT *GATE* transmit) and Figure 64-27 (ONU identification and processing of *GATE* PDUs):

   - Copy these diagrams into a 10G MPCP extensions clause
   - Change the *opcode* in the state diagrams from *GATE* to *10G_GATE*
   - no other changes needed

2. Figure 64-28 (ONU processing of grants) is applicable to 10G as is

Some alternative approaches

1. Instead of a new opcode for *10G_GATE*, it would be appealing to define additional *Flags* in the existing *GATE* MPCPDU

   - But there are no unused *Flags* bits
     - Even if a bit could be repurposed, an existing 1G ONU makes its determination based on the Discovery/Broadcast flag only

2. A “Universal GATE” MPCPDU could include grants for both 1G and 10G upstreams

   - No real benefit to doing this
   - Original GATE is still used for 1G ONUs anyway
   - Would require extensive modifications to figures 64-26, 64-27, 64-28 for no particular purpose

Straw Poll

I prefer to:

- Define a *10G_GATE* MPCP PDU ____
- Something different ____

Motion

A new MPCPDU 10G_GATE shall carry grants for the 10G upstream and be utilized by 10G ONUs as described in slides 3-5 of 3av_0709_mandin_1.pdf

Additional *Flags* shall be defined and utilized by 10G ONUs in REGISTER_REQ as described in slides 7-9 of 3av_0707_mandin_2.pdf

Y ___

N ___

A ___