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LIAISON STATEMENT

Source:	ITU-T SG15
Title:	10GLANPHY and G.709 transport issues
To:	IEEE 802.3
Approval:	Agreed to at SG15 meeting (Geneva, 16-27 May 2005)
For:	Action
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Over the past five years SG 15 has developed a number of ITU-T Recommendations defining the Optical Transport Network (OTN) architecture (G.872), OTN interface bit rates and multiplexing structure (G.709) and OTN equipment (G.798). The defined OTN bit rates have well defined payload capacity for each multiplexing level. For example, the ODU-2 rate has a maximum payload capacity of 9.995277Gbit/s. This was developed in the context of considering STM-N and emerging Ethernet interfaces as well as maximum line rates on 10G transoceanic line systems Currently, OTN equipment with interfaces complying to G.709 have been deployed and are operating in a number of operators networks.

Transporting 10GWAN (10GBASE-W) over the OTN presents no problem in terms of transporting this bit rate over the OTN networks as it was defined by the IEEE in cooperation with the ITU with SDH and OTN networks as the target transport medium.

It has been observed that due to various market factors, the 10GLANPHY has proven much more popular (for terrestrial applications) than the 10GWANPHY. As a result, a number of delegates to ITU-T SG 15 have advocated support for the ability to transport the 10GLANPHY (10GBASE-R) (where the bit rate is 10.3125Gbit/s +/- 100ppm) over the OTN. Furthermore, it was also requested in some contributions that the 10GLANPHY must be carried transparently (for security considerations and to support a number of proprietary schemes, i.e., use of the inter-frame gap and preamble information). This bit rate does not fit within the ODU-2 payload capacity, and it was considered unrealistic to transport it in ODU-3, which has a capacity of 40Gbit/s.

Consensus could not be reached in ITU-T SG 15 to document a unique mapping for transport of fully transparent (including preamble and inter-frame gap) 10G Ethernet LAN PHY. However, after careful consideration, ITU-T SG 15 WP3/15 asks that the IEEE consider whether market factors warrant developing a modified bit rate 10GLANPHY (Clause 51 IEEE802.3ae PMA sublayer) that fits within the ODU-2 payload capacity and be fully compatible with the existing 10GLANPHY hardware.

Preliminary technical analysis has suggested that this may be achieved by changing the current 10.3125Gbit/s PMA to 9.995277Gbit/s +/-20ppm (or lower frequency) by using a slower (or rate switchable) clock. The optimum solution for SG15 is the definition of the same bit rate as CBR 10G (9.953280 Gbit/s +/-20ppm) defined in G.709 section 3.22 as the required adaptation functions are already fully defined.

Full information on the bit rate requirements for payloads to be transported using OTN are specified in ITU-T G.709 section 7.3.

Also it is proposed that the IEEE and the ITU work together to ensure that future evolution of both the network equipment and the Ethernet interface bit rates (for both WAN and LAN applications) are aligned such that this situation can be avoided in the future.

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