Title: Liaison response to ITU-T SG15 LS-272
From: IEEE 802.1
For: Action
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Reference: COM 15 – LS 272 – E

Thank you for your liaison COM 15 – LS 272 – E. We appreciate your continued interest in IEEE Std 802.1AX™-2014 and thank for your thorough analysis, which provides an independent confirmation that the IEEE Std 802.1AX™-2014 specification meets its objectives.

By providing resiliency where there is a failure of either a link or a node (Portal System) of a network interface, Distributed Resilient Network Interconnect (DRNI) has met its design goals. However, in addition to handling single failure scenarios, DRNI also provides resiliency by passing conversations in many cases when multiple DRNI components fail simultaneously. DRNI is able to detect if a Portal System becomes isolated, i.e., it loses connection to its Neighbor Portal System(s) within a Portal, and conversations are passed by the DRNI if only an Intra-Portal Link fails. DRNI is also able to detect if Portal System isolation simultaneously happens in both Portals, when the main task is to prevent the formation of traffic loops, which is provided by DRNI with the extension of passing conversations as much as possible. In addition, DRNI detects if a Portal System is not able to relay traffic as a gateway; DRNI reacts to that in order to avoid traffic blackholing situations.

Handling multiple simultaneous failure events, e.g., involving failure of three or four independent components, was intentionally determined as being out of scope for DRNI. The failure scenarios presented in liaison COM 15 – LS 272 – E have been considered to be corner cases because they involve several simultaneous failure events and/or asymmetric failures, which should be handled by the technology specific control protocol within a protected subnetwork (the "network control protocol"). Nevertheless, even considering such scenarios and the restrictions given by the liaison with respect to the use of DRNI features, DRNI managed objects and variables can be configured or set, e.g., by the network control protocol, such that the desired operation is provided in each of the presented cases. Rather than detailing each case, we strongly encourage you to simply reference IEEE Std 802.1AX™-2014 as needed in your work since this is the preferred way to provide necessary context.

As you are aware, a key feature of DRNI is that it is technology agnostic; i.e., able to protect interconnected networks using different technologies, such as protecting the interconnection of an Ethernet domain with an MPLS domain. As a consequence, DRNI does not consider the unique characteristics of a network control protocol that, for example, may be unable to handle asymmetric failures. In this case however, handling of failures within a protected subnetwork is still considered to be the responsibility of the network control protocol and not that of the network interface protection protocol.

We appreciate the interest of ITU-T Q9/15 in IEEE Std 802.1AX™-2014, the new specification of Link Aggregation, which is already widely used at UNIs and NNIs. We encourage continued consideration by ITU-T Q9/15 of DRNI usage at UNIs and NNIs as DRNI was designed for the

protection of these interfaces and is directly applicable to the MDSP problem domain. As per ITU-T Q9/15 liaison letter COM 15 – LS 076 – E, we are pleased that ITU-T Q9/15 is not planning to specify new mechanisms that would overlap with the functionality provided by DRNI. From a broader perspective, we also would appreciate your support in avoiding the proliferation of standard specification variants addressing special "corner cases" when the standard specifications otherwise have the same/very similar primary objective.

IEEE 802.1 looks forward to maintain the good relationship with ITU-T Q9/15 and to further cooperation between our organizations.

IEEE 802.1 will be meeting next in Atlanta, Georgia, USA 18-21 January 2016.