ITU-T Study Group 15

Y.1731, G.8021, Ethernet Operation, Administration G Suppl. 53 and Maintenance (OAM)

- ITU-T G.8013/Y.1731 provides fault management mechanisms (aligned with and beyond those in IEEE Std 802.1Q) and performance monitoring mechanisms for user-plane OAM functionality in Ethernet networks, and supports both point-topoint and multipoint connectivity.
- ITU-T G.8021 specifies the functional components and methodology that should be used to specify the Ethernet transport network functionality (including Ethernet OAM) of network elements.
- ITU-T G Suppl. 53 provides an overview of Ethernet OAM performance monitoring



Example of maintenance entities under OAM per ITU-T G.8013/Y.1731

Overview of ITU-T G.8021 atomic model functions

1. ITU-T G.8013/Y.1731 – Operation, administration and maintenance (OAM) functions and mechanisms for Ethernetbased networks

Recommendation ITU-T G.8013/Y.1731 specifies mechanisms required to operate and maintain the network and service aspects of the (Recommendation ITU-T G.8010-identified) Ethernet layer network (ETH) layer. It also specifies the Ethernet OAM frame formats and syntax and semantics of OAM frame fields. The OAM mechanisms as described in this Recommendation apply to both point-topoint ETH connections and multipoint ETH connectivity including both multipoint tomultipoint and rooted-multipoint connections. The OAM mechanisms as described in this Recommendation are applicable to any environment independently of how the ETH layer is managed (e.g., using network management systems or operational support systems). The architectural basis for this Recommendation is the Ethernet specification in Recommendation ITU-T G.8010 which also accounts for Institute of Electrical and Electronics Engineers (IEEE) Standard (Std) 802.1Q and IEEE Std 802.3. The OAM functions of the server layer networks used by the Ethernet network and those of the layers above the ETH layer are out of the scope of this Recommendation. ITU-T has prepared Recommendation ITU-T G.8013/Y.1731 in cooperation with the IEEE Project 802.1ag on connectivity fault management. Since the IEEE work is now complete, this Recommendation contains amendments to fully align the final results and includes the appropriate normative references to IEEE documents. Moreover, further detailed work on the implementation details (i.e., the specification of the equipment functions) has been undertaken by ITU-T in Recommendation ITU-T G.8021.

2. ITU-T G.8021 – Characteristics of Ethernet transport network equipment functional blocks

Recommendation ITU-T G.8021 covers the functional requirements of Ethernet functionality within Ethernet transport equipment.

This Recommendation uses the specification methodology defined in Recommendation ITU-T G.806 in general for transport network equipment and is based on the architecture of Ethernet layer networks defined in Recommendation ITU-T G.8010, the interfaces for Ethernet transport networks defined in Recommendation ITU-T G.8012, and in support of services defined in Recommendation ITU-T G.8012, but not exclusively, this Recommendation provides processes for Ethernet OAM based on Recommendation ITU-T G.8013/Y.1731. Processes are also provided in support of

other mechanisms, including Ethernet linear and ring protection switching.

The description is generic and no particular physical partitioning of functions is implied. The input/output information flows associated with the functional blocks serve for defining the functions of the blocks and are considered to be conceptual, not physical.

The functionality defined in this Recommendation can be applied at user-tonetwork interfaces (UNIs) and network-tonetwork interfaces (NNIs) of the Ethernet transport network.

A set of atomic functions associated with the Ethernet signal transport may be combined in various ways to support a variety of Ethernet services

3. ITU-T G Suppl. 53 – Guidance for Ethernet OAM performance monitoring Supplement 53 to ITU-T G-series Recommendations provides an informative overview of Ethernet OAM performance monitoring. It informatively describes how Ethernet OAM performance measurements are processed, configured and managed as normatively described in Recommendations ITU-T G.8013, G.8021 and G.8051. It also introduces the modeling for Ethernet OAM performance monitoring as described in Recommendation ITU-T G.8052. In particular, it discusses the counting of Ethernet loss measurement frames.

For more information, please visit the ITU-T Study Group 15 website at: www.itu.int/go/tsg15