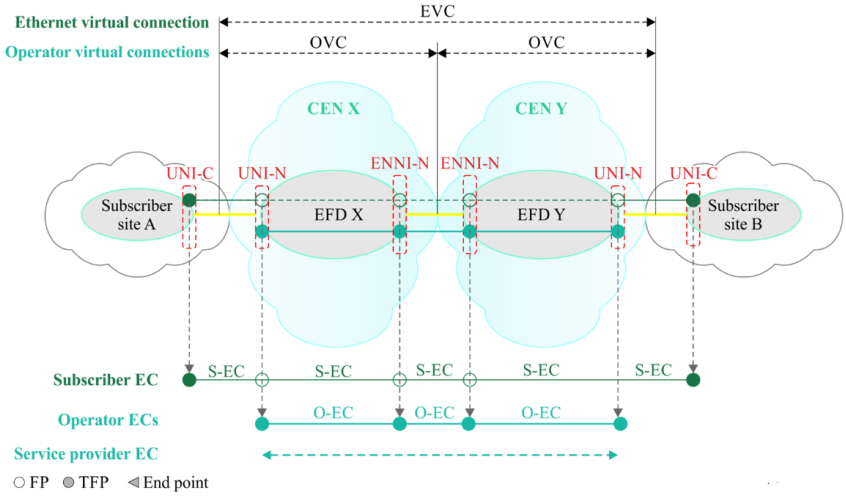
ITU-T Study Group 15

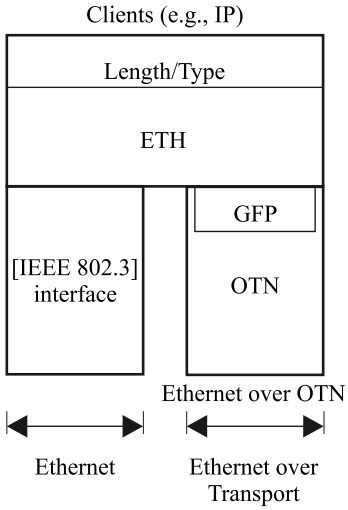
# G.8011, G.8012, G.8112 Ethernet service characteristics, and Ethernet & MPLS-TP interfaces

- ITU-T G.8011 establishes a framework, relying on Ethernet layer networks as modeled by ITU-T and MEF, to describe the characteristics of MEF standards-based Ethernet services created based on the introduced service definition, attributes, and operation, administration and maintenance.
- ITU-T G.8012 specifies the Ethernet user-to-network interface, the Ethernet network node interface and an Ethernet over transport interface for the latter while ITU-T G.8112 specifies equivalent constructs for the multi-protocol label switching transport profile layer network.




EFD: Ethernet flow domain; O-EC: OVC-Ethernet services layer connection; S-EC: subscriber-Ethernet services layer connection; TFP: termination flow point

**Base MEF architecture**




**Basic structure of Ethernet and EoT interfaces**

### 1. ITU-T G.8011 – Ethernet service characteristics

Recommendation ITU-T G.8011 establishes a framework to describe Ethernet services based on the documents of a non-profit industry forum of network, cloud and technology providers, the MEF Forum. The framework consists of a set of service definitions, service attributes and operation, administration and maintenance (OAM) for each Ethernet virtual connection (EVC), operator virtual connection (OVC), Ethernet services layer connection (EC), Ethernet user to network interface (UNI) and Ethernet external network-to-network interface (ENNI). The resulting services that can be described do not refer to a particular network technology implementation and are supported by ITU-T and MEF Ethernet layer architecture models.

### 2. ITU-T G.8012 – Ethernet UNI and Ethernet NNI

Recommendation ITU-T G.8012 specifies the Ethernet user-to-network interface (UNI) and the Ethernet network node interface (NNI) where the Ethernet UNI is formed by an Ethernet interface and the Ethernet NNI by an Ethernet interface or an Ethernet over transport interface. The Ethernet over transport (EoT) NNI uses the optical transport hierarchy server layer network. The detailed requirements applicable to these interfaces are specified in a number of ITU-T Recommendations, and in Institute of Electrical and Electronics Engineers (IEEE) standards (Stds) that are referenced.

This Recommendation defines the interfaces of the Ethernet transport network to be used within and between subnetworks of the Ethernet network, in terms of Ethernet transport hierarchy, formats for mapping and multiplexing client signals into Ethernet connections and formats for multiplexing Ethernet connection signals into Ethernet or non-Ethernet connection signals.

This Recommendation assumes but does not specify the Ethernet component and/or equipment models specified in Recommendation ITU-T G.8021 to support the Ethernet UNI and NNI.

This Recommendation limits the specification of the Ethernet UNI and NNI to Ethernet equipment types aligned with the bridge types specified in IEEE Std 802.1Q and supporting only the untagged, priority-tagged or tagged traffic units covered in Recommendation ITU-T G.8021.

### 3. ITU-T G.8112 – Interfaces for the MPLS transport profile layer network

Recommendation ITU-T G.8112 specifies the interfaces for the multi-protocol label switching transport profile (MPLS-TP) layer network, in particular the:

- Encapsulation of MPLS-TP client signals into the MPLS-TP characteristic information (MPLS-TP _CI) that will be present on MPLS-TP NNI links in the transport network;
- Encapsulation of MPLS-TP_CI into the MPLS-TP link frames that will be present on MPLS-TP NNI links in the transport network;
- MPLS-TP layer network within the transport network and associated MPLS-TP multiplexing;
- MPLS-TP nested connection monitoring per layer network level within the transport network;
- MPLS-TP OAM associated with nested connection monitoring in the transport network;
- Encapsulation of MPLS-TP control plane information.

The MPLS-TP network uses various server layer networks like optical transport network (OTN) and Ethernet media access control layer network. The detailed requirements are specified in a number of ITU-T Recommendations, American National Standards Institute standards, IEEE standards and Internet Engineering Task Force requests for comments, which are cited.

This Recommendation specifies point-to-point label-switched paths.

This Recommendation does not cover inter-operator control plane aspects of the MPLS-TP NNI.

This Recommendation provides a representation of the MPLS-TP technology using the methodologies that have been used for other transport technologies [e.g., OTN and Ethernet].

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