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MPLS Transport Profile User-to-Network and Network-to-Network Interfaces
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Abstract

The framework for MPLS in transport networks (RFC 5921) provides reference models for the MPLS Transport Profile (MPLS-TP) transport service interfaces, which are a User-to-Network Interface (UNI), and an MPLS-TP Network-to-Network Interface (NNI). This document updates those reference models to show detailed reference points for these interfaces, along with further clarification of the functional architecture of MPLS-TP at a UNI and NNI.
This document is a product of a joint Internet Engineering Task Force (IETF) / International Telecommunication Union Telecommunication Standardization Sector (ITU-T) effort to include an MPLS Transport Profile within the IETF MPLS and Pseudowire Emulation Edge-to-Edge (PWE3) architectures to support the capabilities and functionalities of a packet transport network as defined by the ITU-T.
This Informational Internet-Draft is aimed at achieving IETF Consensus before publication as an RFC and will be subject to an IETF Last Call. [RFC Editor, please remove this note before publication as an RFC and insert the correct Streams Boilerplate to indicate that the published RFC has IETF consensus.]

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1. Introduction

The framework for MPLS in transport networks [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.) provides reference models for the MPLS Transport Profile (MPLS-TP) transport service interfaces, which are a User-to-Network Interface (UNI), and an MPLS-TP Network-to-Network Interface (NNI). This document updates those reference models to show detailed reference points for these interfaces, along with further clarification of the functional architecture of MPLS-TP at a UNI and NNI.
This document is a product of a joint Internet Engineering Task Force (IETF) / International Telecommunication Union Telecommunication Standardization Sector (ITU-T) effort to include an MPLS Transport Profile within the IETF MPLS and PWE3 architectures to support the capabilities and functionalities of a packet transport network as defined by the ITU-T.

1.1. Updates to the MPLS-TP UNI and NNI

The transport service interfaces for MPLS-TP are defined in Section 3.4.3 of [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.). These definitions are illustrated by showing MPLS-TP PEs containing a UNI and an NNI. The figures illustrate the UNI and the NNI as a span. However, it is convention to illustrate these interfaces as reference points. Furthermore, in the case of a UNI, it is useful to illustrate the distribution of UNI functions between the Customer Edge (CE) side and the Provider Edge (PE) side of the UNI, i.e. the UNI-C (User-to-User Interface, Client side) and UNI-N (User-to-Network Interface, Network side), in order to show their relationship to one another.

This document provides updated illustrations of the MPLS-TP UNI and MPLS-TP NNI to show these additional details. These illustrations obsolete the corresponding ones in [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.). This document also defines additional terminology referenced in the illustrations. No other updates are made by this document.
Awareness of the Transport Service layer need exist only at PE nodes, and so only these nodes are illustrate in the figures. MPLS-TP Provider (P) nodes need have no awareness of this layer. Both PE and P nodes participate in the Transport Path layer. A PE terminates (i.e., is an LER with respect to) the transport paths it supports, and is responsible for multiplexing and demultiplexing of Transport Service Instance traffic over such transport paths.

1.2. Terminology and Abbreviations

The terminology and abbreviations of [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.) apply.
The following additional terminology is used in this document.

Term	Definition
CP	Control Plane
NNI	Network-to-Network Interface
TSI	Transport Service Instance
UNI	User-to-Network Interface
UNI-C	User-to-Network Interface, Client side
UNI-N	User-to-Network Interface, Network side

Transport Service Instance: A single logical point-to-point connection at the Transport Service layer between the ingress PE providing a packet transport service to a CE, and the corresponding egress PE to which the peer CE is attached.

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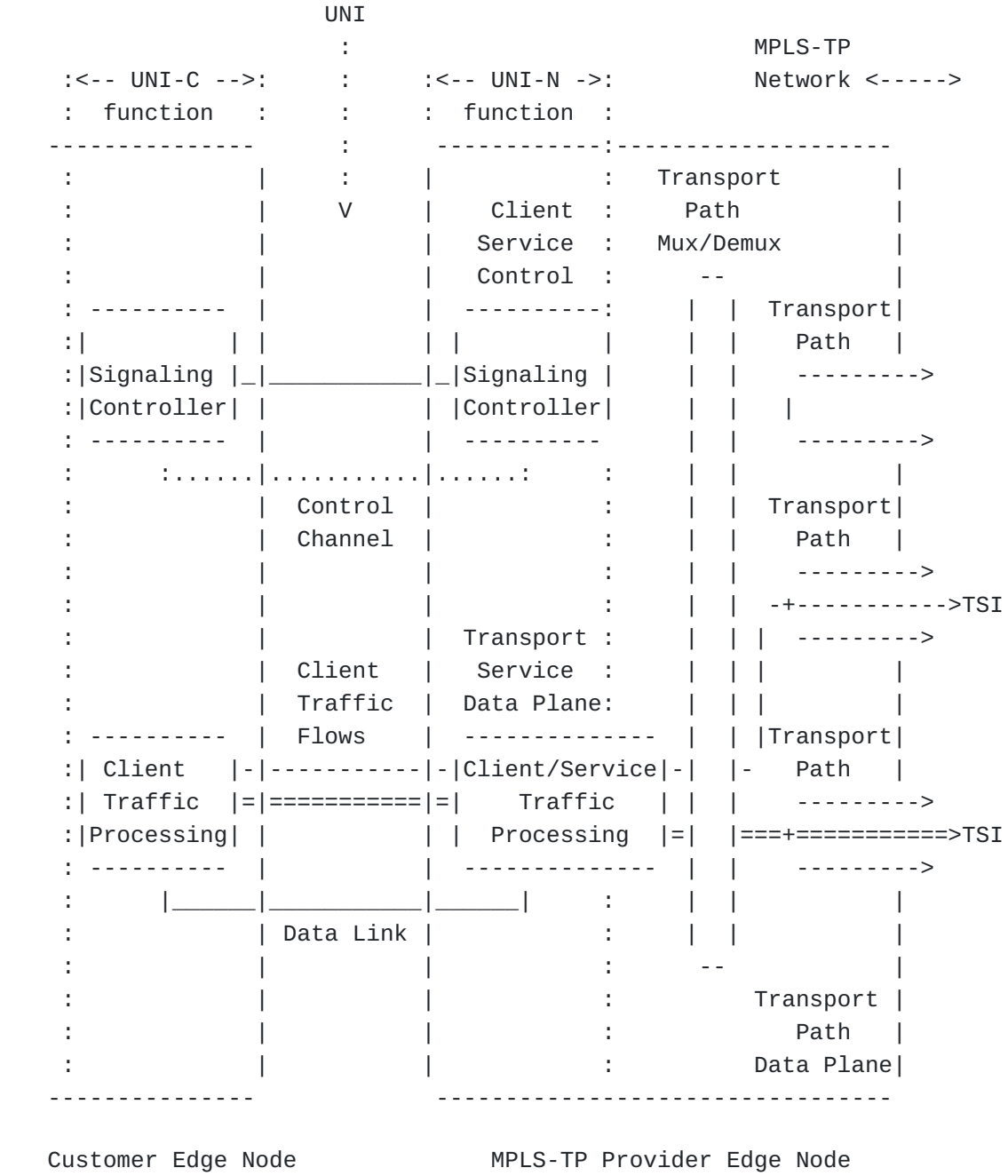
2. MPLS-TP User-to-Network Interface

The MPLS-TP User-to-Network Interface (UNI) is illustrated in Figure 1 (UNI Between CE Node and MPLS-TP PE Node). This figure obsoletes Figure 3 of [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.). Note

that the term MPLS-TP UNI is to be interpreted as a UNI to an MPLS-TP network and does not refer to the protocol transiting the UNI. The UNI for a particular client flow may involve signaling between the CE and PE. If signaling is used, it may traverse the same attachment circuit that supports the client flow.



Note: The client service control plane may be a control protocol belonging to the native service, or GMPLS.

Figure 1: UNI Between CE Node and MPLS-TP PE Node

3. MPLS-TP Network-to-Network Interface

The MPLS-TP Network-to-Network Interface (NNI) is illustrated in Figure 2 (NNI Between MPLS-TP PE Nodes). This figure obsoletes Figure 5 of [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.). The NNI for a particular Transport Service Instance may involve signaling between the two PEs. If signaling is used, it may traverse the same data-link that supports the service instance.

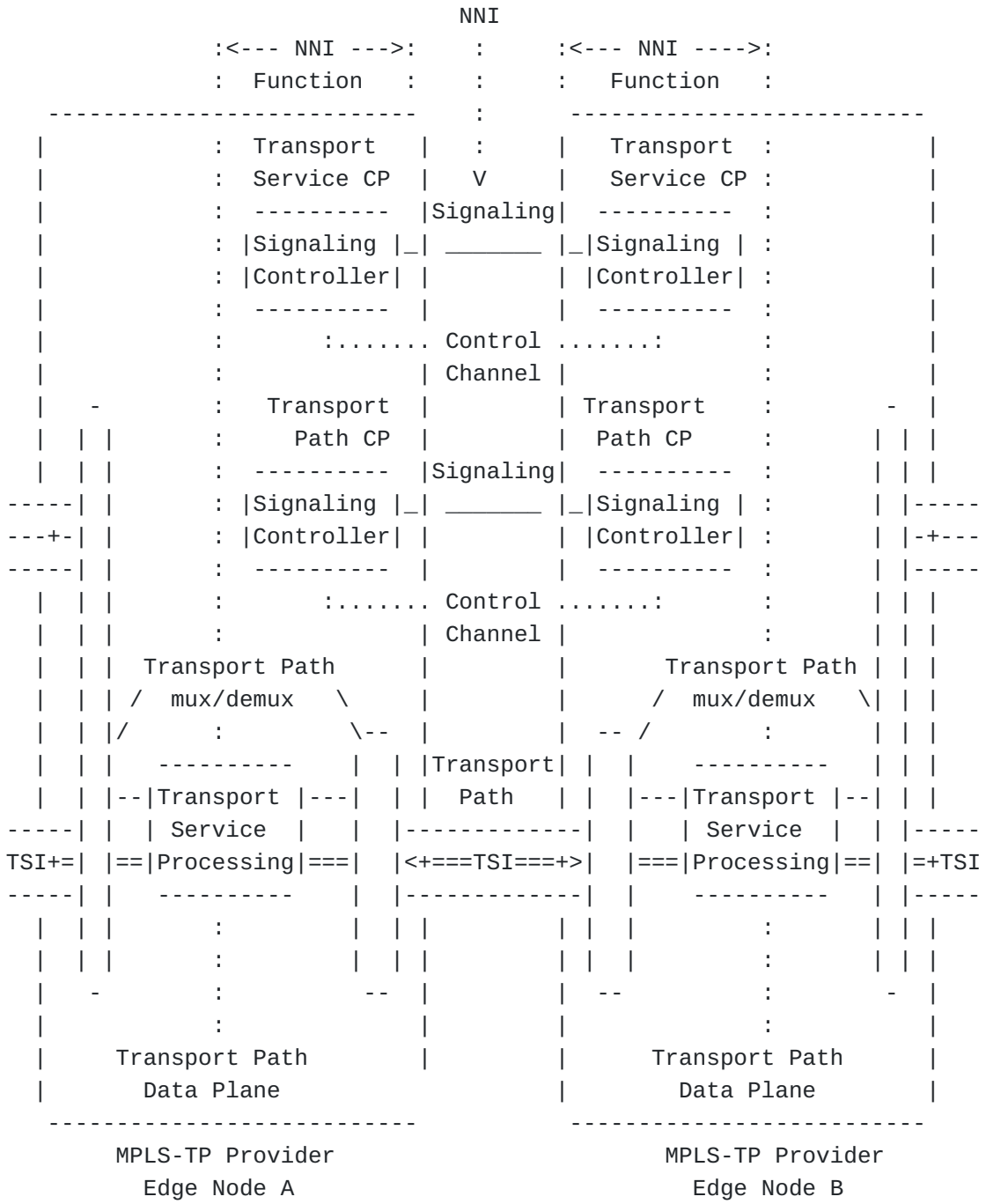


Figure 2: NNI Between MPLS-TP PE Nodes

4. IANA Considerations

This document makes no request of IANA.
Note to RFC Editor: this section may be removed on publication as an RFC.

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5. Security Considerations

The security considerations of [RFC5921] (Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” July 2010.) apply. The updated reference models provided by this document introduce no new security considerations.

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7. Normative References

[RFC5921]	Bocci, M., Bryant, S., Frost, D., Levrau, L., and L. Berger, “A Framework for MPLS in Transport Networks,” RFC 5921, July 2010 (TXT).

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