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

The framework for MPLS in transport networks [RFC5921] provides reference models for an MPLS-TP 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.]

Status of this Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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1. Introduction

The framework for MPLS in transport networks [RFC5921] provides reference models for an MPLS-TP 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.

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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]. 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 more conventional 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 CE side and the PE side of the UNI (the UNI-C and UNI-N).

This document provides updated illustrations of the MPLS-TP UNI and MPLS-TP NNI to show these additional details. These illustrations are intended to obsolete the corresponding ones in [RFC5921]. This document also defines additional terminology referenced in the illustrations. No other updates are proposed by this document.

1.2. Terminology and Abbreviations

The terminology and abbreviations of [RFC5921] apply.

The following additional terminology is used in this document.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP</td>
<td>Control Plane</td>
</tr>
<tr>
<td>NNI</td>
<td>Network-to-Network Interface</td>
</tr>
<tr>
<td>TSI</td>
<td>Transport Service Instance</td>
</tr>
<tr>
<td>UNI</td>
<td>User-to-Network Interface</td>
</tr>
<tr>
<td>UNI-C</td>
<td>User-to-Network Interface, Customer Edge side</td>
</tr>
<tr>
<td>UNI-N</td>
<td>User-to-Network Interface, PE Side</td>
</tr>
</tbody>
</table>
2. MPLS-TP User-to-Network Interface

The MPLS-TP User-Network interface (UNI) is illustrated in Figure 1. This figure obsoletes Figure 3 of [RFC5921]. Note that the term MPLS 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.
3. MPLS-TP Network-to-Network Interface

The MPLS-TP NNI is illustrated in Figure 2. This figure obsoletes Figure 5 of [RFC5921]. 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.

```
NNI
: ------> NNI ----->:    :     :<---- NNI ---->:
: Function     :     : Function     :
---------------------------    :      --------------------------
|            | Transport   |   :     |   Transport  :
|            | Service CP  | V     |   Service CP :
|            |  _______ | Signaling |  _______ :   | Signaling |
|            | Controller |     | Controller |
---------------------------    :      --------------------------
|            | : ........ Control ......:   : Channel |
|            | - : Transport     :     : Transport |
|            |    : Path CP   :     : Path CP |
|            |  _______ | Signaling |  _______ :   | Signaling |
|            | Controller|     : Controller |
---------------------------    :      --------------------------
|            | : ........ Control ......:   : Channel |
|            | - : Transport     :     : Transport |
|            |    : Path CP   :     : Path CP |
|            |  _______ | Signaling |  _______ :   | Signaling |
|            | Controller|     : Controller |
---------------------------    :      --------------------------
Transport Path                     Transport Path
/ mux/demux \                      / mux/demux \
/             \                      /             \
: -- :     :-- :\
|----| Transport | |----| Transport |
|----| Path CP   | |----| Path CP |
|----| Service | |----| Service |
TSI+= | Processing| |++++TSI++++ | |==|Processing|== |++++TSI
--- | ---- | --- | ---- | --- | ---- |
--- | ---- | --- | ---- | --- | ---- |
: :  : :  :  :  :
-- : Transport  :-- : Transport  :
|-----| Service |-----| Service|
:----| Data Plane |----| Data Plane |
---------- MPLS-TP Provider  |
Edge Node A                          |
---------- MPLS-TP Provider  |
Edge Node B                          |

TSI = Transport 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.

5. Security Considerations

The security considerations of RFC5921 apply. The updated reference models provided by this document introduce no new security considerations.

6. Acknowledgements

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- Eve Varma.
- Dieter Beller.
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- Stewart Bryant.
- Italo Busi.
- The participants of ITU-T Study Group 15.

7. Normative References


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