Analysis of Transport North Bound Interface Use Case 1  
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Abstract

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# Introduction

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## Feedbacks provided to the IETF Working Groups

It might be need to record here the feedbacks we have provided to the different drafts/WGs

## Assumptions

Summarize the assumptions that have been made during the analysis (Lou’s comment at IETF 98).

# Conventions used in this document

Summarize some conventions we are using in the JSON code examples.

Clarify that these examples are validated.

# High-level Overview

The use cases described are discussed in the context of the ACTN framework [Reference], which also describes the functional entities and methods for the coordination of resources across multiple domains, to provide end-to-end transport services. The specific ACTN functional components and interfaces include:

o Customer Network Controller (CNC);

o Multi-domain Service Coordinator (MDSC);

o Physical Network Controller (PNC).

o CMI - (CNC-MDSC Interface)

o MMI - (MDSC-MDSC Interface)

o MPI - (MDSC-PNC Interface)

Use Case 1 is described in [TNBI-UseCases] as a single-layer/single-domain scenario. This section provides a high-level overview of how IETF YANG models can be used to support these uses cases at the MPI between the Transport PNC and the MDSC.

Section 3.1 describes the topology abstraction provided to the MDSC by the Transport PNC at the MPI.

Section 3.2 describes how the difference services, defined in section XYZ of [TNBI-UseCases], can be requested to the Transport PNC by the MDSC at the MPI.

## Topology Abstraction

### ODU White Topology Abstraction

In case the Transport PNC exports to the MDSC a white topology, at the MPI there will be one TE Topology instance for the ODU layer (called "ODU Topology") containing one TE Node (called "ODU Node") for each physical node, as shown in Figure 2 below.

*<<Insert Figure>>*

1. White Topology Abstraction (ODU Topology)

As described in section XYZ of [TNBI-UseCases], it is assumed that the physical links between the physical nodes are pre-configured up to the OTU4 trail using mechanisms which are outside the scope of this document. The Transport PNC exports to the MDSC via the MPI, one TE Link (called "ODU Link") for each of this physical link.

Access links in Figure 2 are shown as ODU Links: the modeling of the access links for other access technologies is currently an open issue.

The "external-domain" container allows the MDSC to glue together the ODU Topology provided by the Transport PNC with the information provided by the IP PNC to know which access link is connected with each link/router in the IP domain (e.g., that C-R1 is connected with the access link terminating on S3-1-LTP in the ODU Topology).

## Service Configuration

### ODU Transit Service

In this case, the access links are configured as ODU Link, as described in section 3.1.1 above.

As described in section XYZ of [TNBI-UseCases], the MDSC needs to setup an ODU2 trail, supporting an IP link, between C-R1 and C-R3.

From the topology information described in section 3.1.1 above, the MDSC can know that C-R1 is attached to the access link terminating on S3-1-LTP in the ODU Topology and that C-R3 is attached to the access link terminating on S6-2-LTP in the ODU Topology.

Based on the assumption (to be added), MDSC would then request Transport PNC to setup an ODU2 (Transit Segment) Tunnel between S3-1 and S6-2 LTPs:

* Source and Destination TTP are not specified (since it is a Transit Tunnel)
* Ingress and egress points are indicated in the explicit-route-objects of the primary path:
  + The first element of the explicit-route-objects references the access link terminating on S3-1-LTP
  + Last element of the explicit-route-objects references the access link terminating on S6-2-LTP

*Add some text about the timeslot configuration at the access link*

The Transport PNC performs path computation and sets up the ODU2 cross-connections within the physical nodes S3, S5 and S6, as shown in section XYZ of [TNBI-UseCases].

The Transport PNC reports the status of the created ODU2 (Transit Segment) Tunnel and its path within the ODU Topology as shown in Figure 3 below:

*<<Insert Figure>>*

1. ODU2 Transit Tunnel

### OTN Client Private Line Service

To be added

### EPL over ODU Service

To be added

# Topology Abstraction: detailed JSON examples

## ODU White Topology Abstraction

Section 3.1.1 describes how the Transport PNC can provide a white topology abstraction to the MDSC via the MPI. Figure 2 is an example of such ODU Topology.

This section provides the detailed JSON code describing this ODU Topology, using the [TE-Topo] and [OTN-Topo] YANG models.

*JSON code to be prepared and added.*

# Service Configuration: detailed JSON examples

## ODU Transit Service

Section 3.2.1 describes how the MDSC can request a Transport PNC, via the MPI, to setup an ODU2 transit service over an ODU Topology described in section 3.1.1.

This section provides the detailed JSON code describing this ODU Topology, using the [TE-Tunnel] and [OTN-Tunnel] YANG models.

*<<JSON code to be added>>*

# Security Considerations

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<Add any security considerations>

# IANA Considerations

This document requires no IANA actions.

# Conclusions

<Add any conclusions>

# References

## Normative References

[TNBI-UseCase] Busi, I., King, D. et al, " Transport Northbound Interface Use Cases", draft-tnbidt-ccamp-transport-nbi-use-cases, work in progress.

## Informative References

[ONF TR-527] ONF Technical Recommendation TR-527, "Functional Requirements for Transport API", June 2016.

# Acknowledgments

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