

RSVP-TE Extensions to Exchange MPLS-TP Tunnel Numbers
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Abstract

The MPLS Transport Profile (MPLS-TP) identifiers document [[I-D.ietf-mpls-tp-identifiers](#)] introduce two tunnel numbers, A1-Tunnel_Num and Z9-Tunnel_Num, which allow a compact format for Maintenance Entity Point Identifier (MEP_ID). For some Operation, Administration and Maintenance (OAM) functions, such as Connectivity Verification (CV) [[I-D.ietf-mpls-tp-cc-cv-rdi](#)], source MEP_ID MUST be inserted in the OAM packets, so that the peer endpoint can compare the received and expected MEP_IDs to judge whether there is a mismatch, which means that the two MEP nodes need to pre-store each other's MEP_IDs.

The specification of setting up co-routed bidirectional LSP is described in the document [[RFC3473](#)], which does not introduce the locally configured tunnel number on the tunnel endpoint. This document defines the Connection object to exchange the tunnel numbers.

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1. Introduction

The MPLS Transport Profile (MPLS-TP) identifiers document [[I-D.ietf-mpls-tp-identifiers](#)] introduce two tunnel numbers, A1-Tunnel_Num and Z9-Tunnel_Num, which are locally assigned and allow a compact format for Maintenance Entity Point Identifier (MEP_ID). For a co-routed bidirectional LSP, the format of A1-MEP_ID is A1-Node_ID::A1-Tunnel_Num::LSP_Num, and the format of Z9-MEP_ID is Z9-Node_ID::Z9-Tunnel_Num::LSP_Num. In order to realize some Operation, Administration and Maintenance (OAM) functions, such as Connectivity Verification (CV) [[I-D.ietf-mpls-tp-cc-cv-rdi](#)], source MEP-ID MUST be inserted in the OAM packets, in this way the peer endpoint can compare the received and expected MEP-IDs to judge whether there is a mismatch. Hence, the two MEP nodes must pre-store each other's MEP-IDs before sending the CV packets.

Although the exchange of MEP_IDs can be accomplished by Network Management System (NMS) if it is deployed, it is still complex when the LSPs cross different administration domains, which needs the cooperation of NMSs. So when the LSPs are set up by control plane, Resource Reservation Protocol Traffic Engineering (RSVP-TE) signaling will be more suitable to realize the exchange of MEP_IDs.

The specification of setting up co-routed bidirectional LSP is described in the document [[RFC3473](#)], which does not introduce the locally configured tunnel number on the tunnel endpoint. This document defines the Connection object to exchange the tunnel numbers.

2. Conventions used in this document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

3. Operation

MPLS-TP co-routed bidirectional LSPs can be deployed across one or more administration domains, and NMS may exist in some administration domains, which knows the tunnel spaces of every node in its responsible domain. Consider that LSP1 is initialized at A1 node with Connection object inserted in LSP1's Path message, the following modes may happen.

Modes 1: L bit is set, and the Z9-Tunnel_Num is designated in the "Destination Tunnel Num" field. If the Z9 node finds that this

Connection Object

L

The L bit is set if the initiating node enforces the peer endpoint to configure the value carried in the field of "Destination Tunnel Num".

If the bit is not set, the peer endpoint firstly tries to use the recommended tunnel number; it can use any other unoccupied tunnel numbers when the recommended tunnel number is unavailable.

Reserverd

Must be set to 0 on transmit and ignored on receive.

Destination Tunnel Num

If the L bit is set, it indicates that the peer endpoint must configure the value carried in this field.

If the L bit is not set, this field can be empty or filled by the recommended value.

The Connection object may appear in Path or Resv message, and a midpoint that does not support this object is required to pass it on unaltered, as indicated by the C-Num and the rules defined in [\[RFC2205\]](#).

[5.](#) IANA Considerations

TBD.

[6.](#) Security Considerations

TBD.

[7.](#) Acknowledgement

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[8.](#) References

8.1. Normative references

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2205] Braden, B., Zhang, L., Berson, S., Herzog, S., and S. Jamin, "Resource ReSerVation Protocol (RSVP) -- Version 1 Functional Specification", [RFC 2205](#), September 1997.
- [RFC3473] Berger, L., "Generalized Multi-Protocol Label Switching (GMPLS) Signaling Resource ReserVation Protocol-Traffic Engineering (RSVP-TE) Extensions", [RFC 3473](#), January 2003.

8.2. Informative References

- [I-D.ietf-mpls-tp-cc-cv-rdi]
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