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RSVP Graceful Setup Procedure
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Abstract

The GMPLS RSVP-TE setup procedure for transport LSPs outlined in [RFC3473] involves a single iteration signaling sequence. However there are certain scenarios, where it is not feasible to make an LSP fully operational and ready for use via the existing single-step setup procedure. This document proposes a 2-iteration setup procedure for gracefully bringing up transport LSPs in such cases.

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 RFC-2119 [RFC2119].

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1. Introduction

The GMPLS RSVP-TE extensions required for setting up transport LSPs are discussed in [RFC3473]. As per the existing setup procedure, the signaling sequence commences with the ingress sending a PATH message downstream. The PATH message traverses through all the intermediate nodes and reaches the egress. The egress responds to the setup request by sending a RESV message upstream. The setup iteration is completed when the RESV reaches the ingress. At the end of this iteration, the LSP is deemed operational and ready for use at the ingress. Optionally, if the egress desires a confirmation, the ingress would send a RESV-CONFIRM message downstream. The LSP is deemed operational at the egress as soon as it receives the RESV-CONFIRM.

However, in certain cases (Section 3) there is no guarantee that the LSP is operational and ready for use at the end of this first iteration. This document proposes the use of a 2-iteration setup procedure to cater to those cases. By the end of this Graceful Setup Procedure, the end-points are guaranteed that the LSP is operational and ready for immediate use.

2. Graceful Setup Procedure

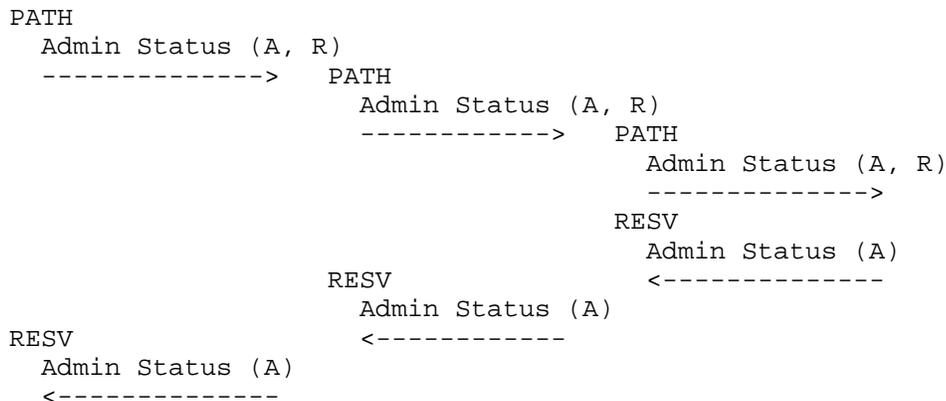
The RSVP graceful setup procedure (illustrated in Figure 1) proposed by this document involves two distinct steps. This setup procedure is similar in spirit to the 2-step RSVP graceful deletion procedure outlined in [RFC3473].

In the first step, the LSP is signaled as "non-operational" - the PATH is sent out with the "A" (Administratively Down) bit set in the ADMIN_STATUS object. All the resources along the path of the LSP are allocated and bound during this iteration.

The LSP is made "operational" only in the second step - the PATH is sent out with the "A" bit cleared in the ADMIN_STATUS. The LSP is deemed fully operational by the egress when it receives the PATH with the "A" bit cleared in the ADMIN_STATUS. Similarly, the LSP is deemed ready for immediate use by the ingress when it receives the RESV with the "A" bit cleared in the ADMIN_STATUS.



Step 1: Prepare the resources along the path of the LSP



Step 2: Make the LSP operational

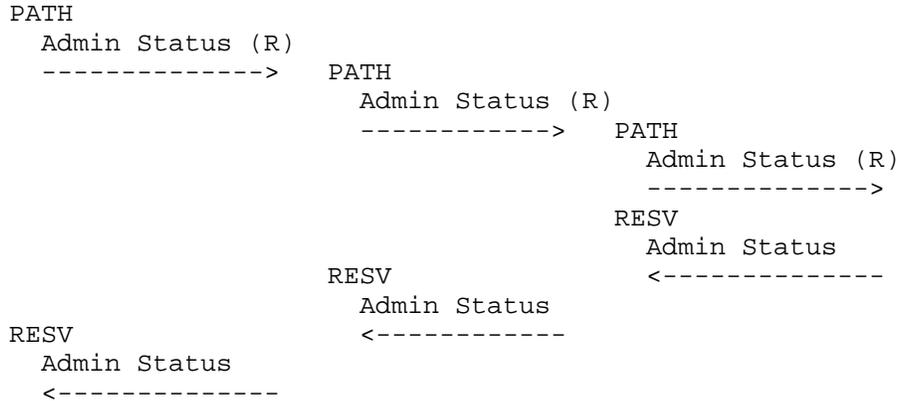


Figure 1: Graceful Setup Procedure - Signaling Sequence

3. Use Case

3.1. Lambda LSP setup

After all the cross-connects are set up in both directions at each node along the path of the LSP and the lasers are turned on at both the ends, the Lambda LSP may still not be ready for immediate use. Certain provisioning operations would need to be performed at each node along the path of the LSP before it is deemed operational. By adopting the Graceful Setup Procedure for Lambda LSPs, operations like "enabling alarm monitoring" and "equalizing power-levels" can get executed in the second step.

4. Security Considerations

TBD

5. IANA Considerations

None.

6. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate

Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC3473] Berger, L., "Generalized Multi-Protocol Label Switching Signaling Resource Reservation Protocol-Traffic Engineering Extensions", RFC 3473, January 2003

7. Acknowledgments

TBD

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