Network Working Group
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Revertive Recovery Requirements
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Status of this Memo

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Abstract

This draft identifies requirements for support of full rerouting recovery scheme in a revertive manner.

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1. Introduction and Problem Statement

Carriers have expressed interest in supporting full-rerouting with reversion capability. Additional clarification of how this can be supported within GMPLS is needed.

2. Basic Requirements

We would like to be able to support of a version of rerouting that has the following characteristics:

- First the original LSP is established on demand.

- Secondly failure of the original LSP causes an alternate LSP to be created without any prior reservation of backup resources, potentially sharing some resources

- Finally, traffic reverts to the original LSP path once the failure is repaired.

3. Analysis of Current Text

The authors would like to get clarifications on how the combination of reversion and rerouting is supported in GMPLS as current specifications are not very explicit about this.

In our reading of [RFC4872], section 11, full LSP rerouting (protection type 0x01) involves tearing down the original LSP, although it says make-before-break can be used to establish the

alternate LSP before tearing down the original, so that some of the resources can be reused.

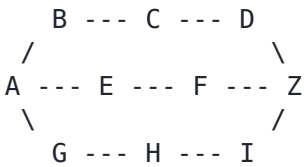
Rerouting without extra traffic (protection type 0x02) involves pre-establishment of the alternate LSP using a disjoint path, with no sharing of resources.

We also found that section 12 on reversion describes how reversion is supported for 1+1 bidirectional protection, 1:n protection with extra traffic, and rerouting without extra traffic, but has no description for reversion for the full LSP rerouting case.

It has been suggested that the decision to maintain the original LSP in the case of full LSP rerouting is made by the head-end despite the make-before-break terminology but we are concerned that this may lead to undefined behavior at the tail-end in case of multiple failures.

4. Example Scenario

For example, let's consider the following network topology:



If we start with an "original" connection A-B-C-D-Z that fails and is restored using "restoration 1" A-E-F-Z that later also fails and is restored to "restoration 2" A-G-H-I-Z. In networks where the SCN is congruent with the data path, the teardown of "original" and "restoration 1" connections may not reach the Z node until much later.

If Z receives a request to establish "restoration 2" LSP A-G-H-I-Z, it may still have "original" LSP A-B-C-D-Z and "restoration 1" LSP A-E-F-Z in place if the teardown of either or both of them failed. If Z cannot determine how to setup the bridge/selector, it cannot accept the request. If Z was informed or the revertiveness of the LSP, it could make that determination based on the type. If it is revertive, bridge with "original", otherwise no bridge needed.

It may be beneficial for this scenario and potentially other scenarios to distinguish between revertive and non-revertive full rerouting.

5. Security Considerations

None identified at this time.

6. IANA Considerations

None identified at this time.

7. Normative References

[RFC4872] Lang, J.P., Ed., Rekhter, Y., Ed., and D. Papadimitriou, Ed., "RSVP-TE Extensions in support of End-to-End Generalized Multi-Protocol Label Switching (GMPLS) Recovery", RFC 4872, May 2007.

8. Informative References

9. Acknowledgements

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