MPLS-TP and MPLS Multipath

Use of Multipath with MPLS-TP and MPLS
draft-ietf-mpls-multipath-use-00

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MPLS-RT review completed
Accepted as WG document

MPLS Multipath Usage - Changes

- Clarity improved as a result of MPLS-RT review.
  1. Reordering wording cited from RFC5960 (MPLS Transport Profile Data Plane Architecture).
  2. ECMP restrictions cited from RFC5960.
  3. Ordered aggregate requirements cited from RFC5960.
  4. OAM fate sharing requirements cited from RFC6371 (Operations, Administration, and Maintenance Framework for MPLS-Based Transport Networks).
  5. Fate-Sharing Considerations for Multilink from RFC6371 cited (multipath is not strictly prohibited).
  6. Direct LM limitations cited from RFC6374 (Packet Loss and Delay Measurement for MPLS Networks).
  7. Role of MPLS-TP midpoint LSR using MPLS server layer clarified.
  8. Text discussing requirements MP#1-3 clarified.
  9. Backward compatibility issue (pre-RFC6790 LSR) made more explicit (with existing workaround).
- Implementation Status section added (as per draft-sheffer-running-code).

MPLS Multipath Usage - Focus Unchanged

- Document makes a few simple points:

  1. MPLS-TP in MPLS and MPLS in MPLS-TP are called for as requirements in RFC 5654 requirement 33.
  2. Entropy Label provides a means of carrying LSP with strict packet ordering requirements (eg MPLS-TP) over MPLS server layer using multipath.
     - This provides a fully MPLS-TP compliant server layer.
  3. MPLS client LSP can be carried within MPLS-TP server layer LSP with limitations described in the draft.

- Without any change in forwarding or protocol extensions MPLS-TP in MPLS and MPLS in MPLS-TP can be supported with limitations described in the document.

MPLS-TP in MPLS - Limitations (Unchanged)

- An MPLS LSR must know which LSP require strict packet ordering.

  1. If the MPLS-TP ingress and MPLS ingress are the same LSR, this can be accomplished by configuration.
  2. If the MPLS ingress is a midpoint LSR for the MPLS-TP LSP, then without signaling extensions this is more difficult. Feasible with overload of administrative attributes for example.

- There is no means to know whether limitations on large microflow in LSR multipath with cause problems.

MPLS in MPLS-TP - Limitations (Unchanged)

- MPLS-TP LSP must be able to carry peak load of the MPLS LSP.

  1. If the MPLS-TP LSP capacity must be increased, the MPLS-TP LSP may have to be rerouted to different component links.
  2. If the MPLS-TP LSP capacity is set to a worst case capacity, then capacity is wasted if MPLS LSP tend not to all peak at the same time.

- Fixing the path of large chunks of capacity (MPLS-TP LSP) tends to create bin packing problems, for example on traditional MPLS Link Bundling.

MPLS Multipath Usage - Conclusion

- Document is essentially unchanged from before MPLS-RT, except significant improvements in clarity.
- draft-ietf-mpls-multipath-use-00 is a short read.
- Please **Read the draft and comment on it on the MPLS WG mailing list**
- This has just become a WG document so now would be a good time to comment on MPLS WG mailing list.
- Questions?