MPLS-TP and MPLS Multipath

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

Curtis Villamizar (OCCNC)

MPLS-RT review completed
Accepted as WG document
MPLS Multipath Usage - Changes

- Clarity improved as a result of MPLS-RT review.
  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).
  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 (e.g., 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?