

Performance-based Path Selection for Explicitly Routed LSPs

draft-atlas-mpls-te-express-path-00

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Basic Ideas

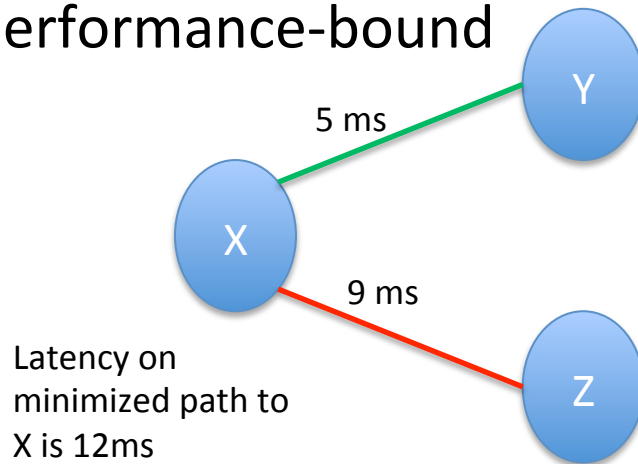
- Performance-based data (latency, loss, jitter) now available via IGP
 - Draft-ietf-ospf-te-metric-extensions & draft-previdi-isis-te-metric-extensions
- Informational draft describes how to use that data to
 - Compute explicit paths at Ingress
 - Respond to Link SLA violations
 - Support periodic verification of performance bounds for existing TE tunnels

Per LSP Behavior

- Each LSP can have:
 - Different performance-bounds
 - Different reactions to link SLA violations (signaled via Anomalous bit)
 - Different rules for creating paths using out-of-SLA links
 - Different path verification requirements

Ingress Path Computation: End-to-end Constraints

- Find path that MEETS the performance requirement and NOT minimum
- Modify CSPF to only explore links which won't violate performance-bound



Latency-bound for LSP is 20ms

Explore X->Y since $12+5 < 20$

Do NOT explore X->Z since $12+9 > 20$

Latency and Delay-Variation can be summed across the path so far.

For Link Loss, path loss percentage is $(100 - \text{loss_link_1}) * \dots * (100 - \text{loss_link_n})$

Ingress Path Computation: Link Constraints

- Avoid using links that violate an optional dynamic constraint such as:
 - Requiring a minimum bandwidth unused by non-RSVP-TE traffic (Unidirectional Available BW)
 - Loss under a configurable value
 - Anomalous bit unset for latency/loss/jitter
- In CSPF, equivalent to treating violating links as if they have a resource attribute in the exclude-any filter

Respond to Link SLA Violations

- Anomalous bit indicates link out of SLA for that parameter.
- At each Ingress, for each interested TE tunnels, behavior may be:
 - Verify continued compliance to tunnel performance-bounds,
 - Switch to a Standby LSP,
 - MBB to a Secondary LSP,
 - or Compute and use a new compliant path

Summary

- Straightforward draft describing how to use new IGP TE extensions for MPLS TE.
- No RSVP-TE signaling extensions
 - Simplicity for ingress path computation
- Interested in feedback and becoming a WG draft