

Framework for latency and loss traffic engineering application

[draft-fuxh-ccamp-delay-loss-te-framework-00.txt](#)
[draft-fuxh-ccamp-delay-loss-rsvp-te-ext-00.txt](#)

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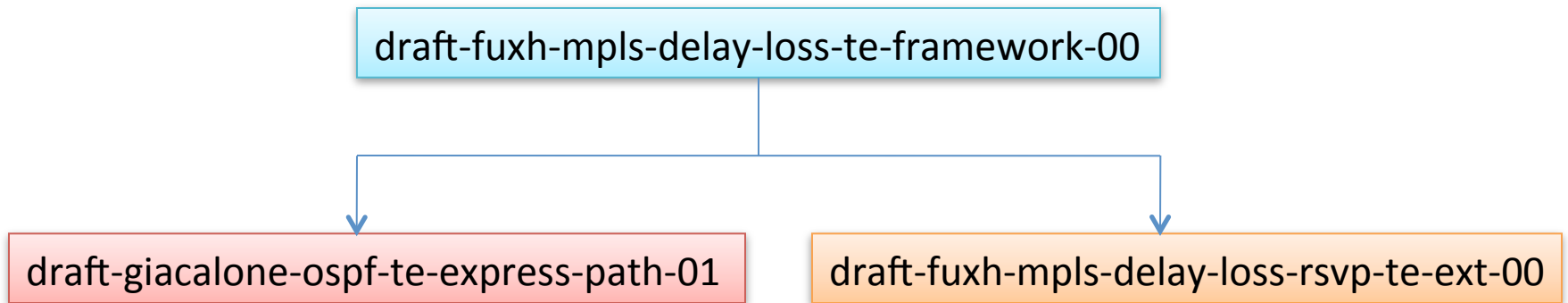
Spencer Giacalone **Thomson Reuters**

Background

- The key driver is stock/commodity trading and data center applications. The purpose is to make an accurate end-to-end prediction of latency and packet loss before a path is established.
- Track
 - [draft-wang-ccamp-latency-te-metric](#) was presented in 79th and 80th in CCAMP.
 - Chairs (Lou and Acee) suggest the overlap OSPF portions of [draft-wang-ccamp-latency-te-metric](#) be combined with [draft-giacalone-ospf-te-express-path](#)
 - Chairs (Lou and Ross) suggest framework and rsvp-te should be done in MPLS WG.
 - Restructure the draft-wang into a framework and some protocol specific parts (e.g., OSPF and RSVP-TE) to address the issues raised in the framework.

Document structure

- Based on the suggestion from chairs, framework and rsvp-te documents will be renamed with title “mpls” and posted to MPLS WG.



Requirement Identification

Num	Requirement	Implication
REQ1	To communicate latency, latency variation and packet loss as a link's traffic engineering performance metric into IGP.	OSPF Extension Local Configuration
	To control latency and loss IGP message advertisement and avoid unstable when the latency, latency variation and packet loss value changes.	
REQ2	Path computation entity MUST have the capability to compute one end-to-end path with latency and packet loss constraint.	Path Computation
REQ3	To indicate a traffic flow should select a component link with minimum latency and/or packet loss value, maximum acceptable latency and/or packet loss value and maximum acceptable delay variation value	RSVP-TE Extension [CL-REQ]
REQ4	To indicate FA selection or FA-LSP creation with minimum latency and/or packet loss value, maximum acceptable latency and/or packet loss value and maximum acceptable delay variation value.	RSVP-TE Extension

Requirement Identification

Num	Requirement	Implication
REQ5	To accumulate latency of links and nodes along one LSP across multi-domain (e.g., inter-AS, inter-Area or multi-layer) so that an latency validation decision can be made at the source node.	RSVP-TE Extension
REQ6	To support pre-defined protection or dynamic re-routing, if a "provisioned" end-to-end LSP latency and/or loss could not meet SLA anymore.	Network Planning
REQ7	To support re-routing latency and/or loss end-to-end cost, if a "provisioned" end-to-end LSP latency and/or loss performance is improved because of some segment performance promotion.	Network Planning
REQ8	To indicate the switchover of the LSP according to maximum acceptable change latency and packet loss value in order to avoid unstable	Local Configuration

Purpose

[draft-fuxh-ccamp-delay-loss-rsvp-te-ext-00.txt](#)

- The RSVP-TE portions in [draft-wang-ccamp-latency-te-metric](#) is moved into this draft.
- The purpose is to extend RSVP-TE protocol to promote SLA experience of latency and packet loss application in inter-AS, inter-Area or multi-layer network.
 - REQ3: To facilitate the component link selection or creation based on latency and packet loss constraint.
 - REQ4: To facilitate the FA selection or FA-LSP creation based on latency and packet loss constraint.
 - REQ5: To accumulate latency of links and nodes along one LSP across multi-domain so that an latency validation decision can be made at the source node.

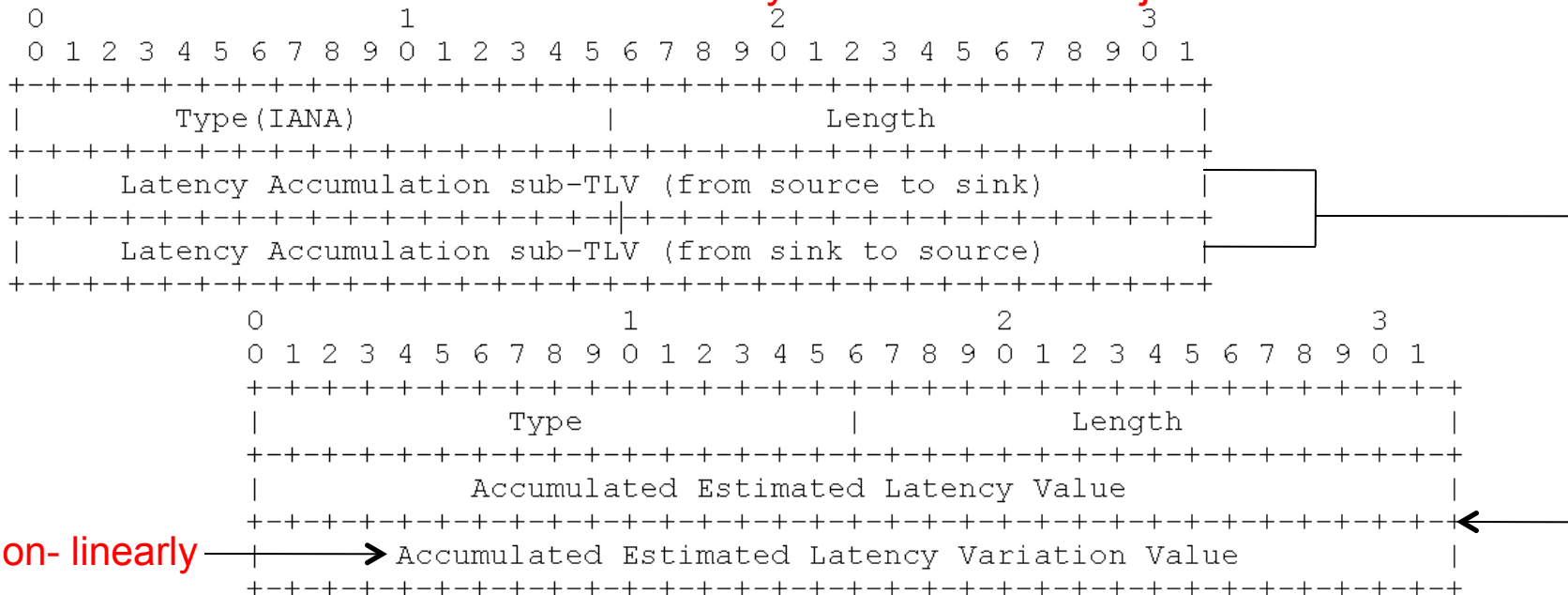
Component Link or FA Selection/ Creation

- Assume there are following component links within one composite link.
 - Component link1: latency = 5ms, latency variation = 15 us
 - Component link2: latency = 10ms, latency variation = 6 us
 - Component link3: latency = 20ms, latency variation = 3 us
 - Component link4: latency = 30ms, latency variation = 1 us
- Assume there are following SLA Parameters for component link selection. Only Component link2 could be qualified.
 - I bit = **TRUE**
 - V bit = **FALSE**
 - Maximum Acceptable Latency Value= 35 ms
 - Maximum Acceptable Latency Variation Value = 10us
- Assume there are following SLA Parameters for component link selection. There may be no any qualified component links. **Priority may be used for latency and variation.**
 - I bit = **TRUE**
 - V bit = **TRUE**
 - Maximum Acceptable Latency Value= 35 ms
 - Maximum Acceptable Latency Variation Value = 10us

Latency Accumulation and Verification

- Latency Accumulation Object
 - It is carried in Path/Resv message in order to accumulate the latency of each links and nodes along the path which is across multi-domain.
 - When the source node desires to accumulate (i.e., sum) the total latency of one end-to-end LSP, the "Latency Accumulating desired" flag should be set in the LSP_ATTRIBUTES object of Path/Resv .

Latency Accumulation Object



Latency Accumulation sub-TLV

Next steps

- Refine the document according to the feedback of meeting and mailing list.