draft-so-yong-rtgwg-cl-framework-04

Composite Link Framework in

Multi Protocol Label Switching (MPLS)

Ning So (Verizon)

Andrew Malis (Verizon)

Dave McDysan (Verizon)

Lucy Yong (Huawei USA)

Curtis Villamizar (Infinera)

Tony Li (Cisco)

Status of Composite Link Documents

1. Requirements for MPLS Over a Composite Link
   draft-ietf-rtgwg-cl-requirement-04
   - completed WG last call

2. Composite Link Framework in Multi Protocol Label
   Switching (MPLS)
   draft-so-yong-rtgwg-cl-framework-04
   - individual submission

   - Co-authors have requested that cl-framework-04 be
     adopted as a WG item.

   - Existing -04 has been fairly stable for a while now.

   - Considerable new late contribution has arrived recently
     Perhaps discussing the suggested addition makes sense

CL Framework -04 Version

Topics covered:

- Provides an overview of the usage of CL

  – CL over multiple component links (Figure 1)
  – CL over mix of links and LSP (Figure 2)

- Provides an overview of CL control plane

  – need for IGP-TE extensions possibly to RFC 4201
  – need for RSVP-TE extensions
  – need for layer interworking
  – use of both RSVP-TE and LDP
  – option for symetrical paths

- Data plane

  – traffic distribution is a local matter
  – multicast must be handled
  – minimally disruptive component failure

- Management plane

Composite Link Framework Additions

Organized as follows:

- Architecture Summary
  a few points to be added to existing sections

- Architecture Tradeoffs
  scalability considerations, oscillations

- New Challenges
  control plane, data plane

- Existing Mechanisms
  link bundling

- Mechanisms Proposed in Other Documents
  new IETF work – see next slides

- Required Protocol Extensions and Mechanisms
  unaddressed requirements – see next slides

CL Framework Additions – Proposed Mechanisms

Regarding "5. Mechanisms Proposed in Other Documents"

- Loss and Delay Measurement
  I-D.ietf-mpls-loss-delay,
  also (maybe) draft-wang-ccamp-latency-te-metric-03.txt
  & draft-giacalone-ospf-te-express-path-01.txt

- Link Bundle Extensions
  I-D.ietf-mpls-explicit-resource-control-bundle

- Fat PW and Entorpy Labels
  I-D.ietf-pwe3-fat-pw & I-D.ietf-mpls-entropy-label

- Multipath Extensions
  I-D.villamizar-mpls-tp-multipath
  & I-D.villamizar-mpls-tp-multipath-te-extn

CL Framework Additions - New Work

Regarding "6. Required Protocol Extensions and Mechanisms"

- This section is still incomplete

- A short list of potential extensions is provided
  link bundle groups & ERO considerations, IGP-TE delay advertisement,
  link bundle group TE-metric

- A longer list of unaddressed requirements is provided
  various flavors of VPN, IP and LDP traffic, migration & backwards
  compatibility, traffic balance oscillation, inter-layer communication,
  IGP-TE extensions for delay, jitter, and load balance rearrangement
  frequency, preemption & soft-preemption, adaptive multipath, behavior
  of traffic distribution methods, performance

CL Framework - Moving Forward

- Co-authors have agreed in principle to merge documents. There has been some technical discussion off list.

- The merged draft could potentially be adopted by the WG.

- Agreement is needed on whether cited "existing work" applies and meets requirements.

- The list of new protocol work needs to be completed. Agreement is then needed on whether new proposed mechanisms meet requirements.