draft-ietf-rtgwg-cl-framework-02

Composite Link Framework in
Multi Protocol Label Switching (MPLS)

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Status of Composite Link Documents

- Three Composite Link documents:

  1. Composite Link Framework in Multi Protocol Label Switching (MPLS)
     draft-ietf-rtgwg-cl-framework-02
     - WG item as of last meeting

  2. Composite Link Use Cases and Design Considerations
     draft-ietf-rtgwg-cl-use-cases-01
     - WG item as of last meeting

  3. Requirements for MPLS Over a Composite Link
     draft-ietf-rtgwg-cl-requirement-08
     - completed WG last call
     - awaiting advancement of related drafts

- "Use Cases" and "Framework" became WG items last meeting.

- There has been almost no discussion on the WG mailing list of these drafts since last meeting.

- Presentation time at IETF-85 is too short to go into technical details but issues will be highlighted.

CL Framework Technical Change

- Means to support LSP with strict packet ordering requirements (aka MPLS-TP) is narrowed down to Entropy Label.

- Most other changes between -01 and -02 are clarifications with no technical impact.

- Section 1.5 "Document Issues" was added to focus WG discussion. Consolidates issues previously scattered within the document.

CL Framework -02 Version - Issues

- Issues listed in Section 1.5 "Document Issues"

1. Symmetric paths highly impractical except in limited cases.
   Recommendation: acknowledge limitations in requirements.
2. Delay optimized routing vs. oscillation.
   Recommendation: separate draft if more detail is needed.
3. Jitter optimized routing vs. oscillation.
   Recommendation: acknowledge limitations in requirements.
4. Is multi-topology routing in-scope for IP & LDP?
   Recommendation: feature creep - declare out-of-scope.
5. Five referenced drafts have expired.
   Recommendation: prune references & bug authors of remaining.
6. Reference to draft-giacalone-ospf-te-express-path.
   Recommendation: drop reference.
7. Multi-Domain CL requirement has very broad scope.
   Recommendation: narrow scope in requirements.
8. Three topics in requirements not addressed in framework.
   Recommendation: take to WG list - in one case clarify or remove
   citations in requirements; two remaining cases need WG input.

Issue #1: Symmetric paths

- Two cases:

  1. LSP capacity smaller than component link capacity.
     Recommendation: use link bundle and pin LSP.
     Can't more LSP later: acknowledge limitation in
     requirements.

  2. LSP capacity greater than component link capacity.
     Recommendation: solving this is too complicated:
     acknowledge limitation in requirements.

Issue #2: Delay optimized routing vs. oscillation

- If load to be potentially move will affect measurement, then oscillation is likely.

- If measurement is unaffected by load (for example, measurement has higher priority than the load that may be moved), then oscillation can't occur.

- If measurement has higher priority than the load, measurement is accurate only in uncongested links.

- Questions to WG: Is this sufficiently clear in the existing draft? Is it too verbose? Is another document needed to expand on this issue?

Issue #3: Jitter optimized routing vs. oscillation

- If load to be potentially move will affect measurement, then oscillation is almost certain.

- If measurement is unaffected by load (for example, measurement has higher priority than the load that may be moved), then oscillation can't occur.

- If measurement has higher priority than the load, measurement (of jitter) will not reflect jitter experienced by load and may be meaningless.

- Questions to WG: Is it reasonable to remove jitter based routing from the requirements? If not, how do we justify keeping the two alternatives: instability or meaningless measurement?

Issue #4: multi-topology routing for IP & LDP

- Personal option of author: Use of multi-topology routing for IP & LDP to route according to set of requirements is a major feature creep.

- Recommendation: Change wording to "could be done in principle but current framework recommendation is to defer implementation of this feature" or drop entirely.

Issue #5: referenced drafts have expired

- Many of these referenced drafts address a small subset of CL requirements and

- CL authors & RTGWG needs to:

  1. Determine if any given draft is abandoned.

  2. Determine whether authors intend to address CL requirements (in cases where proposed mechanisms fall short).

  3. If so, offer to review documents or to contribute to them. If not, create a new document to better address the subset of CL requirements.

Issue #6: ospf-te-express-path

- Was cited as a possible starting point for delay requirements.

- Draft is not a good choice and seems abandoned.

- Recommendation: drop the citation and focus solely on draft-wang-ccamp-latency-te-metric (or new draft).

- Possible replacement for
  draft-wang-ccamp-latency-te-metric:

  1. draft-fuxh-mpls-delay-loss-te-problem-statement and
  2. draft-fuxh-mpls-delay-loss-te-framework and
  3. draft-fuxh-mpls-delay-loss-rsvp-te-ext .

Issue #7: Multi-Domain CL requirement

- Requirement DR#5:
  "When the nodes are connected via a composite link are in different MPLS network topologies, the solution SHALL NOT rely on extensions to the IGP."

- This implies that:

  1. Multi-domain is in scope.

  2. All other requirements still apply (if not, fix requirements document).

  3. IGP extensions cannot be used (a big problem if all other requirements still apply).

- Recommendation: narrow scope in requirements.

Issue #8: topics not addressed in framework

- Three topics:

1. L3VPN RFC 4364, RFC 4797, L2VPN RFC 4664, VPWS, VPLS RFC 4761, RFC 4762 and VPMS VPMS Framework (draft-ietf-l2vpn-vpms-frmwk-requirements) are referenced in the requirements document "Assumptions" section.
   Recommendation: either remove citation or indicate what requirements are implied.
   Preference: remove citations.

2. Migration (incremental deployment) may not be adequately covered in Section 4.1.5.
   Recommendation: discuss on WG mailing list.

3. We may need a performance section in this document to specifically address DR#6 (fast convergence), and DR#7 (fast worst case failure convergence).
   Recommendation: It might be better to make CL Framework shorter rather than longer and create a separate short document.

Conclusion

Discussion on RTGWG mailing list is needed!