LOOPS side meeting

Localized Optimizations over Path Segments

Note Well

— You will be recorded

— Be nice, and be professional

— The IPR guidelines of the IETF apply:
see http://ietf.org/ipr for details.

Repo: https://github.com/loops-wg/ietf107
Notes: https://hackmd.io/HuWZVXcATxyRA0vWaK7Cwg

LOOPS: status

Proposal for IETF work on in-network recovery protocol
Developed in a series of side meetings
non-WG-forming BOF @IETF105

Most recent: 2020-05-07 ("design team meeting")
https://github.com/loops-wg/ietf107/blob/master/slides/LOOPS-107-dt.pdf

Objective

Successfully develop LOOPS protocol(s) in the IETF

— 💣 smear work over existing WGs

— ✅ do work in a new WG

Define charter so that:
— successful work can be done
— IETF community can agree to the charter

Agenda 2020-05-26

— 1504Z: “narrowing the charter”
Four questions:
https://mailarchive.ietf.org/arch/browse/loops/

— 15yyZ: Next steps

Narrowing down the charter proposal

Start out with a narrow work program
Plan to expand during rechartering (2021)

Make sure initial work program is "successful":
— can be delivered in ~ 12 months (simple!)
— has enough deployment interest (benefit!)

Focus on less controversial approaches

Encapsulation

Choose one encapsulation that is amenable to consensus and can be deployed easily

Geneve:

— UDP-based
— reasonable level of consensus

SRv6: Might get stuck in IPv6 header wars
GRE: Great, but separate protocol: Harder to deploy

Relationship to ECN

ECN lends itself to a simple feedback model
Two levels for potential narrowing decisions:

- (1) [x] restrict to ECT(0) end-to-end flows (simple signaling, no resequencing)
  - or at least optimize mainly for that case?
- (2) [?!] restrict to path segments where all (underlay) routers between ingress and egress are ECN-enabled (i.e., we can assume the losses are non-congestion)

Data needed for ECN decision

(0) Danger: ECN is changing; an industry-wide push to advanced ECN (L4S-style) might starve ECN-Classic
(Need Insight into L4S movement)

(1) Is there a good percentage of ECT traffic out there today
… with one of the use cases we could focus on?

(2) Are there ECN-enabled segment paths available for LOOPS deployment?

reconstruction or retransmission

Reconstruction (FEC):
separate area of of knowledge
Coordinate closely with proposals in NWCRG and TSVWG
Deployment of FEC might require specific platforms, be harder in general

Retransmission:
has to burden e2e paths with reordering
— (or needs to do resequencing ➔ latency!)
requires taking more protocol design work ((N)ACK structure etc.)

Desirable properties

(1) Focus on aggregate of short flows (tail loss!)
— or short blocks within a flow
vs. (2) focus on elephants

(Discuss deployability some more)

do not:

Second-guess end-to-end transports
(But maybe do optimize for flows steered to LOOPS)

Provide controls to end-to-end transports beyond ECT
(transport to path signaling is research)

Police or shape at the ingress
(But may have circuit breaker, just switching off LOOPS behavior)