IETF 118
Deepspace side meeting

QUIC over TAPS API for Deep Space: TAPSce
And
Careful Resume (CR), and BDP frame

Emile Stephan (Orange)

TAPSce Hackathon Plan

- What problem were you working on?
  - Tune QUIC with TAPS API for using QUIC in deep space
    - Specific problems to solve
      - Support extremely long delay, no ack, disruption…
- How you planned to solve it?
  - implement TAPS on the top of QUIC
  - Identify QUIC and DTN parameters, profiles, features missing to be added

What got done
TAPSce and Careful Resume

- TAPS and QUIC implementations over python asyncio might be assembled

  - https://github.com/aiortc/aioquic

  - https://github.com/fg-inet/python-asyncio-taps/tree

- Max started to merge python-asyncio-taps and aioquic

- careful-resume (Raffaello TSV slides) was implemented on Careful Resume table

- bdp frame (Gorry slides in QUIC WG) might be implemented later

What is planed

- interop with Christian [Quic to Mars](#) implementation

- interop with QUIC implementations supporting Careful Resume

- get feedback from DTN [Bundle Protocol Implementations](#) to map parts of DTN using TAPS specifications

  - Early inputs https://ipnsig-pwg.github.io/

- Continue the discussion on [bdp frame](#)

TAPSce Team

Team members:

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Fans:

Special thanks to Gorry, Ana, Joerg, Raffaello from the Careful Resume Table, and to the people who came visited the TAPSce table

Careful Resume

draft-ietf-tsvwg-careful-resume

Nicolas Kuhn (Thales Alenia Space)
Emile Stephan (Orange)
Gorry Fairhurst (University of Aberdeen)
Christian Huitema (Private Octopus Inc.)

Careful Resume

- Key mechanisms at start-up

  - Slow-start limits capacity use to prevent overshooting but impacts latency and other flows.

  - Hystart++ prevents overshooting the bottleneck and congestion, preserving shared capacity.

  - CR speeds up transfers with high data volume over large path capacity compared to large IW.

- Main Features

  - Reuses past parameters for faster connection restart.

  - Sender sets requirements for capacity utilisation.

  - Ensures safe response when capacity/RTT changes.

QUIC BDP Frame Extension

draft-kuhn-quic-bdpframe-extension

Nicolas Kuhn (Thales Alenia Space)

Emile Stephan (Orange)

Gorry Fairhurst (University of Aberdeen)

Christian Huitema (Private Octopus Inc.)

BDP Frame

Careful Resume (draft-ietf-tsvwg-careful-resume) allows fast startup

   Can be used with QUIC

BDP Frame is a QUIC extension to extend Careful Resume

   Enables client to participate in the "jump"

BDP Frame Receiver Usage

Receiver can read, but not modify, the BDP Frame

Allows receiver to say if CR is not wanted
- Understanding of path/interface changes
- Understand which flow for Careful Resume (can use once)
- Can tune the QUIC flow credit?
- Can tune apps to utilise capacity hints, e.g., DASH clients?
- etc