ACN Project

Laga di paresh sir ne..

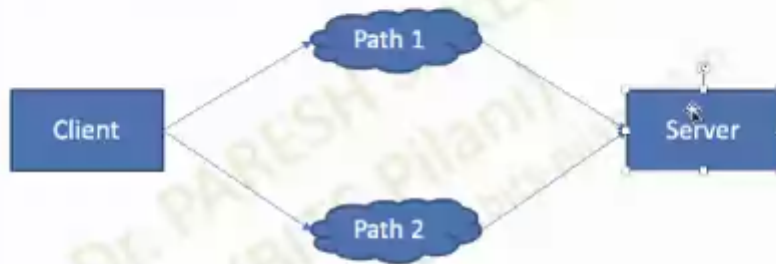| Step	Marks
Step 1	30
Step 2	20
Step 3	20

multipath topology
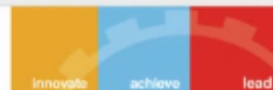
- You need to implement the following topology with mininet and demonstrate MPQUIC for file transmission:

Path 1

Client

Server

Path 2

- Show Transfer of a file from Client to Server
- Use Mininet for implementation, Netem to emulate network conditions, Wireshark, and other tools explained to you in the labs.
- o https://tools.ietf.org/html/draft-ietf-quic-transport-23 o https://ieeexplore.ieee.org/document/8422951
  o https://multipath-quic.org/conext17-deconinck.pdf
  o https://github.com/qdeconinck/mp-quic
- o https://github.com/lucas-clemente/quic-go/ o https://golang.org/doc/install#install

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https://multipath-quic.org/conext17-deconinck.pdf

https://github.com/qdeconinck/mp-quic

https://github.com/lucas-clemente/quic-go/

https://golang.org/doc/install#install

Step 2: MPQUIC Research Paper Implementation

- Choose one of the research papers on MPQUIC
- Read and Present the findings of the paper
- Implement the ideas of this paper (partially or fully)
- Some papers include (and there are many more that you can check over the web):

  - Froemmgen, A., Heuschkel, J. and Koldehofe, B., 2018, May. Multipath tcp scheduling for thin streams: Active probing and one-way delay-awareness. In *2018 IEEE International Conference on Communications (ICC)* (pp. 1-7). IEEE.
  - T. Viernickel, A. Froemmgen, A. Rizk, B. Koldehofe and R. Steinmetz, "Multipath QUIC: A Deployable Multipath Transport Protocol," *2018 IEEE International Conference on Communications (ICC)*, Kansas City, MO, 2018, pp. 1-7, doi: 10.1109/ICC.2018.8422951.
  - Rabitsch, Alexander, Per Hurtig, and Anna Brunstrom. "A stream-aware multipath quic scheduler for heterogeneous paths: Paper# xxx, xxx pages." In *Proceedings of the Workshop on the Evolution, Performance, and Interoperability of QUIC*, pp. 29-35. 2018.
  - Frömmgen, Alexander, Denny Stohr, Boris Koldehofe, and Amr Rizk. "Don't repeat yourself: seamless execution and analysis of extensive network experiments." In *Proceedings of the 14th International Conference on emerging Networking EXperiments and Technologies*, pp. 20-26. 2018.
  - Mogensen, Rasmus S., Christian Markmoller, Tatiana K. Madsen, Troels Kolding, Guillermo Pocovi, and Mads Lauridsen. "Selective Redundant MP-QUIC for 5G Mission Critical Wireless Applications." In *2019 IEEE 89th Vehicular Technology Conference (VTC2019-Spring)*, pp. 1-5. IEEE, 2019.
  - Lübben, Ralf, and Johannes Morgenroth. "An Odd Couple: Loss-Based Congestion Control and Minimum RTT Scheduling in MPTCP." In *2019 IEEE 44th Conference on Local Computer Networks (LCN)*, pp. 300-307. IEEE, 2019.

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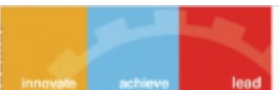
- Suer, Marie-Theres, Christoph Thein, Hugues Tchouankem, and Lars Wolf. "Multi-Connectivity as an Enabler for Reliable Low Latency Communications—An Overview." *IEEE Communications Surveys & Tutorials* 22, no. 1 (2019): 156-169.
- Vu, Vu Anh, and Brenton Walker. "On the Latency of Multipath-QUIC in Real-time Applications." In *2020 16th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)(50308)*, pp. 1-7. IEEE, 2020.
- Shi, Xiang, Lin Wang, Fa Zhang, Biyu Zhou, and Zhiyong Liu. "PStream: Priority-Based Stream Scheduling for Heterogeneous Paths in Multipath-QUIC." In *2020 29th International Conference on Computer Communications and Networks (ICCCN)*, pp. 1-8. IEEE, 2020.

And many other references present over the web (Look For Citations !!)

Step 3: Your own Innovation

- Choose one topic: connection management, congestion control, scheduling algorithms, etc.
- Propose your own algorithm/method that can provide benefits in certain scenario.
- Define those scenarios, Implement your innovation and compare with other existing algorithms.
- Let us assume, you come up with scheduling algorithm 'A'. Then implement that algorithm and compare with other scheduling algorithms of MPQUIC and MPTCP.

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