A Data-driven Approach to Tackle Network Diversity with Heterogeneous Protocol Configurations.

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Protocols Configurations at CDN Edge

Goal: maximize delivery performance

HTTP=2.0, #_streams=100, ...
TCP=BBR, ICW=10, RTO=1s, ...

How do we maximize performance for the entire user-base?
One set of protocol configurations is sub-optimal for diverse connections.

Diverse user-base

Performance Sensitivity of protocols for diverse networks

Potential for significant improvements!
Optimizes web performance by systematically reconfiguring network stack in a principled manner.
Configanator

Data-driven algorithm to learn optimal configurations with minimal overhead.

Changes to networking stack for flexible reconfiguration of connections.

PLT & connection characteristics

The “right” configurations

Data-path component

Control-path component

Web server

Edge server

GET foo.html
Conclusion

Propose control-plane data-driven algorithm and flexible networking stack to dynamically reconfigure protocol configurations.

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Configurator: A Data-driven Approach to Improving CDN Performance.

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36-67% improvement at tail.
Low BW, low-high RTT/loss networks, content-rich sites.

15-17% improvement at median