



A Worldwide View on the Reachability of Encrypted DNS Services

Ruixuan Li^{1,2}, Baojun Liu², Chaoyi Lu², Haixin Duan², Jun Shao¹

¹Zhejiang Gongshang University ²Tsinghua University

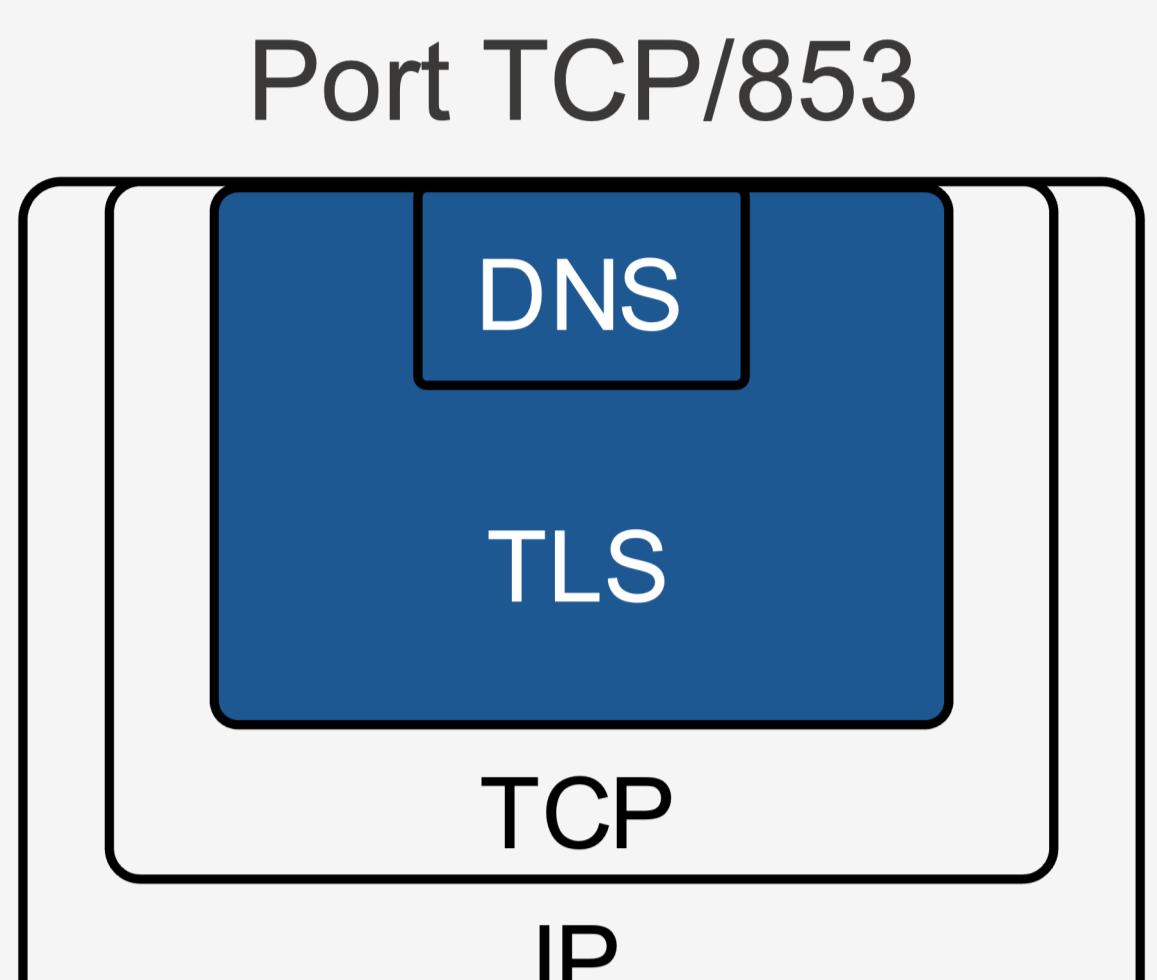


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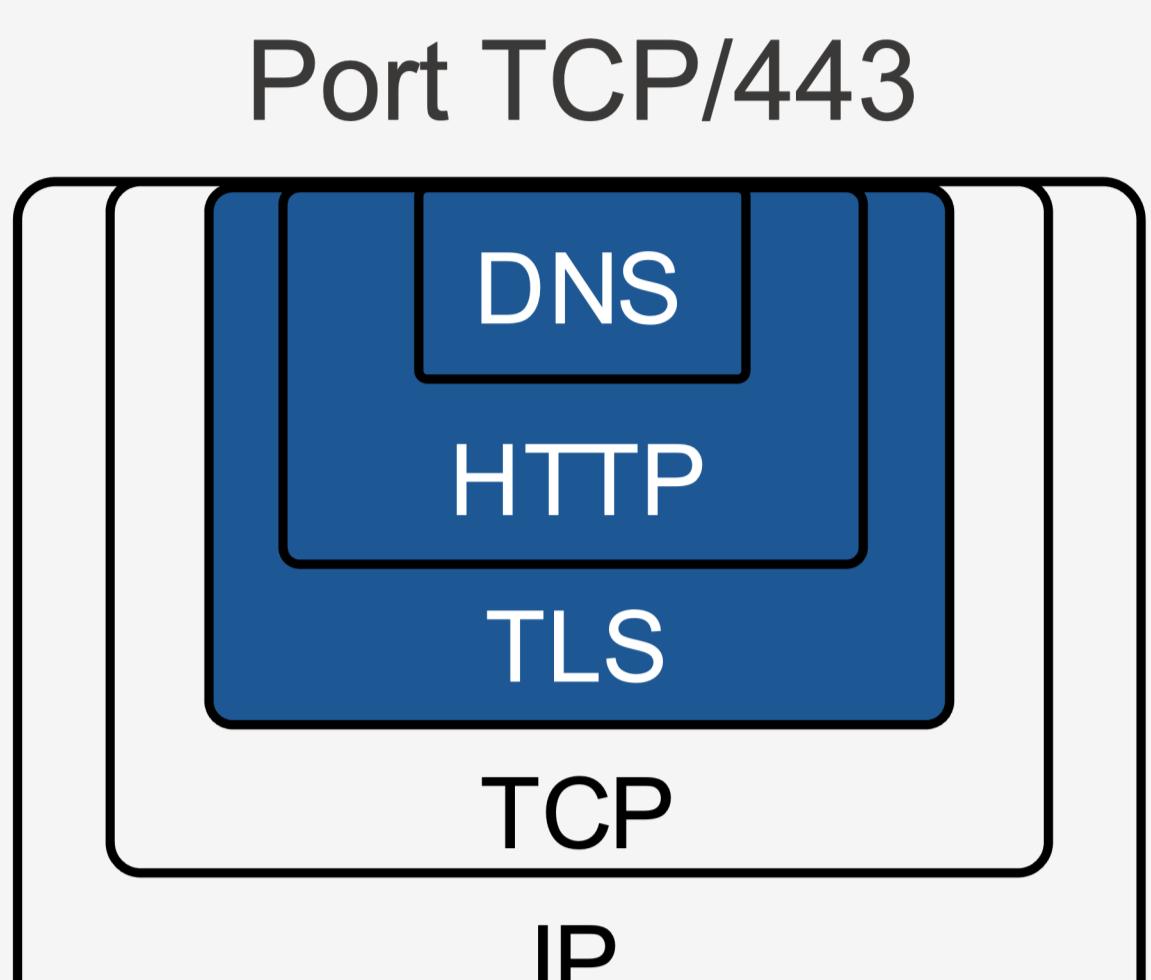


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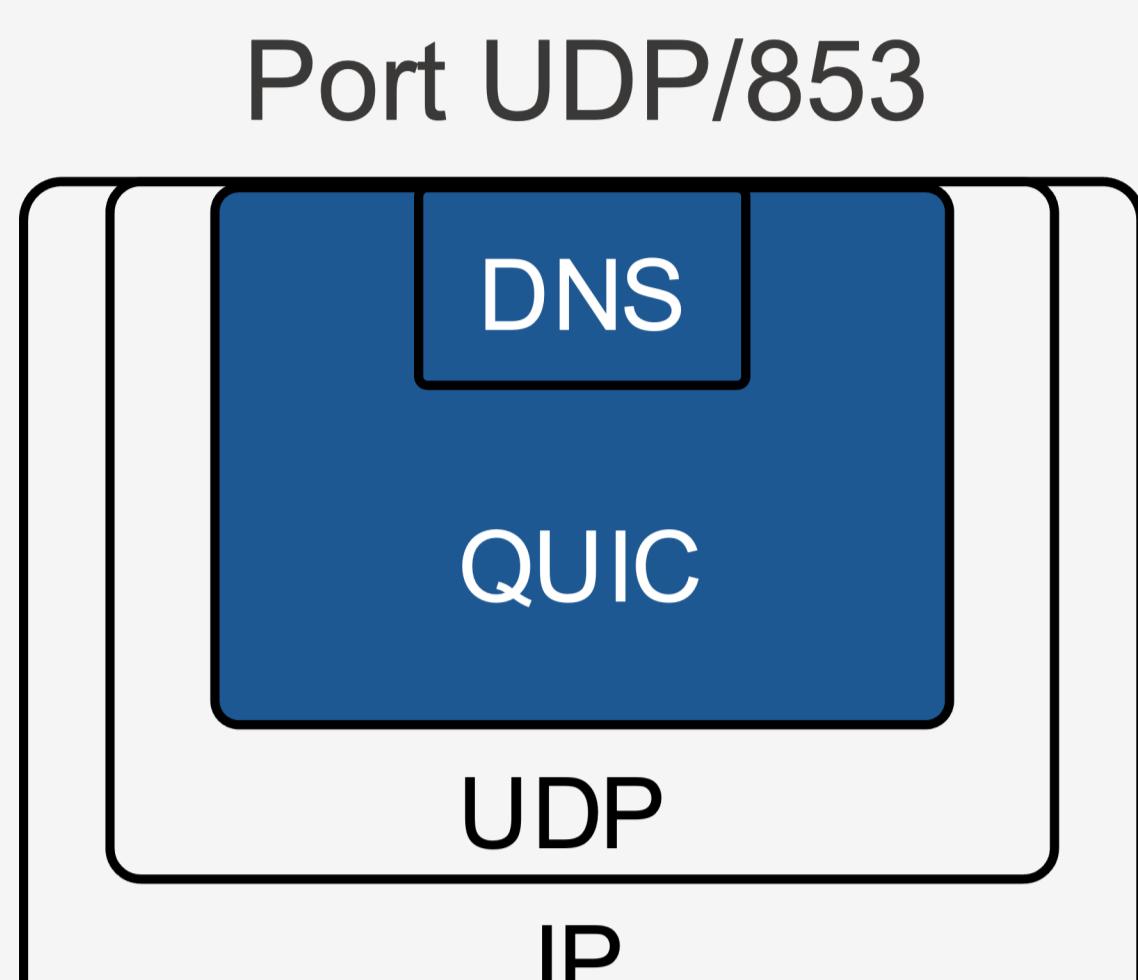
DNS over Encryption (DoE) emerges as emerging technology to mitigate DNS threats



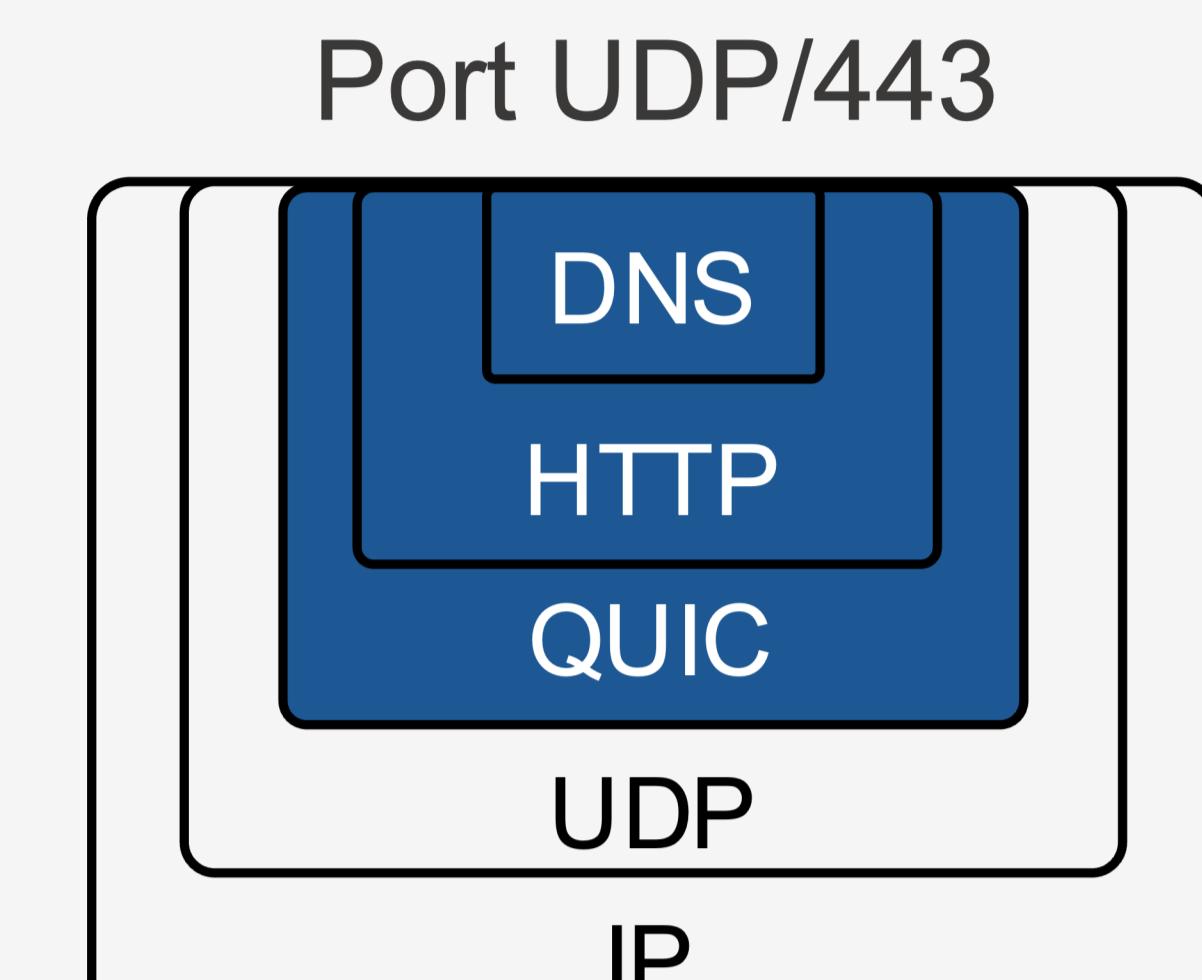
DNS over TLS (DoT)



DNS over HTTPS (DoH)

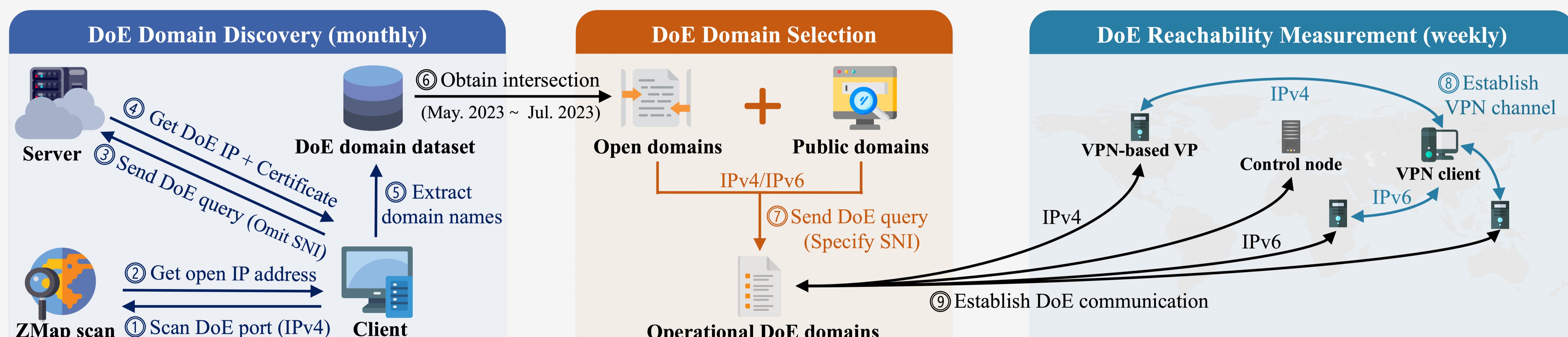


DNS over QUIC (DoQ)



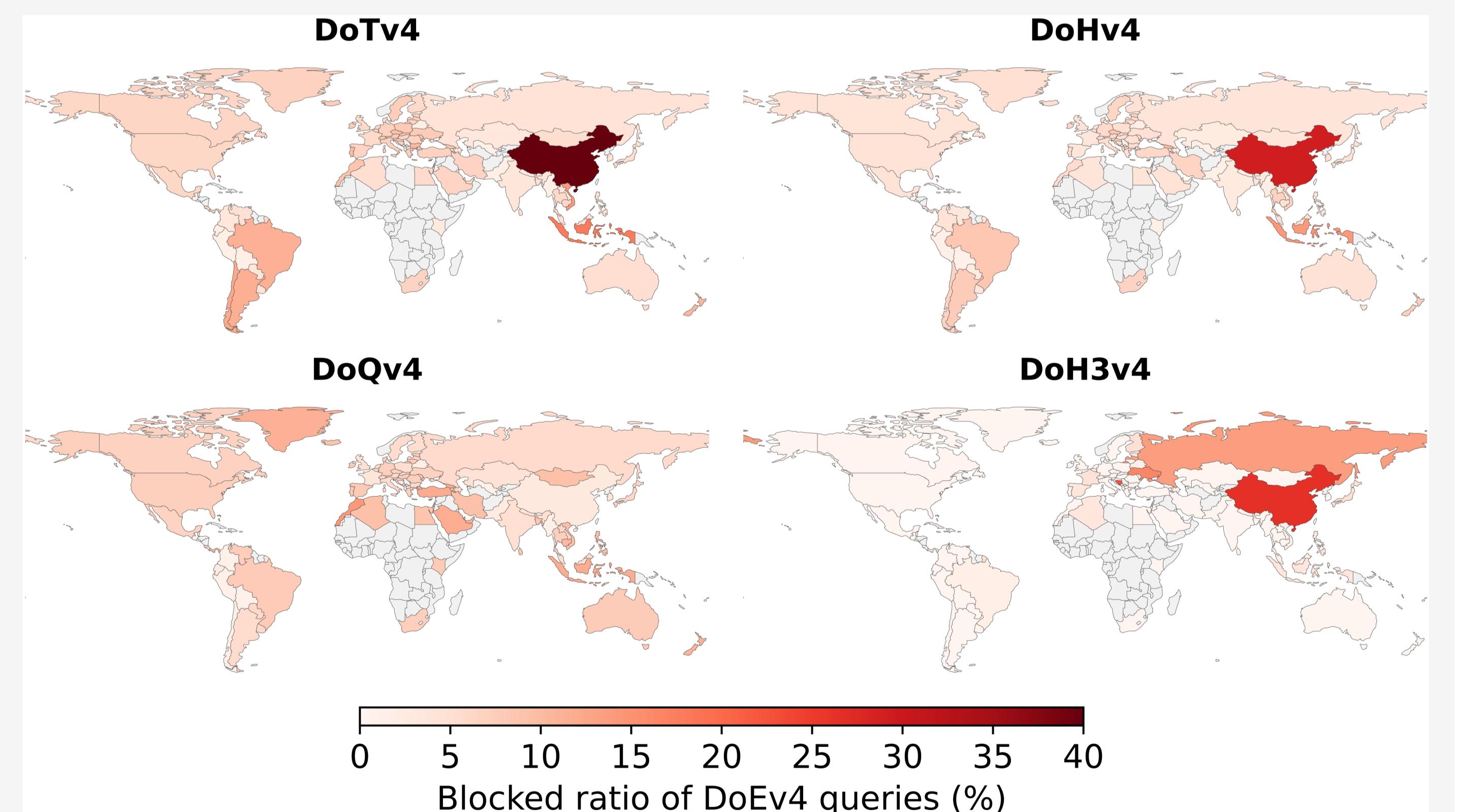
DNS over HTTP/3 (DoH3)

Our global DoE service reachability measurement platform

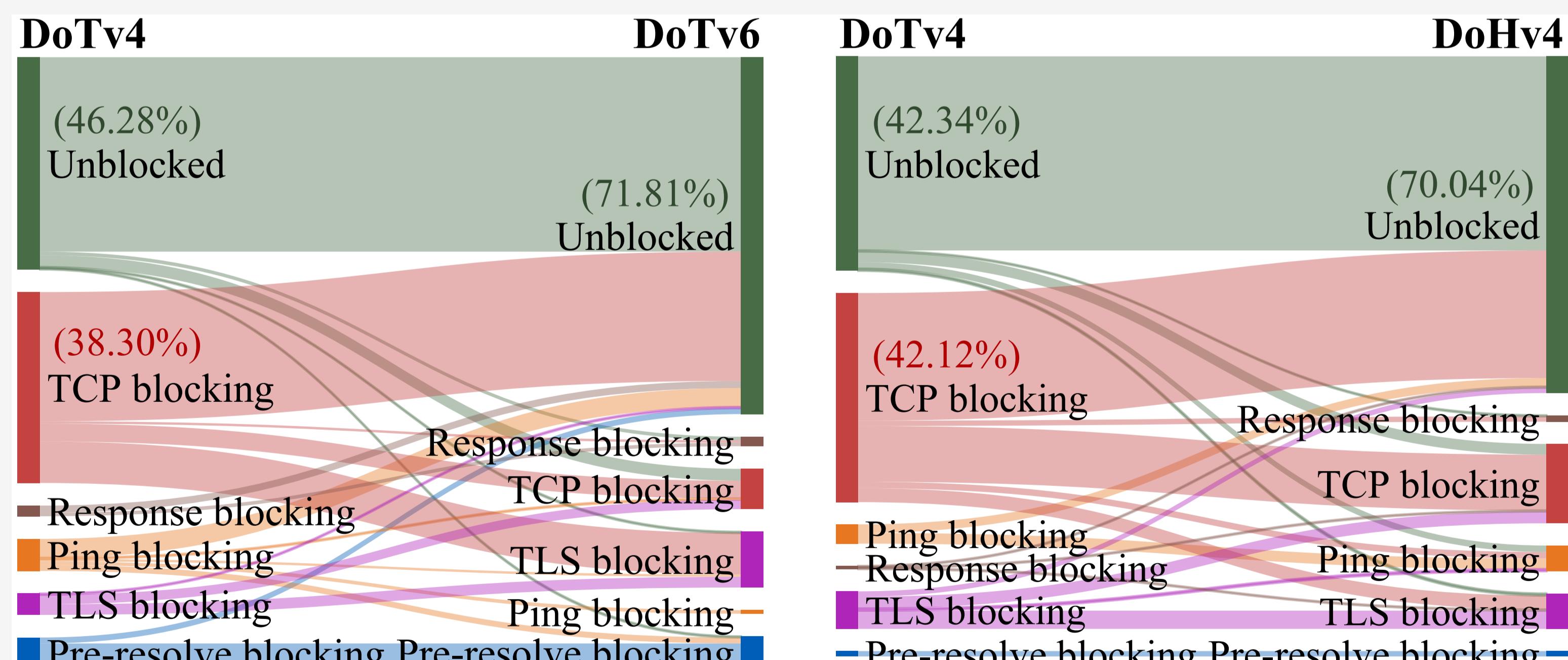


- ❖ **Supported protocols:** DoT, DoH, DoQ, DoH3 (IPv4/IPv6)
- ❖ **Supported blocking type detection:** Pre-resolve, Ping, TCP, TLS, QUIC-VN, QUIC, Response
- ❖ **Vantage point distribution:** 5K VPN nodes, located in 102 countries/regions
- ❖ **DoE domain collection:** 1302 operational DoE domains, 448 of which support IPv6
- ❖ **DoE reachability monitor:** over 10M DoE queries in two months

Country/region blocking of DoE services



Changing DoE service types can improve reachability



We publish our code and data at: <https://port-53.info/data/open-encrypted-dns-servers/>

Open Encrypted DNS Servers

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We scan the IPv4 address space for servers supporting DNS-over-TLS (DoT, [RFC 7858](#)), DNS-over-HTTPS (DoH, [RFC 8484](#)), DNS-over-QUIC (DoQ, [RFC 9250](#)), and DoH3. Here we provide statistics and data about open encrypted DNS servers, including their IP addresses, authentication domain names (ADN), locations, and certificate verification status.

Contact: Ruixuan Li, lrx.goat@gmail.com