



## END-USER MAPPING: NEXT GENERATION REQUEST ROUTING FOR CONTENT DELIVERY

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**ABSTRACT:** Content Delivery Networks (CDNs) deliver much of the world's web, video, and application content on the Internet today. A key component of a CDN is the mapping system that uses the DNS protocol to route each client's request to a "proximal" server that serves the requested content. While traditional mapping systems identify a client using the IP of its name server, we describe our experience in building and rolling-out a novel system called end-user mapping that identifies the client directly by using a prefix of the client's IP address. Using measurements from Akamai's production network during the roll-out, we show that end-user mapping provides significant performance benefits for clients who use public resolvers, including an eight-fold decrease in mapping distance, a two-fold decrease in RTT and content download time, and a 30% improvement in the time-to-first-byte. We also quantify the scaling challenges in implementing end-user mapping such as the 8-fold increase in DNS queries. Finally, we show that a CDN with a larger number of deployment locations is likely to benefit more from end-user mapping than a CDN with a smaller number of deployments.

**BIOGRAPHY:** Fangfei Chen received his bachelor degree in EE from Tsinghua University and PhD in CS from the Penn State University. In 2012, he joined Akamai Technologies and has since been working on various performance analysis projects. He is also interested in optimization models and big data techniques.