

# Measuring DNS Integrations into Blockchain Namespaces (abstract)

Andrew Kaizer and Swapneel Sheth, Verisign Labs

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Over the last several years, blockchain and decentralized applications have emerged as a new use case for user-friendly identifiers. In these applications, a common use case is that an identifier can be associated with a resource such as a wallet, a smart contract, or a decentralized website (or more precisely, with the resource's address in one of the various blockchain or decentralized application environments).

Given the historical evolution of Domain Name System (DNS) to account for use cases related to mapping an easy-to-remember identifier to a hard-to-remember resource identifier, it is worth considering how DNS could evolve to address these use cases as well. Existing user-friendly identifiers in such applications have centered on blockchain-based alternative name systems instead of DNS-based solutions.

While these alternative name systems are not part of what is traditionally considered as the DNS, some of them have developed DNS integrations which allow a DNS domain name to be imported into their namespaces, mostly via Domain Name System Security Extensions (DNSSEC). One DNSSEC-based integration is from Ethereum Name Service (ENS) which launched a prototype in 2018<sup>1</sup>, later expanding it in 2021<sup>2</sup> for most DNSSEC-enabled TLDs. Other DNSSEC-based integrations have also been launched by Tezos Domains.

Our analysis of the current ENS DNSSEC-based integration reveals that nearly 23% of the DNS domain names that have been imported into ENS are out of synchronization with their state in DNS – i.e., it is no longer clear if the same registrant controls the name in both the DNS and ENS namespaces. Such issues may lead to confusion from users and raise questions about the security and stability of this type of DNSSEC-based DNS integration.

The goal of this proposed topic is two-fold. First, we will present our preliminary measurement of the ENS DNSSEC-based integration to ground that the synchronization issue is real and explain why the current implementation leads to such outcomes.

Second, we hope to engage with the broader community to establish what other measurements may be helpful, and to discuss other consideration that may impact the security and stability of DNS integrations.

In raising these topics<sup>3</sup> now, it is hoped that a stronger understanding of DNS integrations can begin to emerge to help understand considerations and potential remediations that may exist and be applicable to DNS integrations more broadly.

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<sup>1</sup> Nick Johnson. Announcing support for .xyz on ENS. Sep. 5, 2018. <https://medium.com/the-ethereum-name-service/announcing-support-for-xyz-on-ens-7f5bc7fe1b24>.

<sup>2</sup> Brantly Millegan. Full DNS Namespace Integration to ENS Now on Mainnet. Aug. 26, 2021. <https://medium.com/the-ethereum-name-service/full-dns-namespace-integration-to-ens-now-on-mainnet-9d37270807d3>.

<sup>3</sup> Swapneel Sheth. Diversifying beyond the traditional DNS ecosystem: responsible integration into blockchain namespaces. <https://www.icann.org/en/system/files/files/presentation-traditional-dns-ecosystem-integration-blockchain-namespaces-16nov22-en.pdf>.