MONITORING AND EVALUATING ENS THROUGH THE INSO

Eric Osterweil -- eoster@gmu.edu
Pavan Kumar Dinesh -- pdinesh@gmu.edu (itspavan.eth)
Srivalli Vajjha -- svajjha@gmu.edu
SHOULD THE ETHEREUM NAME SERVICE (ENS) BE INFORMED BY DNSSEC?

- Our community has learned that a lot goes into securing the Internet’s namespace.
- DNSSEC and DS automation are topical research because they address complex challenges.
  - Their lessons and developments are relevant to general namespace security.
- Recently, blockchain-based name systems being positioned for Internet naming.
  - Are they just “different?” Do they have similar challenges? What are they aiming at?
- In this talk, I will present preliminary monitoring of one prominent example: the Ethereum Name Service (ENS).
- We extend our DNSSEC monitoring system (the INSO) to facilitate side-by-side evaluations.
  - We ask: Are comparisons relevant? How do they apply? Are these systems doing different things?
- We find preliminary evidence that ENS is already aiming to resolve DNS’ namespace.
**WHAT IS THE ETHEREUM NAME SERVICE (ENS)?**

- **ENS** is a name mapping service that is built on the *Ethereum* blockchain
  - *Ethereum* is a blockchain system that stores *transactions* on its immutable ledger
  - These transactions encode the creation and invocations of *smart contracts* (code stored and executed on *Ethereum* itself)
  - As is typical of blockchain systems, the address space in *Ethereum* is flat
- **ENS** provides semantic names that resemble the structure of DNS
  - These names were initially designed to map semantically meaningful ENS names to Ethereum’s flat address space
  - Objectives include mapping names to wallets, IPFS content, Web3 web pages, etc.
- Native ENS names are delegated below the .eth [pseudo] Top-Level Domain (TLD)
- But, is it more?
WHAT ENS MAY BE

• ENS presents a general name resolution service, for arbitrary names
• Coexistence with the DNS is already codified in Ethereum’s standards
  • Ethereum Request for Comments (ERCs) specify rules for creating of tokens, smart contracts, etc.
  • ERC-1185: Storage of DNS Records in ENS
  • Claiming a DNS name in ENS requires operation and validation of DNSSEC
• ERC-1185 states, “This allows ENS to be used as a store of authoritative DNS information”

• The stated design and deployment objectives for ENS remain focused on Ethereum addresses, NFTs, IPFS, Web3, etc.
• However, monitoring reveals growing populations of DNSSEC names in ENS’ ~2.5M names

• We feel that monitoring ENS’ growth and function is becoming increasingly important
• For this, we are extending the Internet Namespace Security Observatory (INSO),
  https://inso.gmu.edu/
• INSO holistically monitors, measures, and evaluates DNSSEC
• INSO focuses on
  • Historical progress of the Internet’s namespace security
  • Structure of the hierarchy
• Both important in the ENS as well (albeit details are quite different)

• https://inso.gmu.edu/
Because ENS is part of the Ethereum blockchain, we can measure its full structure and history.

We can also perform ongoing monitoring to evaluate its growth and usage.

Already discovering behaviors:
- ~3.7% of “Text” types in ENS point to email addresses
- ~4.7% point to URLs (DNS-based)
- ~4.5% point to twitter.com
- ~5.3% point to domains in .com, .org, .xyz, .me, .network, …
• Current results scraped from Ethereum

• We have deployed an Ethereum index called TrueBlocks’ Chifra
  • [https://trueblocks.io/](https://trueblocks.io/)

• We are provisioning an Ethereum archive node
  • Learning operational lessons about the challenges of operating a node

• Will be integrating our Chifra index with our archive node

• Will be deploying the ENS view of the INSO in the coming quarter
• Thank you to
Pavan Kumar Dinesh
( pdinesh@gmu.edu
itspavan.eth)

and

Srivalli Vajjha
( svajjha@gmu.edu
https://www.linkedin.com/in/srivalli-vajjha-197a43110/ )

• Both are on the job market!