ENS Cross Chain Integration Strategy

matoken.eth
twitter: @makoto_inoue

Devcon Bogota
2022 Oct

My Name is ...

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01. Cross chain examples in the wild

02. Under the hood

03. What’s next

1. Cross chain examples in the wild

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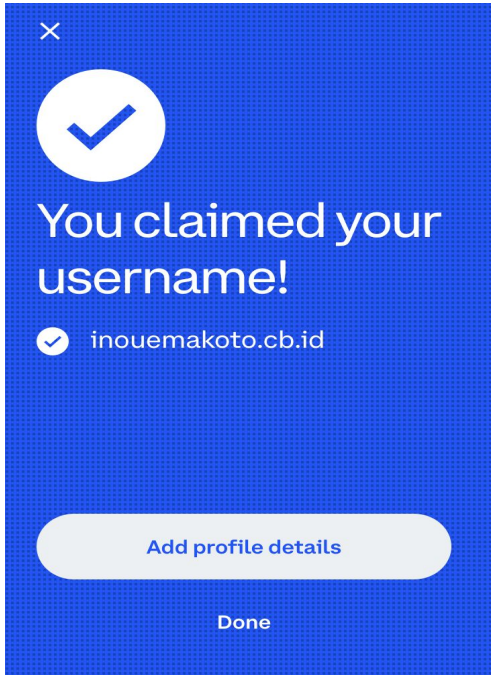
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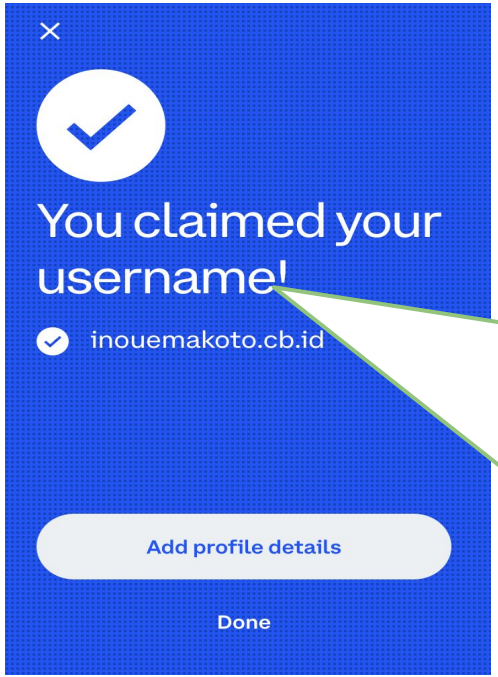
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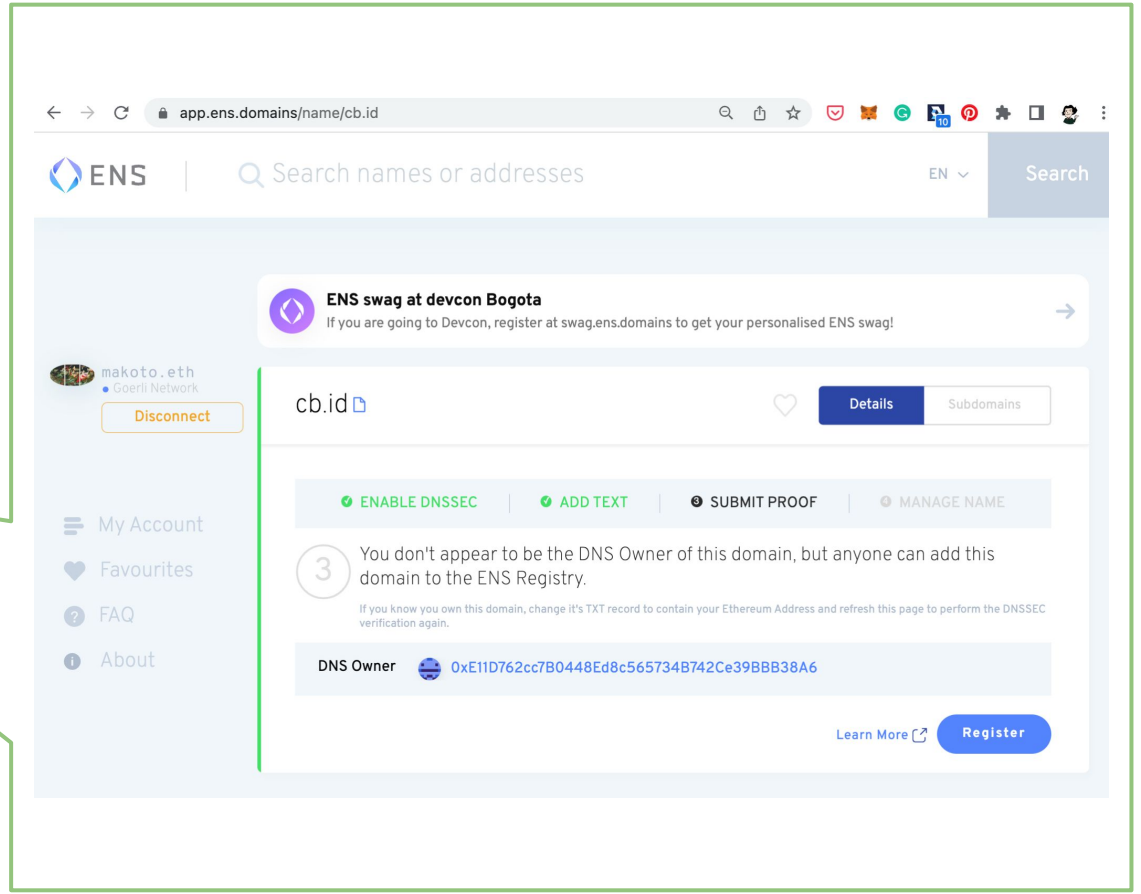
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ENABLE DNSSEC
ADD TEXT
SUBMIT PROOF
MANAGE NAME
3
You don't appear to be the DNS Owner of this domain, but anyone can add this domain to the ENS Registry.
If you know you own this domain, change it's TXT record to contain your Ethereum Address and refresh this page to perform the DNSSEC verification again.
DNS Owner
0xE11D762cc7B0448Ed8c565734B742Ce39BBB38A6
Learn More
Register

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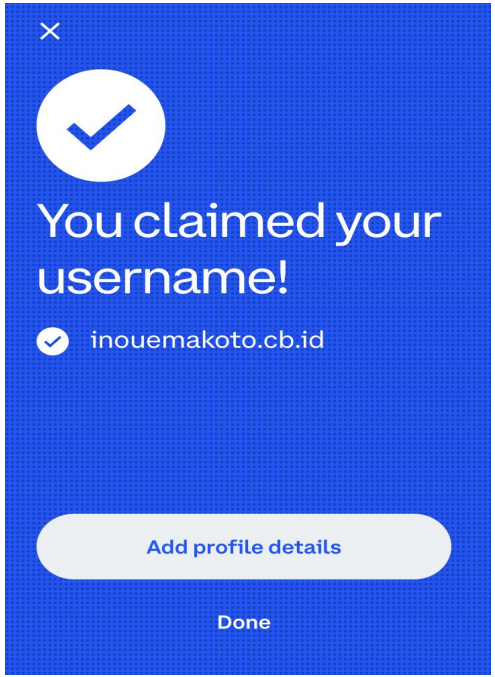
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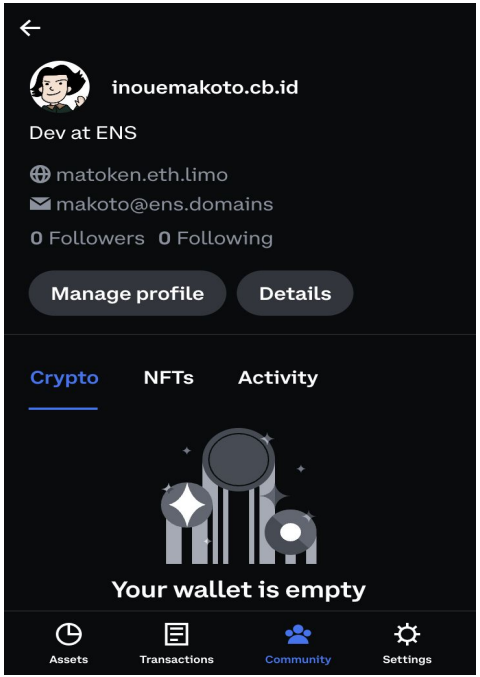
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Manage profile
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Activity
Your wallet is empty
Assets
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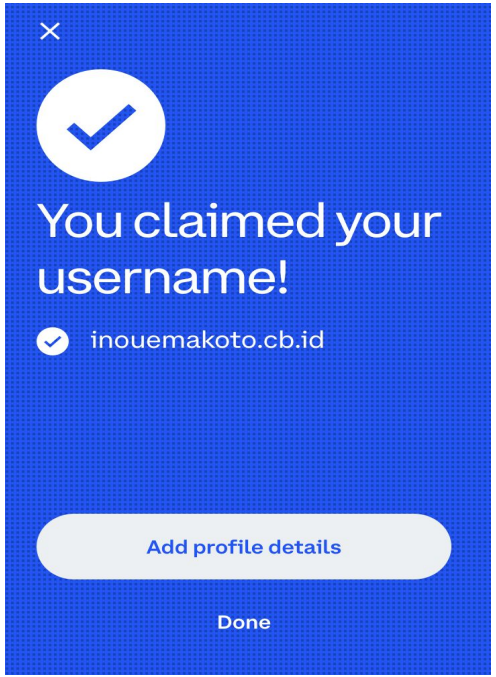
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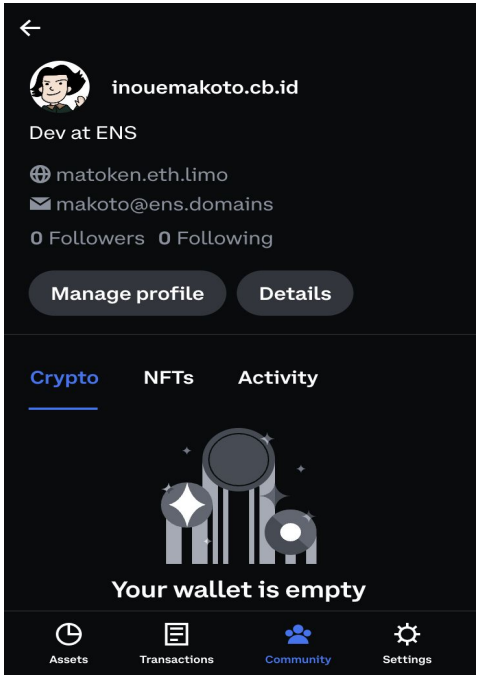
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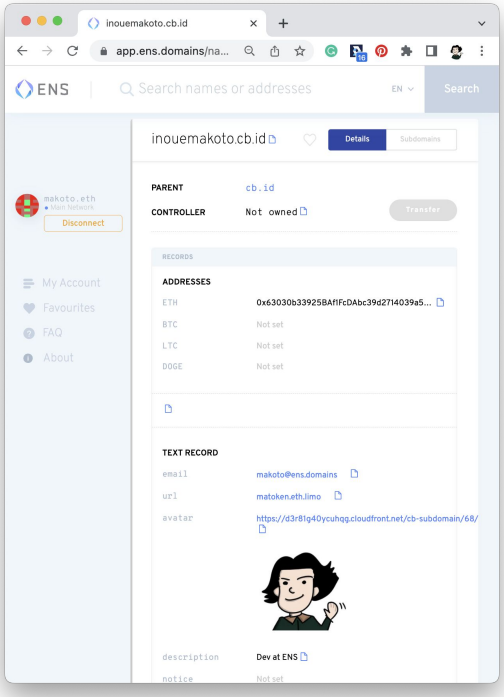
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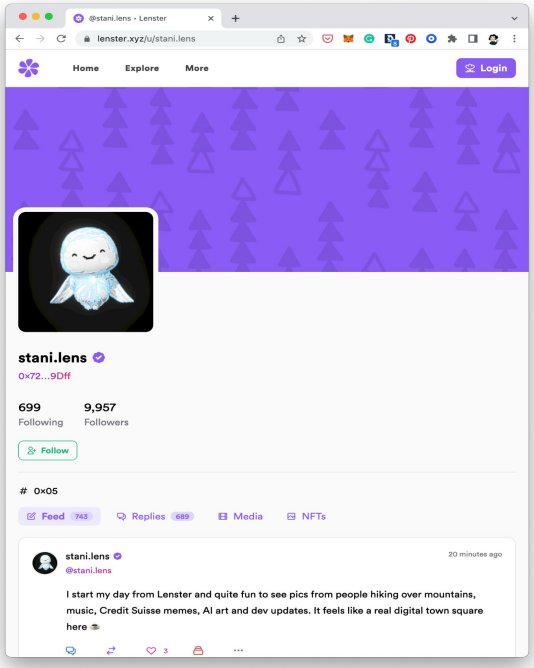
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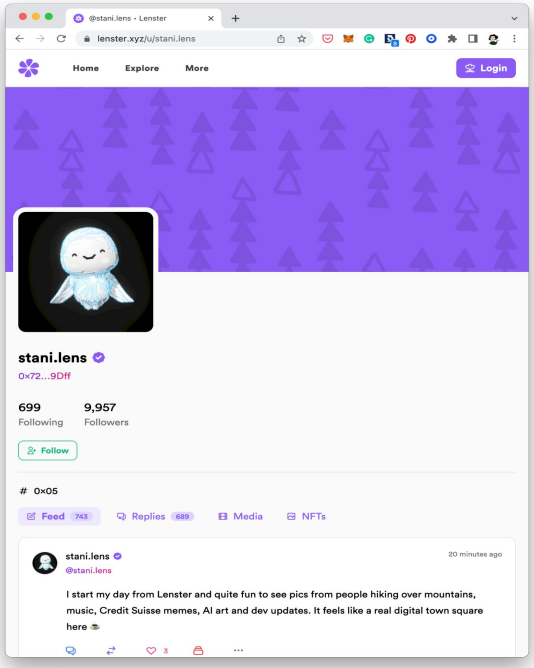
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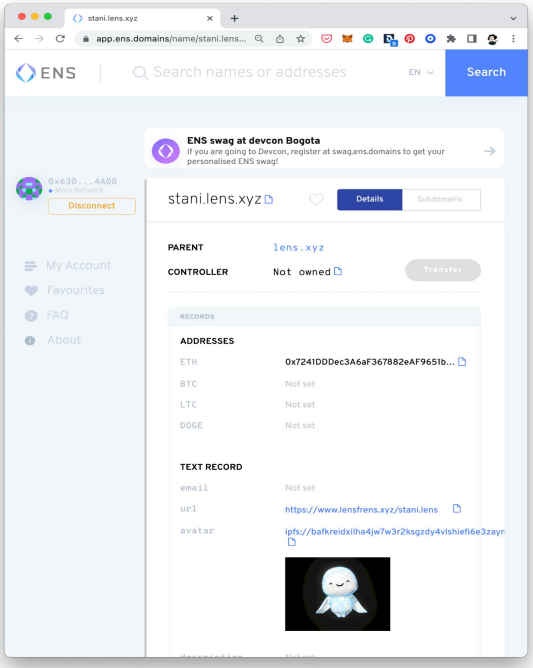
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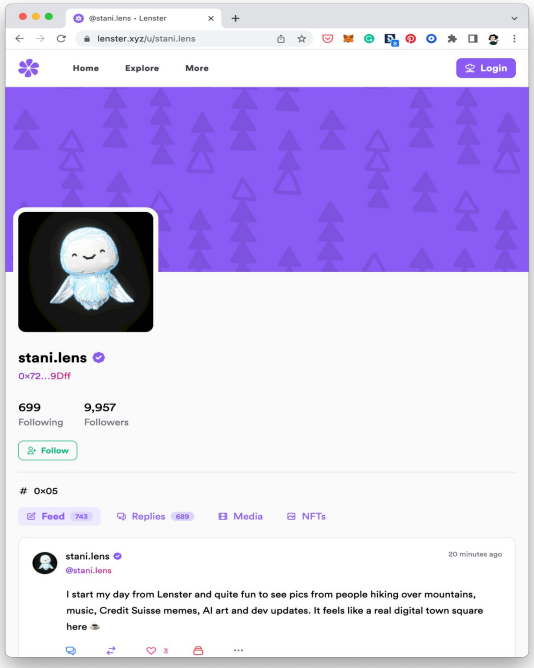
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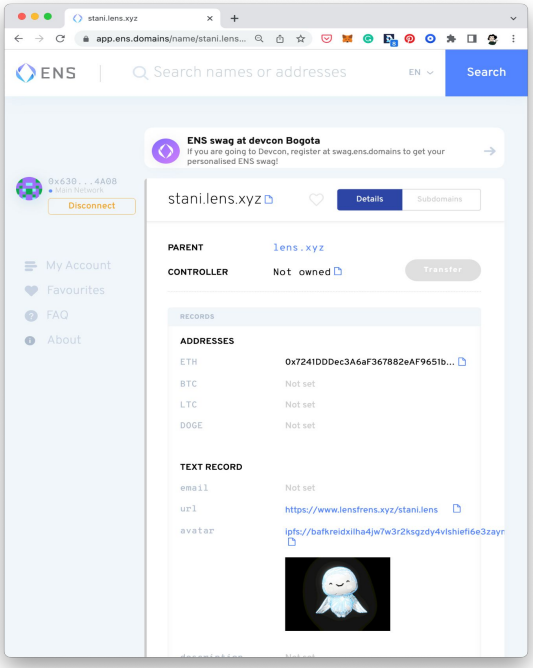
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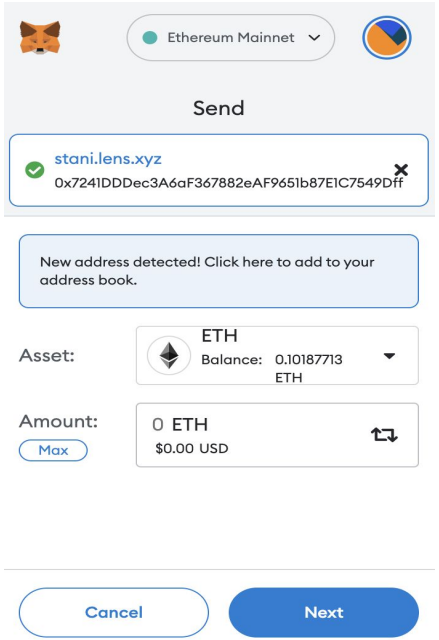
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New address detected! Click here to add to your address book.
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ETH
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Cancel
Next

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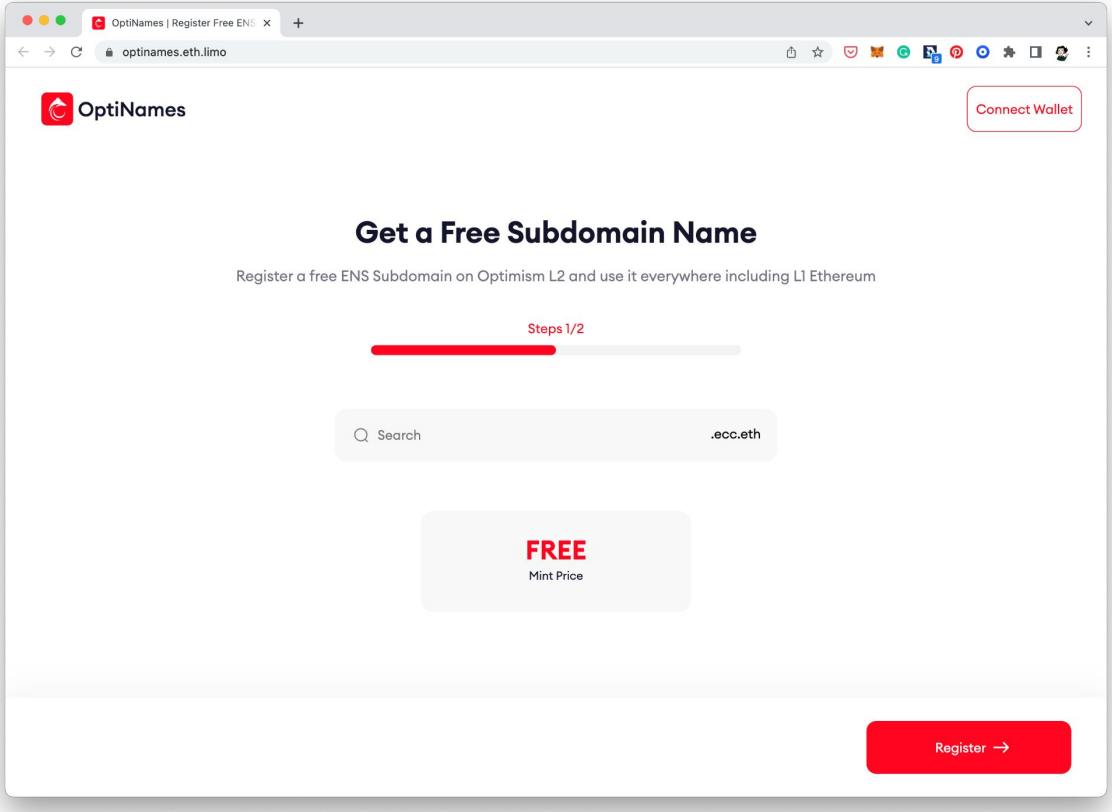
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FREE
Mint Price
Register

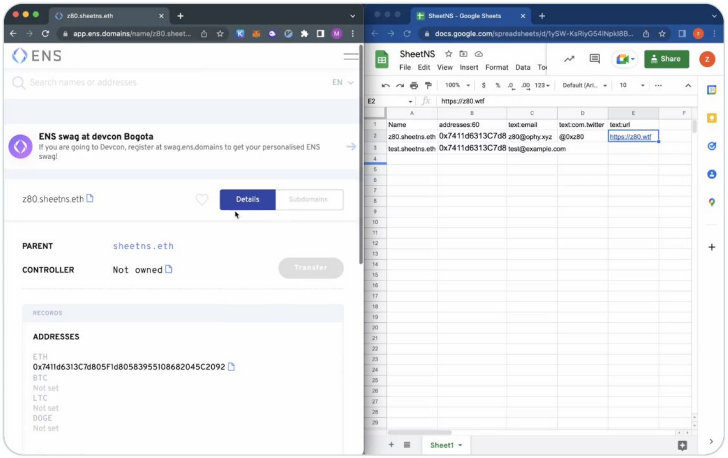
sheets.eth 🤯

z80 is going to devcon
@0xz80

With EIP3668, you can already move storage off-chain today. While it isn't fully trustless, it scales extremely well

For example, you could create an infinite number of @ensdomains for free

you can even use @googlesheets as your source-of-truth



z80 is going to devcon @0xz80 · Oct 3
ENS but all the data is stored on google sheets

Integrated libraries, apps and wallets

- ethers.js (v5.6.2)
- web3.py (v6)
- web3j (v4.9.3)
- wagmi
- useDapp

What’s common across these examples?

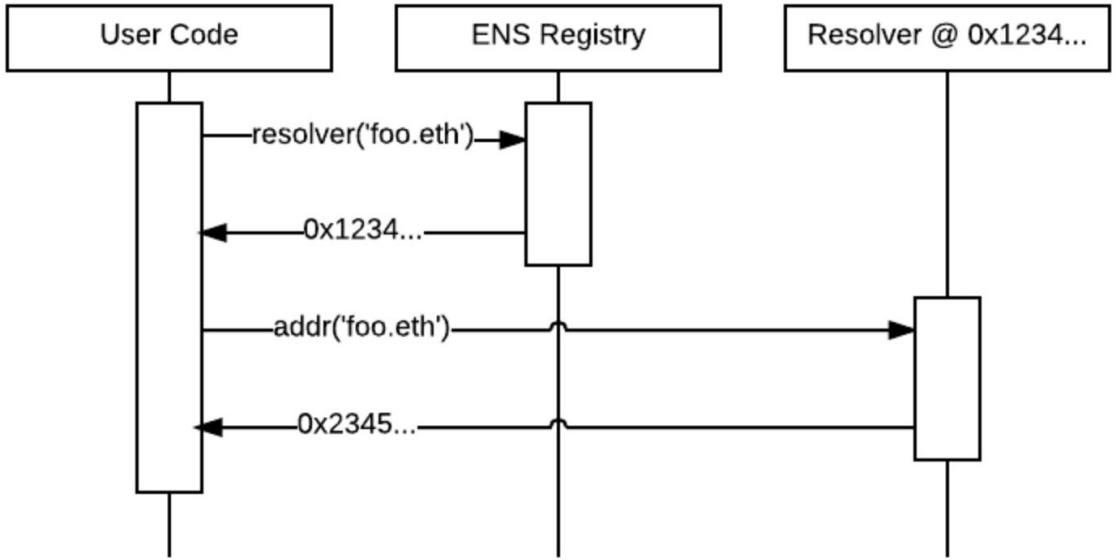
- Storage Agnostic (DBMS, Polygon, Optimism, etc) = No or little gas fee
- Names available on L1 = No need to switch networks to lookup names
- Trust NOT minimised

2. Under the hood
(CCIP-read + Wildcard)

https://docs.ens.domains/dapp-developer-guide/ens-l2-offchain

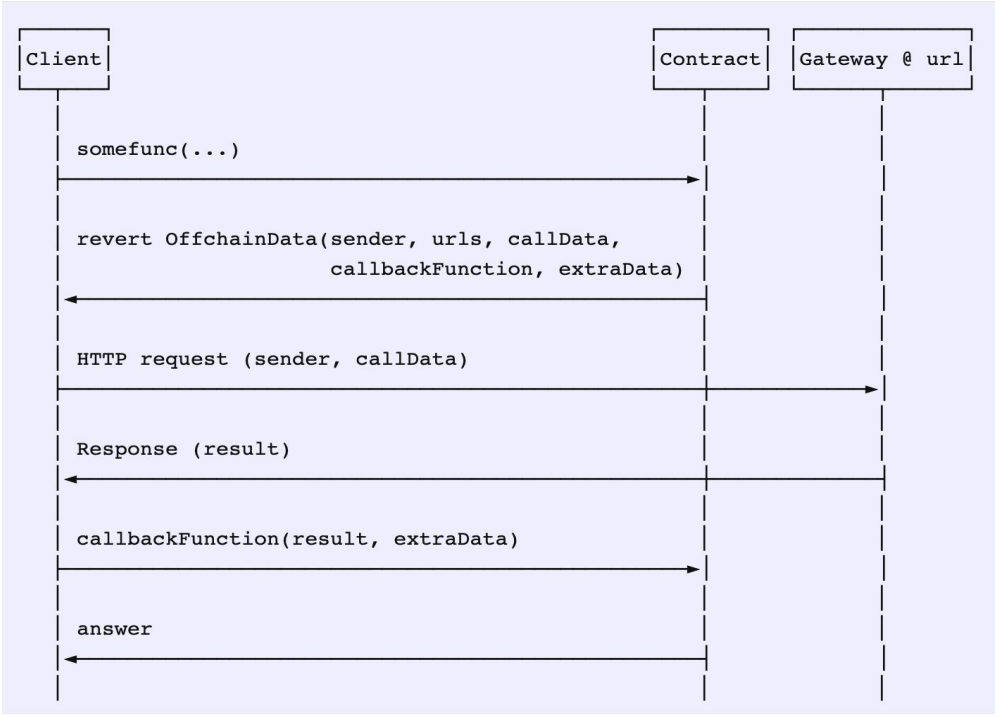
ENS Architecture recap

- 2 requests model
- Swappable resolver



CCIP-read (EIP 3668)
Secure Offchain data retrieval

- 3 request model
  - Revert, Request, Verify



CCIP-read
Step 1: Revert

```
41      function resolve(bytes calldata name, bytes calldata data) external override view returns(bytes memory)
42          bytes memory callData = abi.encodeWithSelector(IResolverService.resolve.selector, name, data);
43          string[] memory urls = new string[](1);
44          urls[0] = url;
45          revert OffchainLookup(
46              address(this),
47              urls,
48              callData,
49              OffchainResolver.resolveWithProof.selector,
50              callData
51          );
52      }
```

CCIP-read Step 2: Request

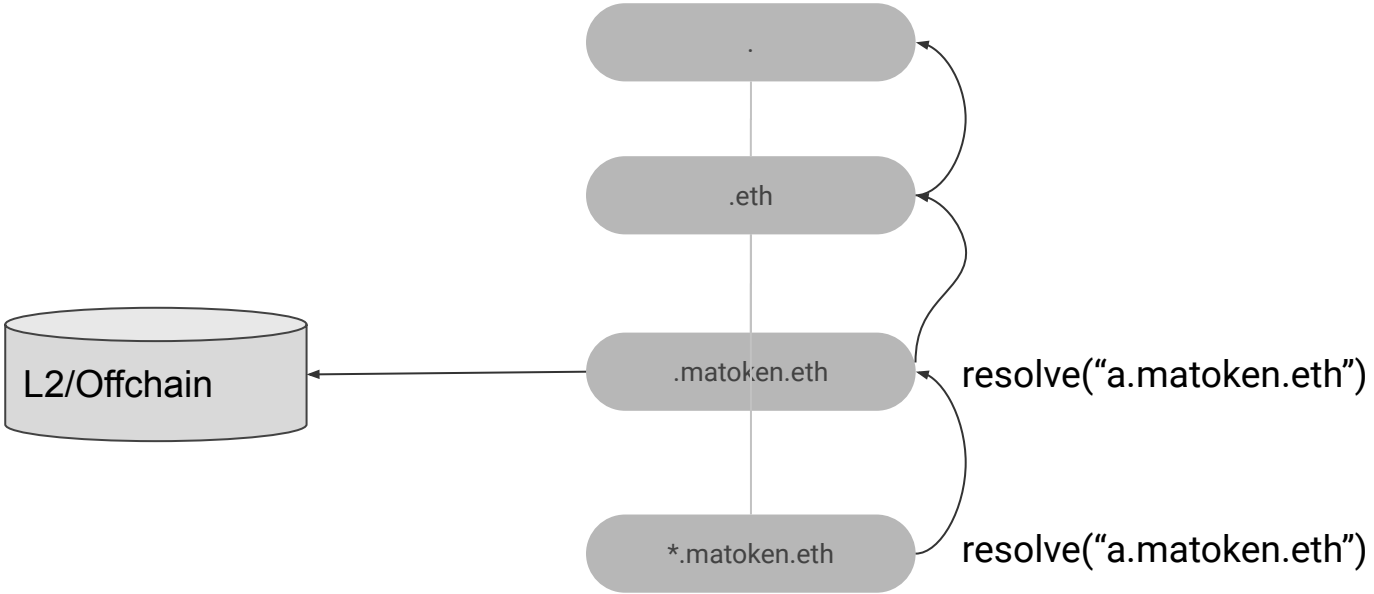
- @chainlink/ccip-read-server
- query
- construct a proof

```
95  export function makeServer(signer: ethers.utils.SigningKey, db: Database) {
96    const server = new Server();
97    server.add(IResolverService_abi, [
98      {
99        type: 'resolve',
100       func: async ([encodedName, data]: Result, request) => {
101         const name = decodeDnsName(Buffer.from(encodedName.slice(2), 'hex'
102
103         const { result, validUntil } = await query(db, name, data);
104
105         // Hash and sign the response
106         let messageHash = ethers.utils.solidityKeccak256(
107           ['bytes', 'address', 'uint64', 'bytes32', 'bytes32'],
108           [
109             '0x1900',
110             request?.to,
111             validUntil,
112             ethers.utils.keccak256(request?.data || '0x'),
113             ethers.utils.keccak256(result),
114           ]
115         );
116         const sig = signer.signDigest(messageHash);
117
118         return [result, validUntil, sigData];
119       },
120     },
121   ]);
122   return server;
```

CCIP-read
Step 3: Verify

```
57      function resolveWithProof(bytes calldata response, bytes calldata extraData) external view returns(bytes memory
58          (address signer, bytes memory result) = SignatureVerifier.verify(extraData, response);
59          require(
60              signers[signer],
61              "SignatureVerifier: Invalid sigature");
62          return result;
63      }
```

Wildcard Resolution (ENSIP 10)
For issuing subdomains



Considerations

- No Onchain events (for subdomains and records)
- Must protect signing keys
- Must host own gateway service

Ready to try?

https://github.com/ensdomains/offchain-resolver

3. What’s next?

Where we are right now

- [✔️] Off chain data retrieval
- [✔️] Basic libraries and wallets integrated
- [ ] Cross chain data deferral
- [ ] Trust minimised resolver
- [ ] ENS L2 Canonical registry

CCWDP (EIP-5559)

⚠ This EIP is not recommended for general use or implementation as it is likely to change.

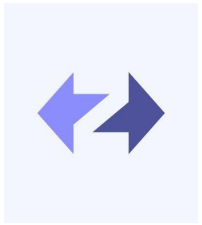
EIP-5559: Cross Chain Write Deferral Protocol ‹›

The cross chain write deferral protocol provides a mechanism to defer the storage & resolution of mutations to off-chain handlers

Author	Paul Gauvreau, Nick Johnson
Discussions-To	https://ethereum-magicians.org/t/eip-cross-chain-write-deferral-protocol/10576
Status	Draft
Type	Standards Track
Category	ERC
Created	2022-06-23
Requires	712

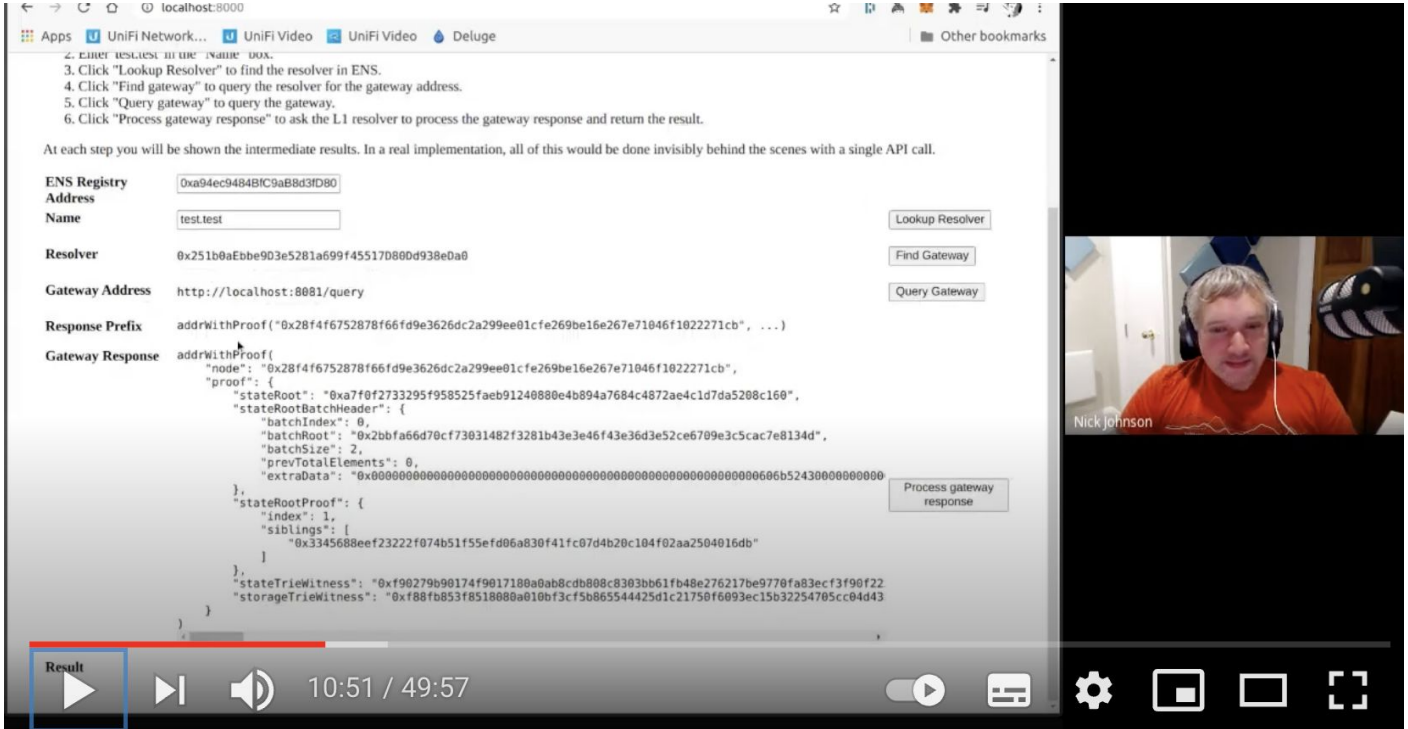
Trust Minimised Resolver ⇒ Rollups

- Batch write L2 data to L1
- L2 State Verifiable on L1
  - Fraud Proof
  - Validity Proof
- Storage Validation
  - With Merkle Tree



L2 Resolver on Optimism Demo

https://youtu.be/9DdL7AQgXTM



ENS L2 Canonical registry and bridge

- Subdomain ENS NFT on L2
- Event aggregation (Dune, subgraph, etc)
- eg: Chain Specific Name Service as ENS subdomains

ENS

Thank you

https://docs.ens.domains/dapp-developer-guide/ens-l2-offchain

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Devcon Bogota
2020 Oct

One more thing....

State of the ENS

Talk 5 — On Top of the Mountain

1140

State of the ENS

Talk Intermediate

GOVERNANCE & COORDINATION

Day 2 — Wed, Oct 12 **16:30 - 17:00** 30 Mins

Speakers

Nick Johnson

nicksdjohnson