

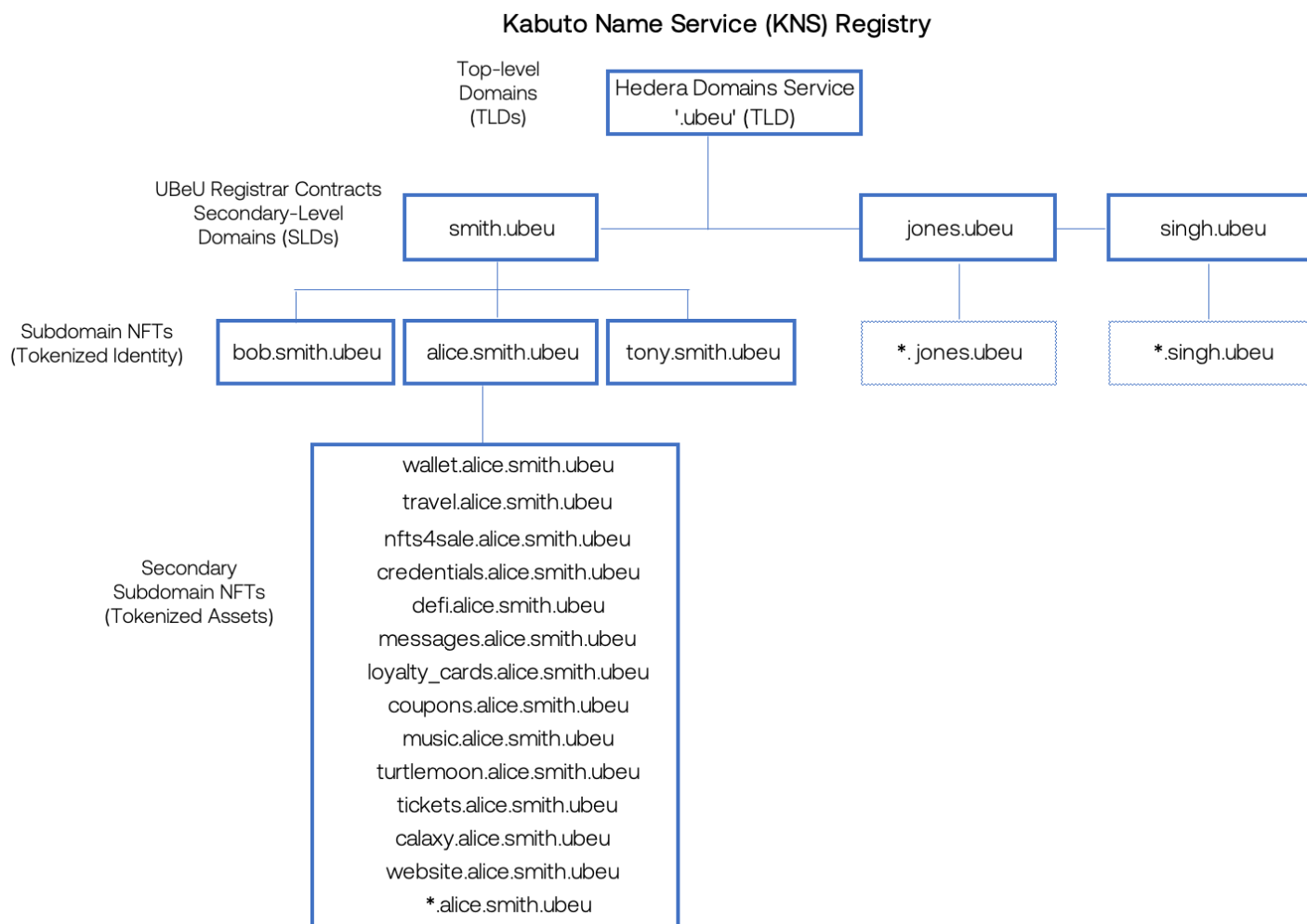


UBeU – for Digital Identity & Digital Asset Management

Introduction

Hedera Domains Service (HDS) is creating UBeU, a single unified registry for digital identity on Hedera Hashgraph. The platform is being built on the Kabuto Naming Service (KNS) under the '.ubeu' TLD.

By tokenizing surname SLDs, the UBeU platform creates a standardized format for digital identity - 'firstname.lastname.ubeu.' And further, due to the hierarchal nature of the KNS protocol, owners of '.ubeu' digital identity tokens can create an unlimited number of secondary subdomains ('*.firstname.lastname.ubeu') and map tokenized digital assets to designated wallets holding these secondary subdomain NFTs. This capability makes UBeU a digital asset management platform as well as a risk mitigation tool as digital assets can be efficiently organized and partitioned among wallets.





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Digital identity can be considered an extension of a user as they interact and transact with DApps, services and resources across Hedera and the broader Web3 ecosystem. As the touchpoint for a self-sovereign Web3 digital identity, a UBeU digital identity NFT is a login and authorization for all Web3 DApps and resources. It is the basis of your Web3 profile, connecting your social profiles, contact details, and digital credentials. It is the name you use to receive payments and other digital assets. It can even be the domain for your Web3 website.

Today, one of the most common uses of a smart domain NFT is as an account alias; a self-selected human readable name to be used in lieu of more complex account identifiers when sending and receiving digital assets. Despite this critical function, Hedera wallets do not include the option to create an account alias during the account creation process; the services of a name provider are required. Separating the creation of an account alias from the process of creating a network account is akin to separating the choice of an email address from creating an email account.

The cause of this inefficiency is manifold: Hedera has multiple HNS name providers with isolated registries and resolvers; there is a lack of standardized digital identity format, the HNS has not developed open source libraries, SDKs, and tools that would decentralize a domain registry to allow wallets and Dapps to interact directly with it.

The UBeU unified registry is an ideal solution to this problem as it is application specific based on creating a standardized format for digital identity tokens and providing decentralized access to this unified registry to wallets and Dapps throughout the Hedera ecosystem. This will allow wallet software to integrate digital identity creation into the account creation process making the process for new users creating network accounts no different than creating an email account with an email address.

Once a subdomain digital identity NFT is created users will be able to dynamically add secondary subdomains through the UBeU DApp or dynamically as third-party Hedera DApps will be able to interact with the UBeU registry in a direct and decentralized fashion; in this way a user can use this digital identity token for digital asset management and map DApp resources to specific wallets.



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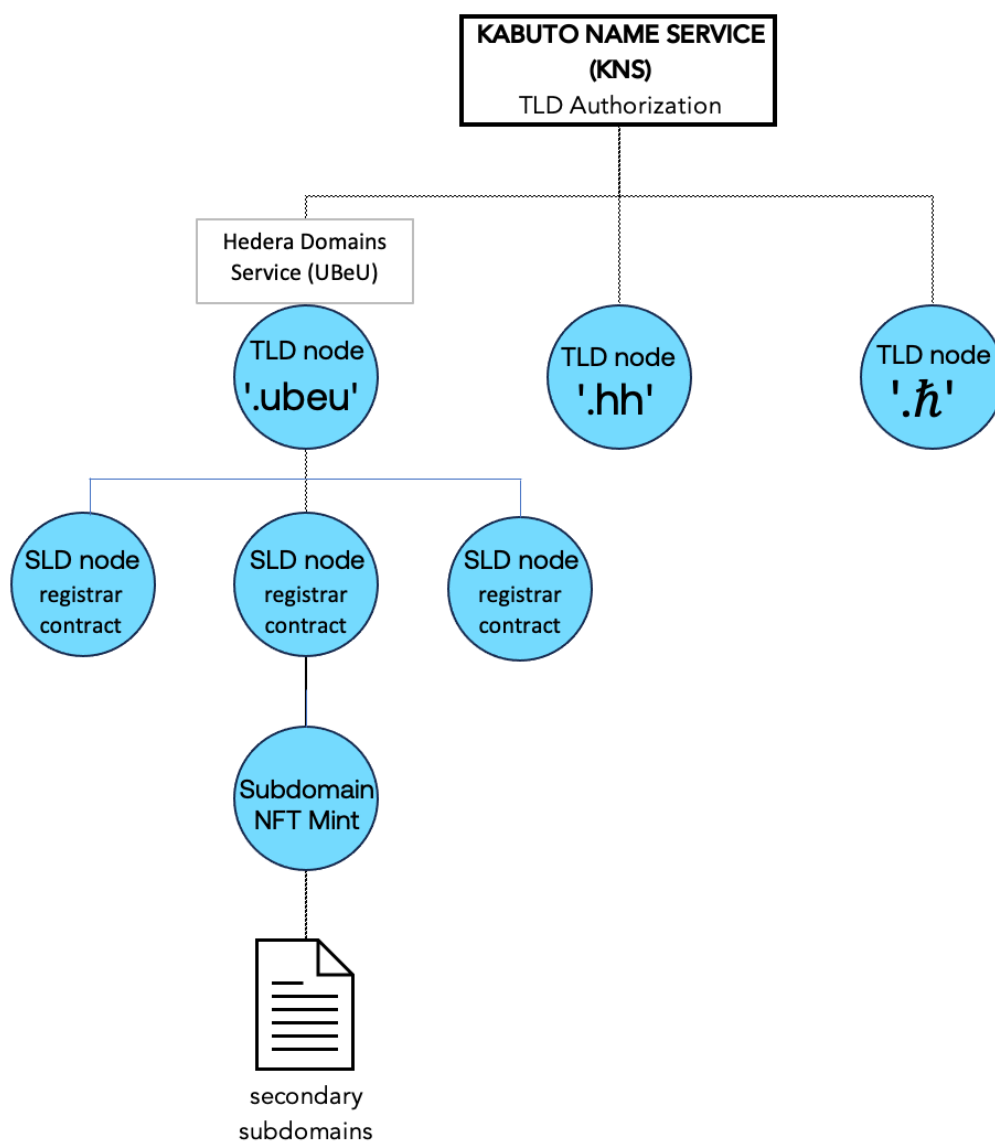
Abstract

This document outlines the implementation of the UBeU platform, which will serve as a unified registry and decentralized platform for digital identification tokens and digital asset management. The platform consists of:

- a top-level domain (‘.ubeu’) and attendant registry which is the core contract that enables ‘.ubeu’ name resolution. The registry maintains a list of domains, recording the owner, resolver, and allows the owner to make changes to the data therein.
- a registrar which is the smart contract that owns the secondary-level domain and issues subdomain NFTs as ‘.ubeu’ digital identity tokens according to the rules defined by its contract code.
- Domain resolution is made using a KNS resolver.
- The UBeU DApp allows users to interact with the ‘.ubeu’ registrar contract and create a digital identity subdomain NFT. The subdomain NFT serves as authorization for its holder to interact with the DApp and configure secondary subdomains for their NFTs and view their digital asset holdings in wallets holding secondary subdomain NFTs of the ‘.ubeu’ subdomain in the registry.
- The development of open-source libraries, tools, and SDKs will allow decentralized access to the ‘.ubeu’ registry by wallets and Dapps throughout the Hedera ecosystem. By allowing wallets to interact with the TLD registry, users will be able to create digital identities (account aliases) during the account creation process. DApps interaction with the registry will provide users with an easy way to update a name they own, creating secondary subdomains mapped to the applications resources.



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Motivation

- The ability to create a digital identity and an account alias directly from a wallet during the account creation process is intuitive and necessary to facilitate the onboarding of more casual less sophisticated network users.
- Digital identity account aliases based on a standard 'firstname.lastname.ubeu' format is intuitive and not dissimilar to traditional email. A standard format using labels for first and last name labels allow DApps to better personalize and customize products.



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- The use of secondary subdomains ('*.firstname.lastname.ubeu') accommodates the proliferation of tokenized consumer real world assets – coupons, music, loyalty cards, tickets, reservations, website, money, securities, etc. Users can interact with the UBeU DApp and configure '*.firstname.lastname.ubeu' secondary subdomains using the '.ubeu' subdomain NFT as authorization token. Decentralized access to the '.ubeu' registry by ecosystem DApps permits users to update names and map resources directly to DApps they interact with.
- Secondary subdomains allow users to partition digital assets between wallets which minimizes the assets a user exposes to the DApps and services interacted with to only those necessary. Asset partitioning limits the risk of losing assets if a single concentrated wallet is compromised. Long-term high value assets (stocks, the deed to a house etc.) can be held in a cold storage wallet while short term liquid assets (currency) or those with expirations (concert tickets) can be assigned to hot wallets. The UBeU Dapp provides users with a unified platform for viewing and managing their digital assets.

Rationale

By creating and administering an application specific '.ubeu' TLD, the UBeU platform will have the native ability to mint digital identity tokens based on any of the estimated 31 million global surnames. When a digital identity token is requested, a new surname SLD is created and the registrar contract for that surname is held by UBeU. Any future requests for a digital identity token based on that surname requires registrar contract to issue a subdomain NFT to the user.

Specifications

- Top level domain (TLD) administered by UBeU '.ubeu'
- Write a contract that owns the surname SLDs. 'surname.ubeu'
- Registrar contract issues its own NFTs for requested subdomains.
- User buys/licenses subdomain NFT
- User interacts with UBeU app using '.ubeu' NFT as authorization to configure secondary subdomains.
- Open source libraries, tools, and SDKs will decentralize access to '.ubeu' registry providing wallets and DApps with the ability to interact with it directly.



Alternative Approaches & Rejected Ideas

Superlink is built on Handshake protocol which is an effort to replace DNS with blockchain alternatives while KNS complements and extends the usefulness of DNS with decentralized, trustworthy name resolution for web3 resources such as blockchain addresses and distributed content.

Superlink has bought at auction or in the secondary market 1.2 million TLD surnames on the Handshake Protocol; a small percentage of the estimated 31 million global surnames. The Superlink portfolio holds 56 of the top 100 surnames globally, and 40 of the top 100 surnames in the USA. A partial portfolio of surnames which excludes many common surnames is a less than ideal solution for wallets wanting to support the creation of digital IDs directly by interacting with a single unified registry. Assembling a portfolio of surnames is capital intensive and will continue to grow more so over time. Superlink infrastructure does not support subdomains, nor does it support organizational identity.

The Hedera Name Service is not structured in a way that makes it practical for the purpose of creating a single unified digital identity registry. The creation of a unified registry administered under its own TLD as UBeU proposes is a far superior approach. Consider:

- UBeU, is an application specific platform which retains ownership of all (31 million) surname SLD registrar contracts. HNS surname SLD are held in 100s of different wallets, while 10s of millions of SLDs of surnames remain unregistered. UBeU offers ubiquity and scale that cannot be replicated under the HNS structure.
- Second, HNS domains do not currently have subdomain functionality which prevents a surname SLD from being tokenized and used to create a standardized firstname.lastname digital identity format.
- Third, the HNS has multiple name providers administering proprietary naming systems which complicates attempt to integrates the HNS registry access into wallets and DApps.



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- Fourth, the lack of HNS protocol layer policy leaves renewal pricing decisions in the hands of name providers; this discretion can be used adversely affect the economics of HNS domain based businesses and creates a lack of ecosystem consistency and considerable uncertainty for developers.
- Fifth, the HNS has no policies that would protect the holders of subdomains if the SLD holder allowed the domain to expire. Because '*.ubeu' SLD registrar contracts are owned by UBeU, this is not a concern.

UBeU: Scalable and Future Proofed

The UBeU model does not require any pre-buying of assets but rather the infrastructure writes a contract to hold SLDs when that SLD is first requested; the contract issues subdomain NFTs to users creating '.ubeu' digital ID tokens. The UBeU model natively supports digital ID tokens for all 31 million surnames at inception. And technically, HDS could add additional TLDs ('ubeu2') to its service if needed which provides unlimited scalability. The UBeU model supports unlimited customizable secondary subdomains for managing digital assets, which means is can accommodate tokenization models and services not yet to be developed making its utility future-proofed.

Governance/Protocol Management

TBD

Reference Implementation

Technical Architecture

TLD Node (registry, KNS resolver)

SLD Node (registrar contracts)

Subdomain NFT mints

Secondary Subdomain configuration

SDK, libraries, tools to provide decentralized access to HDS registry.