The Future of Money, Media & Messaging with Name-Only Domains
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Introduction

Since around the mid-1980s networks have been radicalizing value in ways that competing configurations have been unable to match. At the heart of this process is the internet. The internet is a collection of servers that are location-identifiable via numeric markers masked with domain name addresses. The way that addresses for IP servers were constructed was via separating out a second-level domain and a top-level domain into the following format:

symbols.com

with the second-level address appearing before a period which was followed by the top-level domain. There were 8 top-level domain addresses configured by the US Department of Defense in 1985 and these were: .com (for commercial use), .edu (for academic institutions), .mil (for military use), .gov (for government use), .net (for technical/internet provider use), .org (for not-for-profits) and .int (for international organizations, e.g. NATO).

Ultimately, .com became the standard adopted by a wide range of institutions, while .gov and .edu remained heavily-used for their respective categories, with the other top-level domain names becoming only more marginally adopted. For example, while .mil was assigned to the Department of Defense (DoD) and its subsidiaries, ultimately DoD adopted simply the web address "defense.gov" while the US army uses .com's for many of its activities today (e.g. "goarmy.com) despite both having their own assigned TLD. This trend was broadly followed by internet service providers who by and large use ".com" web addresses today rather than ".net" addresses.

Naming services have thus naturally gravitated towards the simplest identifiers since the creation of the internet. At the same time, the internet overall as a unified virtual network has remained intact. The impact is one that has led to a highly centralized and top-down form of information dissemination, particularly in the areas of broadcasting and social media. As a result, an explosion of alternate TLDs has occurred in the past 10 years. ICAAN has received over 2,000 applications for new TLDs in the past decade and licensed an additional 1,300 of them (what are called gTLDs) with extensions such as ".loan", ".home" and ".xyz" appearing for sale.

Despite the enormous surge in the number of available extensions, adoption remains relative sanguine. Around 75% of all domain registrations still occur over just 10 extensions, with almost half of all registrations still being ".com" registrations. Despite some improvement during the Covid period in registration of domains on alternate extensions, the leading new gTLD approved by ICAAN, these numbers remain steady here too. In other words, the explosion of supply in the offering of additional extensions has resulted in a quick mass-saturation of virtual location supply-side economics.

Further compounding problems for newly-issued TLDs is the adoption of alternate extensions by spammers, putting users of such extensions very often on e-mail blacklists. Spamhaus recently estimated that as many as 90% of .loan extensions, 70% of .work extensions and even half of all .biz extensions are owned and used by bad actors primarily for junk mail or fraudulent purposes. Meanwhile, ICAAN, the central issuer of all these extensions, has achieved billions of dollars in additional profits from their sale.

It is clear that a clean break with both the internet as unilateral information highway and with the increasingly innumerable range of alternate location identifiers is required to consolidate the virtual user experience. Some of this has been attempted using Blockchain. Confoundingly, however, Blockchain Network Service (BNS) providers have, rather than attempting to establish their own unique networks, conformed to the traditional ICAAN-centered model, simply without the cooperation of ICAAN itself.

Ethereum Name Service (ENS) offers non-fungible tokens (NFTs) that presently can be used to mask wallet addresses with the traditional top-level extension format in ".eth", while other networks such as Solana have created network-specific variants of the same (in this case, ".sol"). Handshake, which has its own Blockchain, offers root-based decentralization resolving capabilities, allowing for an infinite possibility of TLDs by using Blockchain.

To date, all Blockchain solutions have merely compounded the problem that the vast increase in TLD ownership has created. What is more, all Blockchain solutions so far seem to be targeting the objective of resolving on DNS itself, effectively competing with and adding to the vast choice of TLDs that are already on offer to consumers and that are, it would appear, predominantly adopted by bulk e-mail marketers and other schemers.

Unstoppable Domains (UD), for example, paid substantial fees to Brave browser to resolve its 8 chosen extensions alongside every other website using Infura. What is more perplexing still, Brave

conceals the IP address of the user attempting to access these sites via Infura, not dissimilar to Tor, a controversial and fringe internet resolving technology historically associated with darknet crimes. Handshake domains resolve using various custom-built website portals in much the same way.

It is hard to overstate to what extent increasing the supply of an already saturated offering (TLDs) while introducing additional network privacy features specifically for that range of product offerings ends up creating more problems than it does solutions.

First, the minute that NFTs which carry masked extensions are introduced as domain name resolvers, their economic value equates to much the same as that of any little-used extension such as ".loan". This is a bad deal for collectors. Second, resolving visitors with enhanced Tor-like privacy features merely creates additional risk for law enforcement authorities, especially when the location name is fully-decentralized. Third, by placing these new extensions half-on, half-off the internet, a darknet-like barrier is created between content that is available via conventional DNS resolution and by the content that can be accessed via services such as Infura. This is not to levy undue criticism at Infura, a valuable piece of web3 infrastructure with many exciting product and service offerings, rather to point out that one must consider a range of factors before adding to the overall utility-value of virtual real estate addresses.

In this paper, we introduce a novel and technically-ambitious solution with respect to Blockchain-based virtual highway expansion. We attempt to take aim at the introduction of a seemingly infinite variety of extension-based domain name product offerings, and in so doing, consider how the construction of an alternate, name-only virtual network would look, starting with the technically much simpler task of resolving Blockchain-based payments to this network.

Domain Name Market

There are around 350 million domain names registered across all top-level domain (TLD) name extensions. Of these, 72% of names are registered across ten TLDs – these are .com (46%), .cn (5.1%), .de (5%), .net (3.8%), .uk (3.2%), .org (3.1%), .nl (1.8%), .ru (1.6%), .br (1.4%) and .au (1.2%). In other words, a third of all domain name registrations comprise three TLDs (.com, .net and .org), another third comprising 7 country top level domains (China, Germany, UK, Netherlands, Russia, Brazil and Australia) while another third still are split between over 1,500 possible extensions.

The scenario is one where the vast majority of domain name extensions are thus little-used or unused at all, with preferential emphasis heavily placed on the very top few extensions only. Even among the

new top-level domains (nTLDs), competition is heavily skewered towards a few popular extensions. Half of all nTLDs are divided among just 10 names, with the top 3 dominant in market share to a great extent. This is of course typical in supply chain economics, where one or two brands suck up by far the bulk of market share with the others acting as smaller outliers. What is not typical is that, whereas in traditional market scale economies, bigger brands gobble up the market share of smaller competitors and fold them into their existing operations, in the world of domain name extensions, each of the smaller competing extensions remains as is forever. This scenario destines the bulk of extension name purchases to be rendered null over the long term.

Most SLDs can be purchased for sums ranging anywhere from $10 for standard domain extensions such as .com up to hundreds of dollars for specialist extensions which receive far fewer sales. Aftermarket sales for premium SLDs have in some cases reached hundreds of thousands and even millions of dollars.

As a result, in 2022 Verisign, the world's largest seller of domain names, reported a net decline for the first time in history of the number of domain registrations; included were the traditionally robust .com and .net sales [1]. Aftermarket, or secondary market sales of domain names has also experienced a sharp decline after the domain registration bonanza seen over the Covid-19 period [2]. Prices for both .com and .net domain names rose 7% year-on-year at point of registration in 2022 and 2023, following the broader lead of higher-cost registrations of nTLDs.

While some of this decline is attributable to market gyrations associated with the post-pandemic market economy, much is also down to a combination of rising supply and rising costs, what is nothing less than an economic paradox. The situation is one where registrars are seeking to capitalize on what is best described as reversal of classic economic theory, saturating the market with more options while putting premiums on the lower-grade product choices. Clearly such a situation is not sustainable over the long term.

Blockchain Domain Name Market

Ethereum Name Service (ENS) is a Blockchain name service smart contract that allows users to register names with the extension ".eth". By any metric, given its relatively niche product focus, ENS has been a wild success in terms of achieving high levels of both registrations and after-market sales. A total of 2.76 million ENS names have been registered since the product went live in May 2017 and to date there are a total of 690,000 holders of ENS NFTs [3] [4]. Eighty percent of all ENS registrations in circulation today took place in 2022, marking a unique outlier to the general demise of the crypto

market overall. To register, ENS divides names between 3 characters ($640/year), 4 characters ($160/year) and 5 characters or longer ($5/year).[5] These figures alone already put .eth extensions among the leading TLD registrations in the world, and almost in the Top 10, a remarkable feat for a decentralized, NFT-oriented naming protocol.

Aftermarket sales of ENS NFTs have proven robust. Around $400,000 to $500,000 per week of aftermarket sales are achieved on any given week across 200-300 NFTs, resulting in an average price per ENS NFT of $1200-$1300 each [6].

Demand for ENS NFTs equates to about $25 million a year, which is far in excess of the aftermarket demand achieved by non-Blockchain nTLDs. As a percentage of annual registration costs, almost half the same volume is achieved on aftermarket sales, a similarly impressive ratio.

Following the launch of ENS, other similar Blockchain domain name solutions have been launched with varying degrees of differentiation.

The top competing providers today are: Handshake, Unstoppable Domains, Solana Naming Service, Bonafida/Solana Naming Service, Peername, NEM Blockchain DNS, Quick.com and Blockstack. Binance also has its own NFT product, with .binanceus TLDs on offer. Unstoppable Domains, which provides 12 TLD options, is the largest of these, boasting 2.6 million registrations.

Problems with Blockchain Naming Systems (BNS)

Blockchain-based domains occupy 3 core markets/functions:

- Wallet masking
- Decentralized domain name ownership
- Metaverse and identity solutions / data storage

Of these utilities, by far the greatest date is to act as wallet masking addresses. It is surprising in fact how few Blockchain domains act as resolving addresses, even on services such as UD where resolving capabilities are possible with fairly populous browsers such as Brave and Opera's crypto browser.

We scanned a sample of 315,000 dictionary names on UD across TLDs .zil, .x and .crypto revealed 16,250 registered domains of which 9,101 had datapoints. The most common datapoints where:

- An ETH wallet address (9415 instances)
- An e-mail address (4,158 instances)
- A "for sale" Boolean (3,734 instances) wherein 95.6% (3,671 instances) of the Boolean option was set to "true" and only 63 were set to "False"

In the same survey, we scanned separately 105,000 dictionary words for .x on UD and logged 3,000 registrations with just 41 webpage redirects. Similar results were obtained for the rest of UD's portfolio of TLDs and SLDs. The data, although representative of a small sample size, reveals two interesting aspects of Blockchain Domain Names:

1) By far the majority are purchased for selling on and/or for wallet address configuration vs. website naming
2) In most cases, unlike with traditional domain name services, users are not registering the most obvious branded names (e.g. dictionary names) but rather, internet handles, numbers and other collectables

This reveals on the surface an interesting feature of BNS – that by and large, the addition of more name extensions to what already represents a heavy oversupply of TLDs and SLD options thereon is creating more of a potential problem than it is a solution when it comes to building out the web3 internet in a scalable/usable way.

The central issue with these existing Blockchain domain name providers is that introducing alternative TLDs does not address the central problem that is plaguing the internet naming service supply-side economy – namely, that the market is literally flooded now with the introductions of new TLDs and an infinite number of SLDs attached to those.

As both an asset and a tool of identity, a name which is separated out with an "SLD.TLD" format in most cases does not contribute any meaningful progress to the already saturated state of the market. While there are some exceptions to this rule (such as very uniquely branded TLDs or those with cultures that are formed around them) in general it is safe to say that by far the majority of new TLDs launched on Blockchain will never hold any significant value or utility for the purchaser, let alone the second level names of these top-level names.

For Web3, it is clear that if a wallet- and browser-based identity marking solution is to be launched, what is needed most is a much simpler, more scaled-back approach which emphasizes uniqueness and more effective memorability. This is especially the case when it comes to metaverse-based utility, which is dominantly reliant on identity clarity. The global metaverse market size was valued at $100 billion in 2022 and is projected to grow 10 times to over $1 trillion by 2029, at a CAGR of 47.6% [7], so this is a market that no domain name provider can afford to ignore given the already-lackluster growth among leading TLDs. It is worth noting here how central identity is as a feature of metaverse functionality. When it comes to identity, SLD.TLD formats are not ideal.

The obvious solution is to strip away the TLD and SLD markers and instead to create a single-name solution which users can type in for payments, media and communications. Of the alternate web3 providers, Handshake comes closest to effecting this, allowing TLD owners to resolve addresses with just the TLD. However, because the Handshake blockchain also allows TLD owners the ability to sell SLDs on their top-level names, the exclusivity and premium aspect of this solution will inevitably follow the same saturation tendency as for the myriad other TLDs being offered to SLD purchasers today.

The emphasis in web3 should be an alternative money, media and messaging solution with a clear, unified branded messaging aspect to it, much like AOL offered in the early days of the internet with its Keywords search. With AOL Keywords, brands could purchase keywords that would take them specifically to a webpage. For example, Nickelodian adopted the keyword NICK while CNBC adopted the keyword MONEY. In web3, we think that it is possible to imagine an alternate metaverse-integrated lite network with similar attributes, where brands will be able to experiment with Blockchain concepts at the same time as they will be able to keep them somehow separate from their existing Web2 product offerings. Further, it must be recognized that the internet has come a long way in the past 30 years, and that now individuals as much as brands face the same sort of Blockchain-adaption and integration challenges and possibilities. BDNS allows for both of these actors to create decentralized media, payment and messaging systems in a much more robust name-only format than other web3 providers, which essentially offer nothing more than the same set of problems already besieging mainstream internet identity and branding.

Name-Only Domains (NODs)

Name-only Domains (NODs) are non-fungible tokens that can be configured on the Ethereum network and ultimately, cross-network to mask wallet addresses and resolve domain name locations without any TLD extension and without SLD sub-level identifiers. For example, BDNS offers the purchaser the

option to purchase and configure the name BLOCKCHAIN vs. Blockchain.eth, Blockchain.zil or Blockchain.binanceus. This simpler, cleaner naming interface will over time represent considerably higher value virtual real estate and much better alternate virtual network propagation than other comparable Blockchain TLD solutions on offer today.

NOD Pricing

BDNS NODs are priced at reasonable values to allow investors of all kinds to take part in minting their first-choice names. There are no private sales or pre-minting features built into BDNS so that all collectors can participate on a level playing field. In some cases, BDNS has restricted the purchase of certain brand names or names of very famous celebrities for a short period, after which if these are not minted by that company or individual they are freely available to mint along the same price parameters as any NODs of their price category. BDNS has not set the pricing of NODs by traits, as is common with most NFT minting platform, but rather by character length, which is a truer representation of scarcity value. The cost of minting NODs is priced in USD and charged in the form of ETH using the BDNS smart contract system as follows:

Popular Names (e.g. "FAIR"): $999
1 Character Names (e.g. "A"): $99,000
2 Character Names (e.g. "A8"): $4,999
3 Character Names (e.g. "CAT"): $499
4 Character Names (e.g. "LIPS"): $89
All Other Names: $9

All prices constitute one years' worth of ownership status of each NOD, although if purchased upfront or any time during the ownership period of the NOD, there is a discount of 70% for additional annual registration periods. This allows NODs to retain a minimum base value while still giving owners of the NFTs the chance to hold on to their favorite names for many years without having to continually reregister their tokens at full cost.

Integrations

There are a few dominant players in terms of Blockchain wallets; the lion's share of usage goes to Metamask, Trust Wallet and Brave. In terms of crypto-specific integration possibilities, Brave, Aloha (a mobile browser which resolves Handshake domains with an hns:// marker) and Opera crypto browser are the notable front=runners when it comes to integrating Blockchain resolving technology. Besides these market leaders, a handful of more web3-centric solutions with more distributed

economies are up-and-coming, and some of these offer exciting potential integration possibilities with BDNS.

To start with, we have developed our own BDNS wallet application which supports NODs as Ethereum masking solutions. The BDNS wallet is multi-network, with different Blockchains (such as Bitcoin, Polygon etc.) concurrently functional alongside the Ethereum network inside the wallet, although to start with, only the Ethereum network is able to configure NODs for wallet masking address purposes. In addition to pursuing third party integrations, the long-term aim for BDNS is to build out the wallet application so that it is usable across these other Blockchain networks, and so that it ultimately contains multi-media resolution capabilities.

Name Only Tokens (NOTEs)

Name Only Tokens (NOTEs) are a digital currency that can be used to purchase NODs. While the BDNS smart contract is initially configured to accept ETH for payments, payments for minting new NODs will ultimately be configured in NOTEs.

Decentralized NFT exchanges such as Opensea and Blur are increasingly offering sales and purchases in a variety of cryptocurrencies compatible with the Ethereum network. This presents an opportunity to introduce a cryptocurrency that is, by virtue of being used to mint NFTs that are sold for ETH and other cryptos, effectively tethered in price to the crypto market as a whole. This tethering effect offers value and purchase robustness in the utility token over time as well as in the NODs being purchased by offsetting the value at point of mint in its own currency system.

To visualize this, assume that NOTEs are priced at $1 while ETH is priced at $2000. In this instance, there is a 2000:1 ratio between ETH:NOTE. If ETH rises to $3000, then it follows logically that the prices of NODs will rise similarly in dollar terms but also will commensurately fall in terms of NOTEs being used to mint NODs. This effect will lead to a surplus of premium purchasing opportunities for holders of NOTEs the longer that they hang onto them, assuming that the cryptocurrency market overall rises at historical or near-historical rates of appreciates.

Because BDNS takes a percentage of all revenues received in NOD-minting process, any NOTE issuance can happen along much more equitable terms than is common for competing token issuance cases.

In other words, the primary objective of a NOTE issuance is to support the use of NOTEs as purchase mechanisms for NODs, and not for other purposes. We have broken down the core cost-drivers of propagating the BDNS ecosystem as follows:

- Market Making/Liquidity Pools (30%)
- Ads & Marketing (15%)
- Engineering (20%)
- Integrations (15%)
- Community Development (5%)
- Operations (15%)

We then approximate a token supply of between 20,000,000 – 200,000,000 NOTEs and assume a presale of 80% of the tokens in exchange for total contributions, with 20% being utilized for market making and liquidity pools. In this model, there is a clear market surplus in value and utility terms.

In this scenario, we assume that approximately just over half of initial presale NOTE purchases will be used to mint new NODs that will either be used or resold on decentralized NFT exchanges, with the remainder of the coins finding their way post-sale onto DEX/CEX marketplaces. This seems to us to be conservative given that the primary tool in the BDNS ecosystem is not the NOTE itself but the NOD, which is what harnesses the utility exponent power of Blockchain as it is used to integrate into more browsers, wallets, DeFi and even GameFi systems.

Other NOD Use-cases

NODs are unique in that they are wallet masking addresses, tokens and repositories of data as well as pointers to multimedia sites/applications. As we have discussed in this White Paper, utility for BNS NFTs still revolves predominantly around masking wallet addresses on Ethereum and other specific networks, flipping and storing e-mail addresses. To say this is an underutilization of the potential of these NFT types is a huge understatement. The aftermarket and wallet masking address emphasis by BNS providers represents only a fraction of the potential utility such tokens hold.

As both tokens in their own right and as wallet addresses, NODs are ideal for configuring a range of DeFi applications along staking and decentralized market making. A repositories of an essentially infinite range of data too, they serve as useful tools in GameFi, identity and metaverse solutions. As identity markers per se, it is possible to envision NODs as key components in decentralized media

and communications technologies. In terms of multimedia usage, we envisage a network that runs parallel to the internet where NODs resolve their own unique web3 pages, where brands can safely launch Blockchain and decentralized products and experiment with the technology in a meaningful way that encapsulates payments, media resolutions and communications at once. All of these solutions are significantly enhanced of course with the omission of TLDs and SLDs and with the unique approach of Name-Only identification.

Conclusion

It is clear that Blockchain naming services have gotten off to a strong start in terms of capturing popular appeal from investors and those who are concerned about third-party custodial interference with respect to media supporting infrastructure. Having notched up millions in sales so far, services such as ENS and UD have posed a substantial competitive threat to traditional ICAAN-based naming service offerings. At the same time, curiously, Blockchain naming service offerings remain confined to an obscure niche of money, media and messaging innovation – that of serving purely as wallet masking addresses. Prices of most new Blockchain naming services vary widely, with many still very high. For instance, services such as UD and .binanceus start at higher price-points than for more popular ENS domains and go up to the thousands of dollars. At the same time, extensions such as .wallet, .manga and .binanceus confine users to cumbersome niche interference when it comes to accurately representing their owners and branded solutions. Quite simply, extensions are not a component of the internet that need to be nor should be imported into web3.

As web3 evolves in scale and possibilities, the more versatile and unique identity solutions are in terms of functionality and configuration, the exponentially more popular their appeal will become. Web3 holds the potential to dramatically alter how digital identities are configured and managed. Because of the decentralized ownership property of NFTs, NODs make for ideal digital identity locators to log into websites, access customer data etc. Instead of using e-mail addresses for correspondence and log-in, we foresee users accessing their messaging services and other data via NODs. Of all comparable web3 products, clearly NODs represent the cleanest, most advanced form of digital identity markers, as well as being distinctly more premium than those with SLD.TLD formats.

Here it is possible to see value in terms of web3 real estate as ultimately being manifest in the uniqueness and simplicity of web3 identity solutions, of which NODs represent the most convincing use-case. With oue combined deep experience in developing and building market making solutions for cryptocurrencies and domain names, and drawing on the history of Blockchain naming services outlined in this White Paper [8], we believe that now represents a highly opportune time to roll out a

solution with up-and-coming Blockchain development partners that better serves the needs of the web3 population. BDNS is unique with respect to competing naming services in that it is:

- Name-Only: Easy to use from a branding / identity standpoint
- Fully-configurable on its own purpose-built application from day 1
- Low-cost with a 10% decentralized purchasing model (no pre-mints, reserved names etc.)
- Easily configurable with an own-brand currency purchasing model that can be integrated into future DeFi and GameFi solutions

With the advancement of web3 and metaverse applications and technologies, we believe that Name-Only domain solutions are thus more technically and economically efficient payment and multimedia based NFTs than competing providers that have the potential to revolutionize how naming services are developed henceforth.

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[8] This White Paper is for informational purposes only. It concerns a Blockchain technology that is featured at http://app.bdns.app website. While references are made to the value of NFTs in this paper, absolutely no guarantee is offered in terms of the present or future value of NODs. All values represented in this White Paper are strictly approximations and may be changed at any time. There are no assurances or guarantees offered with respect to forward-looking statements given herein.