

How It Works: Blockchain Name Technologies



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Overview

- ⦿ Recent ICANN publications
- ⦿ Understanding blockchain technologies
- ⦿ Understanding blockchain name system technologies
- ⦿ Questions and comments

Recent ICANN publications

- ⦿ People in many different parts of the ICANN community asked for more information on blockchain name systems
- ⦿ They also wanted to know more about blockchains themselves because the name systems are tightly bound to the blockchain technologies
- ⦿ ICANN published two documents earlier this month to cover these requests

OCTO-039 and OCTO-040

- ⦿ [OCTO-039](#), *Introduction to Blockchain Name System Technologies*
- ⦿ [OCTO-040](#), *Introduction to Blockchain Technologies*
- ⦿ Both are technical and neutral
- ⦿ Neither promotes or disparages the technologies covered

Blockchain technologies: overview

- ◉ It's very likely that they are much more complicated than you think
- ◉ For example, a blockchain is not a database that you can query
- ◉ Blockchain technologies are often not well documented
- ◉ It is easy to get overwhelmed with the buzzwords and new terminology used in the blockchain ecosystem, even though many of the technical concepts are quite basic
- ◉ Exciting new finance is only part of the picture

Blockchain technologies: the ledger

- ⦿ The blockchain itself is just a ledger
- ⦿ A blockchain ledger is just list of transactions that happen to be batched into blocks
- ⦿ In some blockchains, a transaction might be a complex program
 - “If this person has fewer than 20 coins, give them 5 of mine; otherwise, give 5 to this other person”
- ⦿ Searching in the ledger doesn’t show any account balances: you need a database for that

Blockchain technologies: the database

- ⦿ You need to process every transaction in the blockchain into a database in order to determine the status of all accounts
- ⦿ Everyone who processes the transactions in the same order will come out with the same database
- ⦿ For some blockchains, this is hundreds of millions of transactions

Blockchain technologies: trust models

- ⦿ Different blockchains have different models of who they trust to add blocks to the blockchain
 - This is sometimes called “decentralization”
- ⦿ These models hugely affect the costs of running the blockchain and the speed that transactions can be added
- ⦿ Recently created blockchains often use trust models that require much less electricity than older blockchains like Bitcoin

Blockchain technologies: types of blockchains

- ⦿ Layer 1 blockchains are based on widely-circulated blockchain currencies like Bitcoin and Ethereum
- ⦿ Layer 2 blockchains are faster and more nimble than Layer 1 blockchains, and send summary results to the associated Layer 1 blockchain
- ⦿ Sidechains are standalone blockchains, often deployed for a single purpose such as a naming system

Blockchain technologies: cryptography

- ⦿ The cryptography that is talked about all the time in the blockchain ecosystem is one of the least important parts of blockchain technologies
- ⦿ Blockchains use hash algorithms and digital signatures just like secure web and secure email standards
- ⦿ Some new cryptography is emerging from the blockchain world, but it is unclear how useful it will be

Blockchain name system technologies: basics

- ⦿ Every blockchain name system gets to make its own rules, such as which blockchain to use, how names will be resolved, and so on
- ⦿ These rules are sometimes hard to find because there are no well-known central repositories
- ⦿ Blockchain technologies are often not well documented
- ⦿ New blockchain name systems are easy to set up for particular naming markets

Blockchain name system technologies (1)

- ⦿ Resolution of names in the blockchain name system returns an account identifier or other data that is related to blockchains
 - Compare to DNS name resolution typically returning IP addresses
- ⦿ Activities associated with a name in the blockchain name system are permanently stored on the blockchain so that people can always view the entire history of the name

Blockchain name system technologies (2)

- ⦿ Purchase and update of names in the blockchain name system are paid for by blockchain coins instead of traditional currency
- ⦿ Alternative top-level domains (alt-tlds) in blockchain name systems can be strings that are not delegated as top-level domains (TLDs) in the global DNS
 - Currently: .eth, .wallet, .crypto, ...
- ⦿ Blockchain name systems can coordinate with the global DNS by using alt-tlds that match the TLDs that are already delegated in the global DNS

Later this week: Emerging Identifier Technologies

- ⦿ Wednesday November 13, 2024 10:30 - 12:00
- ⦿ Topics include blockchain name systems in general, and the D3 name system in specific
- ⦿ Will also cover topics such as types of blockchains used in blockchain name systems and trust models

Questions and comments

- ⦿ Please remember that facts about one blockchain may be radically different than those for another blockchain
- ⦿ Please remember that facts about one blockchain name system may be radically different than those for another blockchain name system