Everscale™

Report

Cointelegraph
Research

everscale

Dear Partners, Investors and Friends,

The recent rise in the number of novel blockchains, aiming to solve the blockchain trilemma and make the decentralized finance market more accessible and convenient, has led to rapid industry development. Such market players as Solana and Terra Luna have already demonstrated that there is massive room for innovation and progress in DeFi. Gaining excessive traction and showing enormous increases in their respective market capitalizations, these blockchains have opened the market gates to multiple smaller blockchains, which have created solutions fighting the long-standing issues of the crypto world, in general, and DeFi, in particular.

One of such blockchains is Everscale, created by the former team of TON Labs, who reworked 99% of their previous solution – Telegram Open Network (TON). Taking into account all the jurisdictional pitfalls, which prevented the success of TON, the team implemented multiple technological and governance innovations to solve the trilemma of security, scalability and decentralization.

Although Everscale has only been around for slightly more than a year, the blockchain has already succeeded in establishing primary ecosystem infrastructure and gained a reasonably large community of more approx 500k people*, entering the top-300 most valued blockchains in terms of market capitalization.

This report aims to reveal the fundamental technology innovations of the Everscale blockchain, ecosystem development and regulatory impacts. Everscale is also compared to multiple DeFi blockchains. Its further growth is discussed alongside potential market penetration barriers and the impact of regulatory authorities. EVER's price correlations to Bitcoin (BTC) and major financial indexes are compiled and discussed. Thus, this report provides a detailed, high-quality overview of the Everscale blockchain and a comprehensive guide on entering its ecosystem.

We hope you will enjoy the reading as much as you did with the previous *Nonfungible Tokens: A New Frontier Report.* We would also like to take this opportunity to thank you for your ongoing support and the record number of views we achieved for the last report of 2021.

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Sincerely

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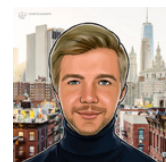
Estimated by total people involved in telegram channels in different countries

Note: *"Everscale Report" was commissioned and prepared in collaboration with the Everscale team.*

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Key Takeaways

- With more **than 500,000 wallets and 66 million transactions in 2021**, Everscale allows interoperability with **Ethereum, Polygon, Fantom and other EVM blockchains** through Octus Bridge. Excelling not only in the DeFi market but also in real-world adoption, Everscale aims to expand its ecosystem and attract developers through its active community and contest initiatives.

- **Everscale is a novel layer-one blockchain**, providing linear scalability while maintaining a high level of security and decentralization.

- **Everscale achieves linear scalability** by applying an array of novel technological solutions, including **multithreading and dynamic sharding**. The blockchain has already demonstrated throughput of 54,000 transactions per second.

- **Everscale stays decentralized and secure** due to the utilization of a distributed dynamic validator set, soft majority fault tolerance (SMFT) consensus and Everscale OS, allowing for end-to-end decentralization and **WebFree, which serves as a completely decentralized alternative to the traditional Web interface**.

- **Byzantine fault governance and soft majority voting** are used to keep token distribution fair and optimize community voting procedures. **Distributed validator pools, DePools**, further aid in preventing centralization through consensus power distribution.

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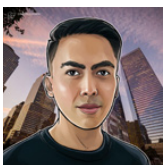
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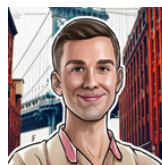
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History of the Everscale legacy

Everscale — Starting from scratch

Blockchains are fundamentally bound by a trilemma among decentralization, scalability and security. Although multiple blockchains have demonstrated success in excelling scalability, most of them still have security or decentralization trade-offs. Everscale is an innovative blockchain project equipped with the necessary technology to compete with major market players and potentially resolve the blockchain trilemma.

In particular, EverX, in collaboration with multiple independent developers, created a set of technologies to overcome the limitations of blockchain infrastructure. In 2020, the team took the Telegram Open Network (TON) open-source code and brilliant novice ideas of Nikolai Durov, who created technology for VK and Telegram as a starting point for the Everscale blockchain. Since then, the project has evolved into a fundamentally different network, with more than 99% of the code being completely new. Accordingly, the community recently passed a vote to rebrand the entire project to Everscale.

Everscale implements innovative technologies that allow for linear scalability, uncompromised security and end-to-end decentralization. Unlike competitors' solutions, Everscale achieves linear scalability where the blockchain's speed directly increases with network size.

Simultaneously, Everscale relies heavily on DAO principles and innovates the consensus protocol to sustain a high level of decentralization. Decentralized governance is established through sub-governance groups following a modified Byzantine fault tolerance protocol. The direction and development of Everscale is run by contests, whose winners are determined through transparent, on-chain voting.

Everscale employs a meritocratic token distribution to have a transparent allocation of funds across the network and prevent the concentration of funds in the hands of whales. Distributed validator pools, called DePools, allow anyone to contribute their funds toward securing the network and prevent the concentration of power in the hands of a few validators. Although Everscale's consensus mechanism sounds similar to Delegated Proof of Stake (DPoS), it is not the same. Instead of voting or election carried by users in DPoS, verifiers elect themselves in Everscale.

An unprecedented level of scalability has enabled Everscale to create the "WebFree" protocol, which enables the Everscale blockchain to be the foundation for a new Web 3.0. - where AI-driven services, decentralized data architecture, and edge computing replace Web 2.0's social networks, mobile-first always on, and cloud-driven computing. Having been built from the ground up with decentralization in mind, Everscale boasts "end-to-end decentralization" across its network.

Moreover, the Everscale community, including core developers, has already established a sufficient ecosystem, including the Octus Bridge, which allows for quick and low-fee transactions on Ethereum, Binance Smart Chain and other Ethereum Virtual Machine (EVM) networks. Moreover, multiple decentralized finance (DeFi), real-world applications and nonfungible token (NFT) projects on Everscale have already gained significant community traction.

The Origins

In 2018, rumours first broke that Telegram, one of the most popular messaging apps in the world, was building a proprietary blockchain, Telegram Open Network (TON). Through this technology, Telegram aimed to bolster its messaging product with privacy features and financial functionality. The team planned for micropayments and remittances as well as with

third-party decentralized applications running on TON infrastructure. Throughout 2018, global development teams were involved in private beta testing of the nodes and smart contracts.[1] One of these teams working as Telegram's technical partner was EverX (previously TON Labs), a firm that would later contribute heavily to the next generation of the TON blockchain, independently and not affiliated with Telegram app.

To fund its ambitious initiative, Telegram sold 2.9 billion of its in-house GRAM tokens worth $1.7 billion to private investors all over the world, including United States residents.[2] Weeks before the launch of TON in Q3 2019, the U.S. Securities and Exchange Commission filed a legal complaint against TON, charging it for offering unregistered securities.[3] The SEC classified GRAM fundraising from 2018 as a securities offering, stating that Telegram had to register before distributing tokens to U.S. investors.

After a nine-month-long legal battle, the company settled with the SEC.[4] Telegram agreed to return the $1.2 billion to its investors and pay $18.5 million in penalties[5] for the unregistered securities offering.[6] An injunction by the U.S. District Court for the Southern District of New York prevented further development of the network, so Telegram and its founder and CEO Pavel Durov discontinued the project and its decentralized products. The TON blockchain was never integrated into Telegram's infrastructure, and Telegram ceased its involvement in any blockchain developments connected with TON.

Take the ball and run with it

Before shelving the TON blockchain, Telegram made the project code publicly available to give it a chance as an independent project. A group of professional validators and developers, many of whom had been working on the initial version of the Telegram Open Network, refused to abandon the venture, including EverX. Even without Telegram's backing, the enthusiasts launched an independent blockchain network called Free TON in May 2020.[7] In November

2021, this was rebranded to Everscale. EverX led the core group of Free TON enthusiasts in their effort to rekindle Telegram's legacy. In an interview with Cointelegraph, EverX co-founder Alexander Filatov explained that his firm teamed up with 17 professional validator companies, such as Dokia Capital, Certus One and Everstake, which were willing to carry out the project.[8]

In December 2020, Everscale officially launched its mainnet, seven months after the network was released.[9] In between the actual and official launch was the need to onboard 400 validators, a landmark in the journey toward sufficient network decentralization. By November 2021, 441 validators had joined the mainnet, so the project was consistent in maintaining and further increasing decentralization of its network.[10]

The new vision

Now that the network is decentralized and the code base is completely rewritten, the natural step would be to distance itself from the Telegram background. In November 2021, as the network started gaining greater traction, the community clearly expressed the need to detach the project from Telegram's legacy.

In the long term, the Free TON name implies relation to other TON-based projects, which also use certain elements of Telegram's branding in their projects. This might have held back mass adoption of the network since the brand would have been associated with Telegram's failed attempt to launch its proprietary blockchain. Having voted on a public proposal, the community has collectively decided to remove the existing constraints by rebranding the network to Everscale, a name that better reflects the network's growth prospects and its technical advantages instead of one that looks back at its origins.[11]

Being a principally new and completely independent project, Everscale aims to provide a fully decentralized, secure and linearly scalable solution to compete with Ethereum and "Ethereum killers." A number of novel

[1] See "Telegram's TON Blockchain Is Live in Private Testing Mode, Shows High Speed: Report", Helen Partz, Cointelegraph, April 11, 2019
[2] See "Telegram Raises $1.7 Billion in Coin Offering, May Seek More", Ilya Khrennikov, Bloomberg, March 30, 2018
[3] See "Report: Telegram To Launch TON Network in Q3 2019", Aaron Wood, Cointelegraph, May 24, 2019
[4] See "Telegram to Return $1.2 Billion to Investors and Pay $18.5 Million Penalty to Settle SEC Charges", SEC, June 26, 2020
[5] See "Telegram's Courtroom Saga With the SEC Comes to a $1.2 Billion End", Kollen Post, Cointelegraph, June 26, 2020
[6] See "The Security Token Report", Cointelegraph Research & Crypto Research Report, 2021
[7] See "TON Community Launches Free Version of Telegram Open Blockchain", Helen Partz, Cointelegraph, May 7, 2020
[8] See "Free TON AMA: A grassroots blockchain solution for building scalable decentralized governance", Cointelegraph YouTube Channel, May 3, 2021
[9] See "Free TON achieves mainnet status after reaching 'sufficient decentralization'", Andrey Shevchenko, Cointelegraph, Dec. 22, 2020
[10] See "TON.Live: blockchain explorer. Validators.", TON.live, Dec. 8, 2021
[11] See "Free TON Community #216 Network rebranding proposal", Free TON Blockchain Community, Nov. 9, 2021

technologies developed by the Everscale team enables a strong basis for the ecosystem.

On the other hand, a dedicated community has stimulated the deployment of blockchain in DeFi and real-world applications, while decentralized governance guides the development of the blockchain. Principles of meritocracy ensure that the development benefits all the community members and not the minority groups, such as initial developers and whales.

Technology Background

Key Takeaways

- Everscale's technology aims to solve the blockchain trilemma of scalability, security and decentralization.

- Everscale's innovative consensus allows parallelizing at uncompromising security and decentralization. Typical proof-of-stake (PoS) and proof-of-work (PoW) protocols cannot solve the blockchain trilemma.

- Competitors' use of practical Byzantine fault tolerance and EVM compromises decentralization while limiting scalability.
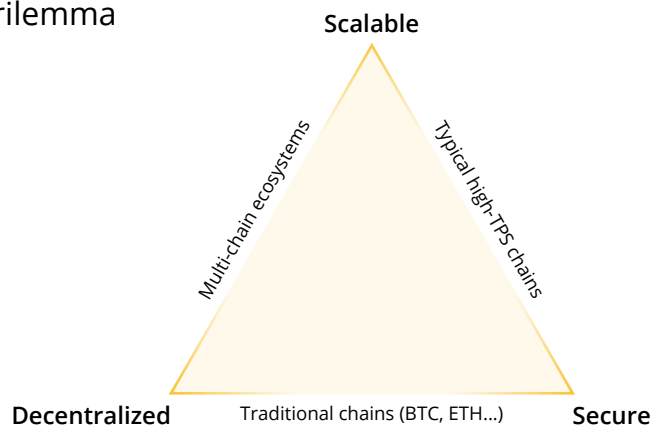
The Blockchain Trilemma

Blockchains are fundamentally bound by a trilemma of decentralization, scalability and security. This is due to the distributed nature of blockchain networks, which require continuous communication among all participants. To reach an agreement about what is to happen with the blockchain, these participants must have the latest information to consider. This is called synchronicity, and it is inherently limited in decentralized networks, which take time to propagate information.

Broadly, scalability refers to how many users, transactions and protocols the blockchain can facilitate without significantly slowing or spiking transaction fees. It is also often used interchangeably with the "throughput" or "transactions per second" the blockchain allows for. Decentralization is how concentrated nodes, governance and token ownership is across the blockchain ecosystem. Security refers to the resilience of the blockchain to attacks and the long-term immutability of data in the blocks. It is widely accepted that only two of these three properties can be achieved by any blockchain, provided that more conventional technologies are used.[12] **[Figure 1]**

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[12] See "Why sharding is great: demystifying the technical properties", Vitalik Buterin, April 7, 2021

The Blockchain Trilemma

Scalable

Multi-chain ecosystems

Typical high-TPS chains

Decentralized   Traditional chains (BTC, ETH...)   **Secure**

Source: Cointelegraph Research, Vitalik Buterin

Blockchains rely on a network of globally distributed nodes to reach consensus, which is essentially an agreement on what kind of changes or modifications the blockchain may undergo. A decentralized network takes more time to reach consensus across all nodes compared to a single centralized node. Therefore, decentralization fundamentally trades off against scalability.[13] Furthermore, scalability is directly proportional to the blockchain's security. This is because a small network can be attacked and have its immutable blockchain data compromised, but a large network is expensive to disrupt. Accordingly, there is no straightforward optimal solution for all three components. Everscale has introduced a new technology that is designed to resolve the blockchain trilemma through consensus mechanism innovations.

Consensus Mechanisms

Consensus mechanisms are how a blockchain network reaches agreement on blocks proposed to the ledger and are at the heart of the blockchain trilemma. A block is simply transaction data, and the blockchain is an immutable ledger of these transactions. Bitcoin achieves consensus on the ledger's record with two rules.

First, the proof-of-work method is where millions of miners around the world spend tremendous amounts of computing power, competing among one another to be the first to solve a mathematical puzzle. The higher your percentage of computing power relative to the network, the more likely you are to complete the puzzle first. This puzzle is hard to solve, but a valid solution is easy to prove, and the first miner to find the solution is rewarded with freshly minted Bitcoin. This achieves consensus because every miner "proves" to the network they have submitted a valid block backed up by the "work" required to solve the puzzle — hence, proof-of-work.

The second rule is the longest chain rule, which means that the chain with the most computing power, or the longest chain, is the correct or "final" record of the ledger. So, a transaction just published to the ledger in a freshly mined block has not necessarily achieved finality. However, a transaction in a block that has had 10 subsequent blocks mined on top of it is almost 100% likely to be final.

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[13] See "The Blockchain Trilemma", Longchamp Y, Deshpande S & Mehra U, SEBA Bank AG, October 2020

> ### Learn finality
>
> Finality is the assurance that a transaction is immutable and cannot be altered, reversed or cancelled.[14]
> The transaction speed of a blockchain generally refers to the time taken to reach finality.

The longest chain rule prevents malicious miners from creating fake blocks that "solve" the puzzle but include fake transactions, for example, giving themselves 1,000 BTC. This is because to create new fake blocks, the malicious miner would have to use enough computing power to take over the majority of the network. This would allow them to win every puzzle and create the new longest chain, with their fake transaction in it. This is called a 51% attack, as it requires more than 51% of the total mining power to achieve.

Proof-of-stake has a different approach to blockchain consensus. On a PoS system, decisions about the correctness of a block are made by a group of "validators." Validators earn their status by giving up control of some amount of their own tokens, called a stake, and agreeing to follow the consensus rules. Validators are incentivized to follow these rules through rewards, such as gaining interest on staked tokens. Validators are also punished for not following consensus rules by having their staked tokens slashed.

The higher a validator's percentage of staked tokens relative to the network, the higher the chance they validate a block. Like Bitcoin, the validator is rewarded with freshly minted tokens. Contrary to PoW, no computationally intensive puzzles need to be solved in PoS. Instead the "proof" is the "stake" behind the validation rather than the computational "work" — hence, proof-of-stake.

> **Fault tolerance:** How much of a system can fail to operate without impacting the total system's ability to continue functioning. The theoretical limit of this is 50%.
>
> **Byzantine fault tolerance:**[15] Byzantine fault tolerance refers to when components of the system fail but still continue to produce incorrect results. In cryptocurrency, this is when malicious nodes attempt to compromise a network's security by approving fake blocks. The theoretical limit of this is 50%.
>
> **Practical Byzantine fault tolerance:** This is a variant of Byzantine fault tolerance for distributed networks that have inherent asynchronicity as information propagates across the network. The theoretical limit of this is 33%.

PoW and non-Byzantine fault tolerant PoS consensus mechanisms can be considered as 50% fault tolerant in that the network can tolerate faults from up to half of the nodes in the network and still operate. This is a key point for the security component of the blockchain trilemma. Blockchain networks need to be scalable, so they achieve a sufficient size and decentralization to avoid attacks from malicious nodes. However, the more decentralized and bigger the network gets, the longer it takes to reach consensus, which slows scalability as a result. A network that increases its throughput capacity with the size of the network is called linearly scalable, a highly coveted feature in blockchain infrastructure.

Achieving consensus requires all nodes to have the latest information, which, in practice, takes time to propagate. Decentralized networks can allow some asynchronicity to improve scalability and transaction speeds at the expense of some security. This is called practical Byzantine fault tolerance. In short, this means subsets of nodes can achieve consensus without necessarily having the latest information from other parts of a network.[16] This means there is less time waiting for messages and improved consensus speeds.

However, with asynchronicity, there is an inevitable trade-off in security. There are now windows during the asynchronous periods where less than 50% of the network is required to launch an attack. It will take time for the rest of the network to recognize the attack and respond, at which point it will have been too late. This reduces the fault tolerance of the network to 33%.

[14] Learn more about finality here
[15] See "Understanding Blockchain Fundamentals, Part 1: Byzantine Fault Tolerance", Georgios Konstantopoulos, Medium, Dec. 1, 2017
[16] See "A Guide to 99% Fault Tolerant Consensus", Vitalik Buterin, Aug. 7, 2018

Alternative consensus protocols, such as proof-of-history, proof-of-burn, proof-of-capacity and proof-of-activity, are also used across the industry, each designed to optimise for the blockchain trilemma.[17] Everscale uses PoS with an innovative design, also known as "soft majority fault tolerance" (SMFT), that allows for parallelizing consensus without compromising on decentralization or security. This consensus mechanism works in tandem with Everscale's layer-one scaling solution design.

Scaling Solutions

There are emerging technologies in the industry that directly address the issues of scalability. These scaling solutions are generally referred to as layer-one or layer-two technologies. Layer-one scaling solutions impact the fundamental infrastructure of the blockchain to improve throughput. While layer-two scaling solutions are networks built on top of an existing blockchain.

Learn Layers

Layer zero, layer one and layer two are terms used to describe different architectures for decentralized ledger technologies.

Layer one often refers to the underlying blockchain architecture of early blockchains, such as Bitcoin and Ethereum. Layer-one scaling solutions include:

○ Dividing the validation of incoming transactions into different groups, a process referred to as sharding.

○ Switching from proof-of-work to proof-of-stake.

Layer two often refers to the applications built on top of the original blockchain. Layer-two scaling solutions include:

○ State channels, such as the Lightning Network, built on top of Bitcoin.

○ Nested blockchains, such as Plasma on Ethereum.[18]

Layer zero is a term often used to describe blockchains that can connect layer-one blockchains. For example, blockchains anchored to Polkadot can transfer assets to and from the Ethereum blockchain.

Bitcoin is the most secure and decentralized blockchain network but has traded off scalability to achieve this. This is largely because with Bitcoin, there is no asynchronicity across nodes. This means consensus has to be reached across the entire network, which has thousands of miners. Accordingly, Bitcoin reaches close to the limit of Byzantine fault tolerance at 50% but has slow transaction speeds. A simple example of layer-one scaling would be increasing the block size to contain more transactions each, which was proposed for Bitcoin in 2017.

Layer-two solutions are built on top of an underlying layer-one blockchain to improve scalability. For example, Bitcoin is a layer-one blockchain that has a layer-two Lightning Network built on top of it. The Lightning Network enables faster and cheaper transactions, which occur off chain, but are settled against the underlying layer-one blockchain. None of the layer-two solutions, however, offers smart contract executions on their layer two, they merely improve transactional throughput for simple transactions. Smart contract executions on layer two are not

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[17] See "SOLANA COIN: Solving the Scalability Problem with Proof of History", Edith M, Forex Academy, June 9, 2020
[18] See "Layer 1 vs Layer 2: What you need to know about different Blockchain Layer solutions", Petro Wallace, The Capital, March 1, 2020

possible for all EVM-compatible solutions due to the design of EVM itself.

Ethereum currently also uses PoW and achieves a comparable level of security to Bitcoin, but with less decentralization due to its nascency. Ethereum also implements some layer-one scaling solutions in its infrastructure to improve transaction speeds over Bitcoin's.[19] Ethereum is by far the most popular layer-one blockchain solution, but 2021 has seen a rise in competitor layer-one solutions, including Solana, Cardano, Fantom and Avalanche.

Many of these layer-one blockchains are compatible with the Ethereum Virtual Machine, which essentially allows developers to build, using Ethereum standards but on a different layer one. Similarly, bridges between blockchains are a common strategy for

attracting liquidity from Ethereum to another layer one. However, any blockchain using an EVM may constrain itself to the scaling problems associated with Ethereum.

Ethereum 2.0 will use proof-of-stake with various layer-one scaling solutions proposed.[20] Sharding is one of these layer-one scaling solutions, which is also used by Polkadot, Near and Zilliqa.[21] Sharding breaks the blockchain down into smaller components that can be processed in parallel, rather than sequentially.[22]
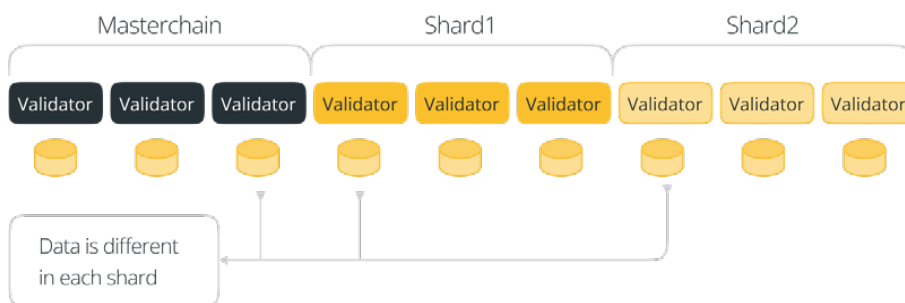
This can significantly increase the scalability and transaction speed of blockchains. However, introducing multiple sharded blockchains can further compromise decentralization and security. This is where Everscale has innovated sharding technology to reduce or entirely eliminate these compromises.

Figure 2 / How Does Sharding Work?

Source: Cointelegraph Research

[19] Learn more about Ethereum's scaling solutions here
[20] See "Fastest Cryptocurrencies: Blockchain Speed 101", Sales Wallet, Medium, June 7, 2021
[21] Learn more about sharding here
[22] See "Sharding, Explained", Chrisjan Pauw, Cointelegraph, June 23, 2019

Everscale Technology

Key Takeaways

- Unlike most other blockchains, Everscale provides linear scalability through multithreading and dynamic sharding. The more nodes there are, the higher the throughput.

- The SMFT consensus allows a 99% thread fault tolerance and does not limit scalability.

- A distributed dynamic validator set eases the process of becoming a validator, improving decentralization and decreasing the risk of validators' power collusion.

- Everscale's operating system and WebFree allow end-to-end decentralization, providing infrastructure alternative to the modern internet

Everscale aims to provide a scalable blockchain capable of delivering millions of transactions per second at an uncompromising level of security and end-to-end decentralization. The project uses innovative consensus mechanisms and layer-one sharding to build these features into their protocol. Furthermore, Everscale strives for friendly and secure user interfaces for the broadest adoption possible.
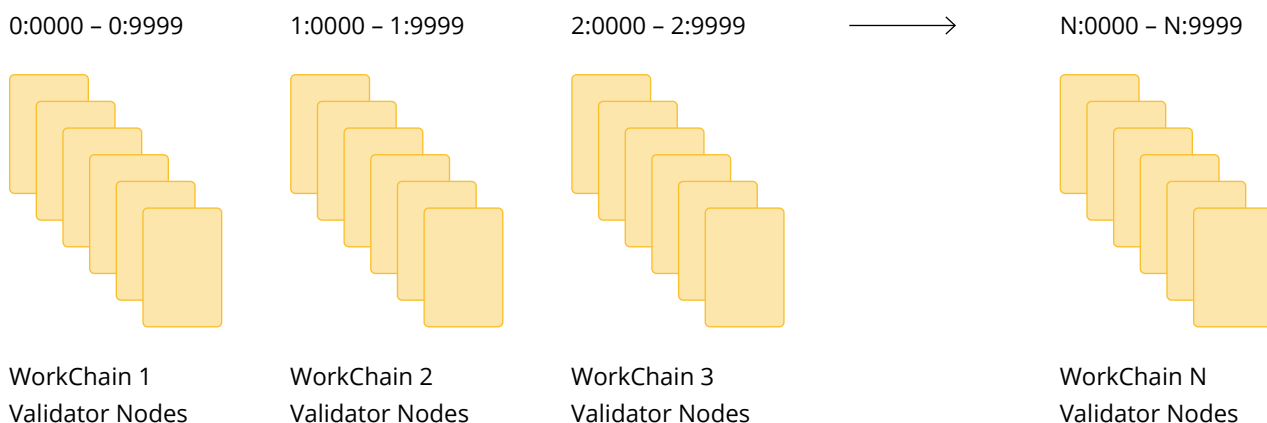
Multithreading

Multithreading is a unique scaling solution designed by Everscale that resembles sharding. The name "threading" draws from the computer science term, where a thread is a unit of execution in concurrent programming. Multithreading is a technique that allows a CPU to execute many tasks of one process at the same time. These threads can execute individually while sharing their resources. Multithreading in Everscale is essentially the parallel execution of smart contracts on workchains, which are sometimes up to 256 threads each.

Another way to understand multithreading is to consider a grocery store analogy. A single thread is like one cashier processing all the customers' purchases. Multithreading is like having a fleet of cashiers processing multiple customers in parallel. A key innovation of Everscale sharding architecture is that all threads in all workchains seamlessly communicate with one another while processing in parallel. This is achieved through the Reliable External Messaging Protocol (REMP), which guarantees that communication among threads is coordinated accurately.

The Everscale blockchain comprises workchains, each of which contains multiple threads. Threads operate together to create workchains that execute smart contracts in parallel. There is also a masterchain, which consolidates transactions processed by all threads in all workchains. The masterchain does not contain blocks from the workchains, as is standard for other protocols. Instead, the masterchain contains a history of block hashes, which is essentially a compressed and verifiable block history record. This means the masterchain doesn't need to contain a large amount of unnecessary data and operates independently of workchains, thus enabling unparalleled scalability.

Figure 3 / Workchains

| 0:0000 – 0:9999 | 1:0000 – 1:9999 | 2:0000 – 2:9999 | ⟶ | N:0000 – N:9999 |

WorkChain 1 Validator Nodes · WorkChain 2 Validator Nodes · WorkChain 3 Validator Nodes · WorkChain N Validator Nodes

Source: Cointelegraph Research

Multithreaded architecture gives Everscale extremely high throughput that scales linearly with network use. Everscale recently demonstrated a transaction speed of 55,000 transactions per second (TPS) during a recent validator contest[23, 24] under real world conditions. Notably, parallelization in the Everscale architecture enables linear scalability, meaning that the capacity of the network increases with the number of nodes and is theoretically unbounded. Most other blockchain protocols cannot achieve linear scalability due to limited implementations of parallelization. This leads to undesirable events, such as Solana's crash following the peak activity of 400,000 transactions caused by a new social-networking protocol.[25]

Figure 4 / Comparison With Other Networks

Blockchain platform	Transaction per second live environment	Transaction per second maximum theoretical limit	Market capitalization	Total value locked (TVL)	Number of DApps
Ethereum	14	100K+ (ETH 2.0)	$374 billion	$174 billion	2,900
Solana	1,416	710K	$43 billion	$10.3 billion	1,200
Polkadot	1,700	100K	$24 billion	$1.6 million	91
Cardano	2.1	5K	$47 billion	$16 million	2
Near	8.5	100K	$11 billion	$158 million	21
Avalanche	6.47	20K+	$21 billion	$16.8 billion	166
Terra	0.4	10K	$29 billion	$20.3 billion	17
Everscale	**54,000**	**1M+ (at regular 1Gb servers)**	**$252 million**	**$34.2 million**	**12**

Source: Everscale Network, Cointelegraph Research (as of 19 Jan' 2022)

23 See "Free TON Speed Record and Development: by Mitja Goroshevsky", Victor Safronov, Free TON House, Aug. 19, 2021
24 See "Rust Cup — Flight to New Worlds", Roman Ganin, Free TON House, Sept. 20, 2021
25 See "Solana Is Tanking Because Even Good Cryptocurrencies Can Crash", Daren Fonda, Barron's, Sept. 18, 2021

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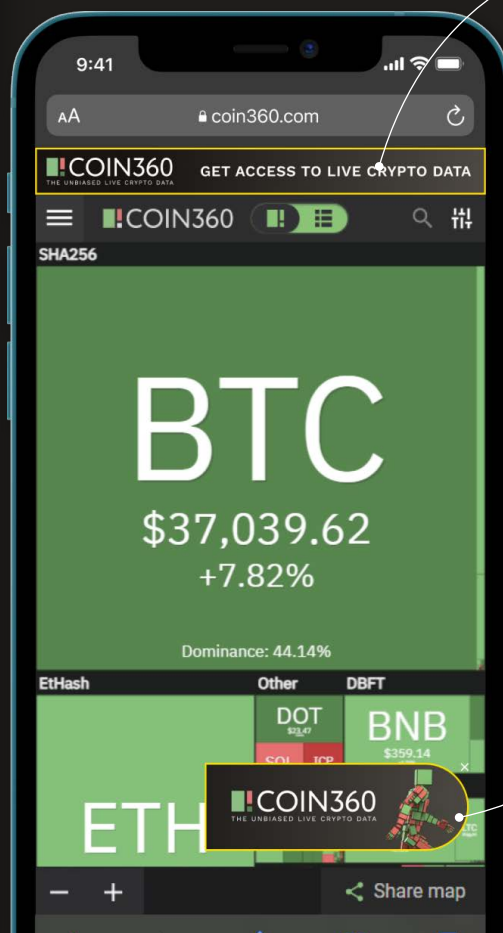
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Soft Majority Fault Tolerance (SMFT) Consensus

Practical Byzantine fault tolerance allows for consensus to be reached in an asynchronous network to improve scalability. However, it compromises security and is only 33% fault tolerant. This means if one third of the network colludes, this one third has enough power to manipulate the transactions by changing the consensus.

Furthermore, critics of layer-one sharding point out that it compromises decentralization. This is because each shard is validated by a single group of nodes, inevitably concentrating the consensus power in those shards. Everscale implements an innovative "red flag" mechanism to improve both the security and decentralization of its consensus design.

Before blocks are finalized, they are approved by a set of verifiers. First, a block from thread validators is provably broadcast to at least 51% of workchain validators. From these worckchain validators, a random set is selected as verifiers. These verifiers may then respond to the thread block with a "red flag" or continue as normal. If no red flags are raised by any of the verifiers, then the block is finalized and the hash is recorded in the masterchain block. However, if just one verifier raises a red flag, the masterchain will initiate a full consensus procedure involving all masterchain validators. These are a separate set of validators from the workchain and are required to reach a full

Byzantine fault tolerant consensus of 51% to finalize the block.

This greatly improves security because now any single honest verifier can prevent an attack from any number of other malicious validators. The trick here is that the validators of each thread don't know who the verifiers will be. This means it's practically impossible for malicious nodes to coordinate an attack between validators and verifiers. For an attack to succeed with 100% certainty, you would need all validators to be malicious because verifiers are randomly selected from a subset of all validators. This increases the fault tolerance of the threads to near 99%. **[Figure 5]**

This high fault tolerance enables blocks to reach finality very quickly, as there is no reasonable strategy to try and maliciously issue an incorrect block. Traditional PoS and PoW consensus mechanisms need to use the longest chain rule to reach finality, as there is a possibility of a new block being malicious or incorrect. On the contrary, Everscale's use of SMFT enhances the security of the system. The result is that the blocks are produced quickly by all threads of all workchains in parallel while being validated by randomly selected verifiers from all validators of a workchain. This creates impressive transaction speeds while keeping consensus sufficiently decentralized.

Figure 5 / SMFT Consensus
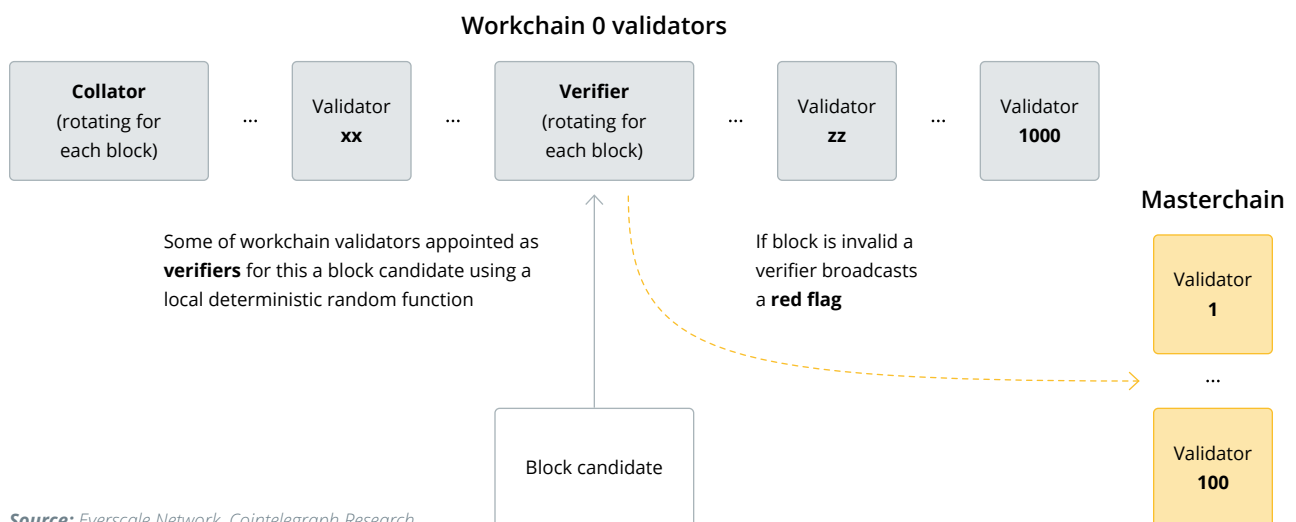
Source: Everscale Network, Cointelegraph Research

Distributed Dynamic Validator Set (DDVS)

A group of validator nodes is called a validator set. There are two ways a PoS system can set up validators: either they are static and unchanging, or they are dynamic and constantly changing groups. A benefit of the static group is if the group is trustworthy, then there will be a stable, reliable source of "truth" in the system. However, this compromises on security and decentralization, requiring trust in the static group.

Dynamic validators solve this trust problem by constantly changing based on an algorithm. Generally, the time between changing validator sets is called an epoch. Validators consist of different nodes across epochs. This prevents dishonest or unreliable behavior from becoming systematic. However, this introduces security issues. Changing epochs can introduce asynchronicity in the network where different validator sets are recognized as valid.

Distributed dynamic validator set (DDVS) is how Everscale is able to have more secure and faster validations of transactions on its blockchain. Currently, Everscale implements dynamic validator sets through epochs but plans to introduce a continuous dynamic validation. This would mean that validators can enter and exit the validator set at any time, with no epochs or resultant security compromise. This is planned to be introduced next year.

On top of continually dynamic validator sets, Everscale has developed its own solution for aggregating individual stakes into community pools. The combination of these features culminates as DDVS. Everscale was the first to propose such a method of community validators by innovating through a smart contract called DePools. These allow various entities to pool their EVER together in order to become validators themselves.

This distributed method of creating a dynamic validator set enables even more users to become validators, which can result in more dynamism of the validator set. This improves decentralization, ensuring there is no reliance on a small group of validators, and improves security, as validators cannot collude easily. This also removes the security threat that epochs bring to a network.

Figure 6 / **Rust Cup Throughput Record**
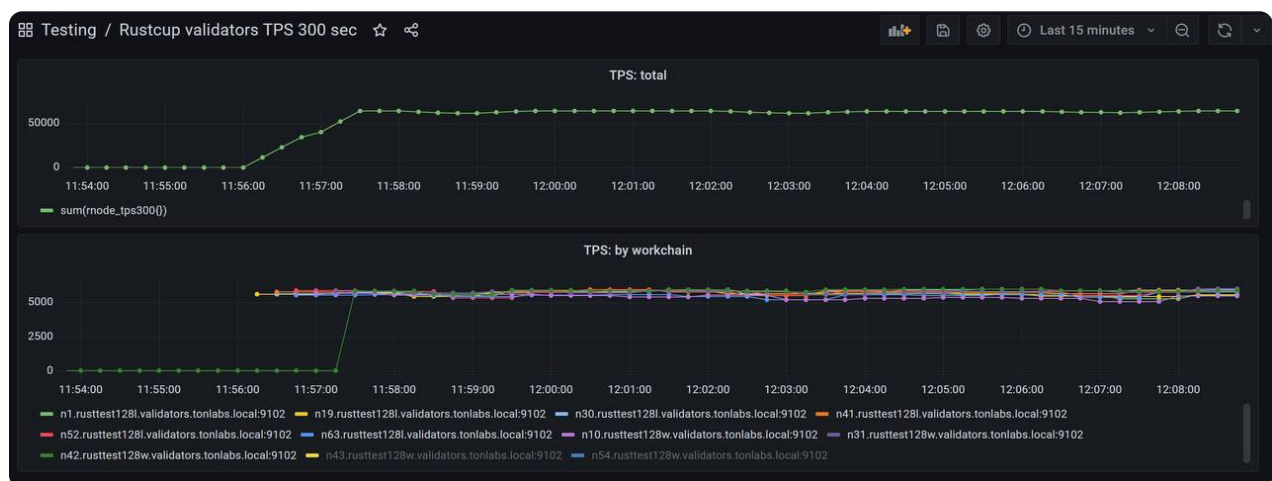
Source: *Free TON DeFi Alliance*

Operating System

An operating system is an intermediary between computers and users, enabling the latter to interact with hardware, manage computer resources, and use applications. The Everscale Operating System is an intermediary between users and the Everscale blockchain, a distributed computing engine.[26] This relationship is managed by the Everscale kernel, which lies at the core of the operating system and manages interactions with the blockchain infrastructure. Unlike Ethereum where only the applications are decentralized, Everscale aims to decentralize the entire operating system end-to-end to create "WebFree",[27] as compared to Web 3.0.


Learn operating system terms

Application Programming Interface (API):[28] APIs are programming code that enables data transmission among applications, websites and computer hardware.

Software Development Kit (SDK):[29] SDKs are a set of software building tools that often includes code libraries, documentation, testing tools and compilers.

Compilers: Primarily used for programs that translate source code from a high-level programming language to a lower-level language.

Kernel:[30] The kernel is the core of the operating system and interfaces with and manages the computer hardware.

Figure 7 / Comparison of Everscale OS to Traditional OS
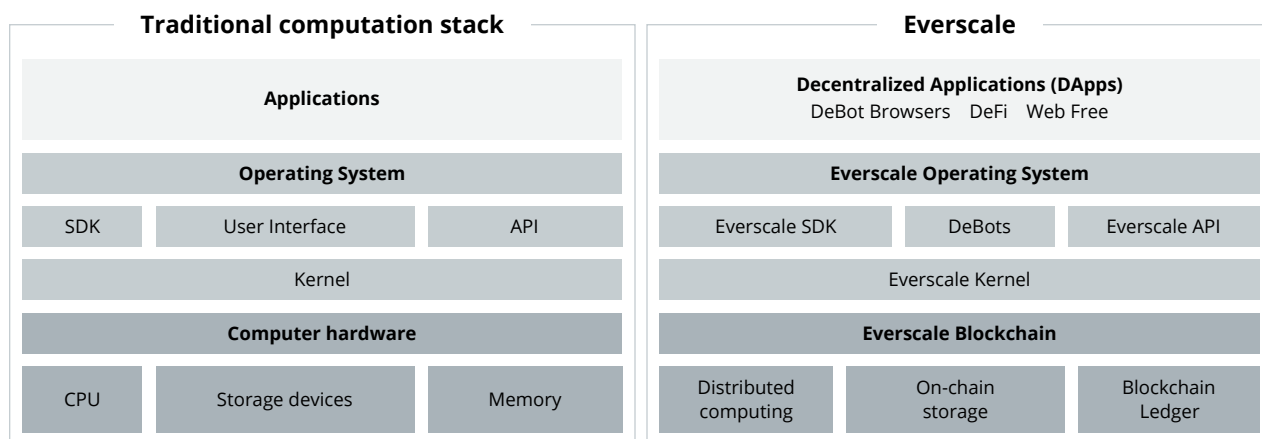
Everscale implements a decentralized computation stack that is analogous to the components of a personal computer.

Source: *Everscale Network, Cointelegraph Research*

Everscale OS includes on-chain storage features that are currently under development and scheduled to release early in 2022. These features are analogous to a computer's storage device, like a hard drive. This is achieved through a dedicated workchain that shares data across validator nodes. These nodes periodically produce random samples to cryptographically verify their hosted data is in sync. The workchains can be designed as "virtual drives" for rapid and regular use or as "archival drives" for long-term storage. This is a

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[26] Learn more about Everscale Operating System here
[27] Learn more about End-to-End Decentralization and WebFree here
[28] See "What is API: Definition, Types, Specifications, Documentation", Altexsoft, July 28, 2021
[29] See "SDK vs. API: What's the Difference?", IBM Cloud Education, July 13, 2021
[30] Learn more about Kernel here

significant advantage over protocols like Ethereum that generally cannot store data on-chain due to high costs.

DeBots provide the user interface for the Everscale operating system, allowing users and developers to interact with the blockchain through DeBot Browsers.[31] Fundamentally, DeBots are smart contracts that facilitate user-friendly interactions with other smart contracts. These DeBot smart contracts include user interface data, known as DInterfaces. A DeBot Browser loads this user interface from the DeBot to deliver a friendly user experience with smart contracts.

Furthermore, DeBots enable a means to run smart contracts from a local machine — without requiring intermediary servers or nodes. The final message of the smart contract is then published to the blockchain. This DeBot design is better for decentralization and transaction speed than Web 3.0 competitors through which every step of a smart contract is run on the blockchain.[32] The Everscale Surf Browser[33] is the flagship DeBot application, enabling users to transact, stake and store tokens, message one another, and browse other applications.[34] Two alternatives, deBrowser and Everscale DeBot Browser, offer these same functionalities.[35]

Figure 8 / Everscale DeBot Browser
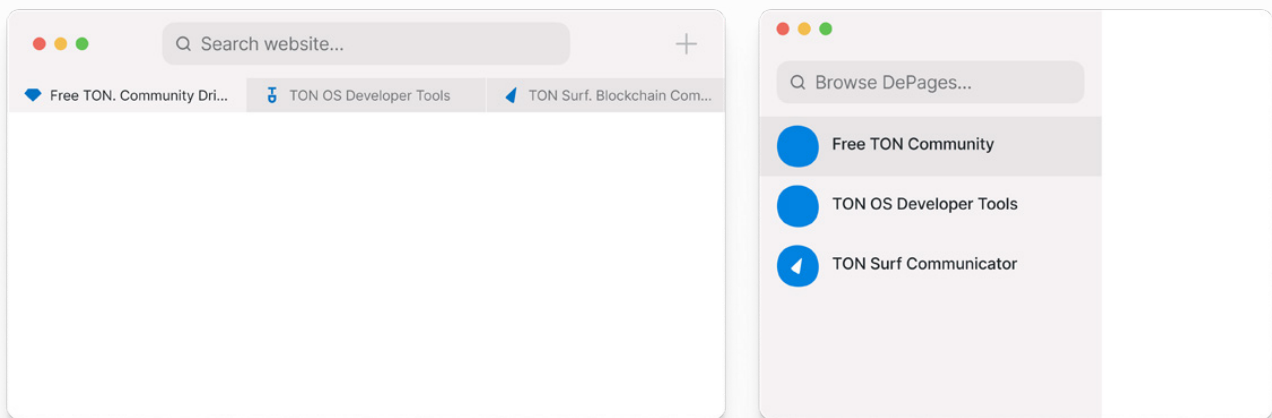
Source: *Everscale Network*

End–to–End Decentralization

Virtual machines such as Ethereum enable protocols to build on their underlying infrastructure to deliver user-facing services, such as decentralized applications (DApp), platforms and wallets. The cumulation of these ecosystems is broadly referred to as Web 3.0. Although Web 3.0 enables decentralized, blockchain-based web applications, it is still limited by the centralization of user interfaces and information

outside of the blockchain. This increases counterparty risk, faults and censorship from intermediaries. For example, the lack of on-chain storage on Ethereum means data associated with a smart contract is often stored off-chain. Third-party solutions such as Inter-Planetary File Storage (IPFS) have emerged to fill this gap with decentralized solutions.

[31] Learn more about DeBots here
[32] See "How to Decentralize the Internet?", Ben Sunderland, Free TON House, May 22, 2021
[33] Learn more about Everscale Surf Browser here
[34] Learn more about Everscale Surf here
[35] See "SMV DeBot Browser contest proposal", "Mitja", Free TON Forum, March 24, 2021

WebFree is built with end-to-end decentralization in mind. End-to-end decentralization provides the end user the ability to verify the correctness of their interaction with a smart contract through any channel of interaction. The Everscale OS is a stack of decentralized technologies built on the Everscale blockchain. At its core, this is a decentralized computing platform, which also includes a means to store, query and manage data natively on-chain, enabled by the scalability of Everscale infrastructure. The OS allows anyone to easily run smart contracts locally without having to publish every step to the blockchain. Furthermore, smart contracts can be built with user interfaces and displayed through a browser-style application.

Figure 9 / Everscale Architecture
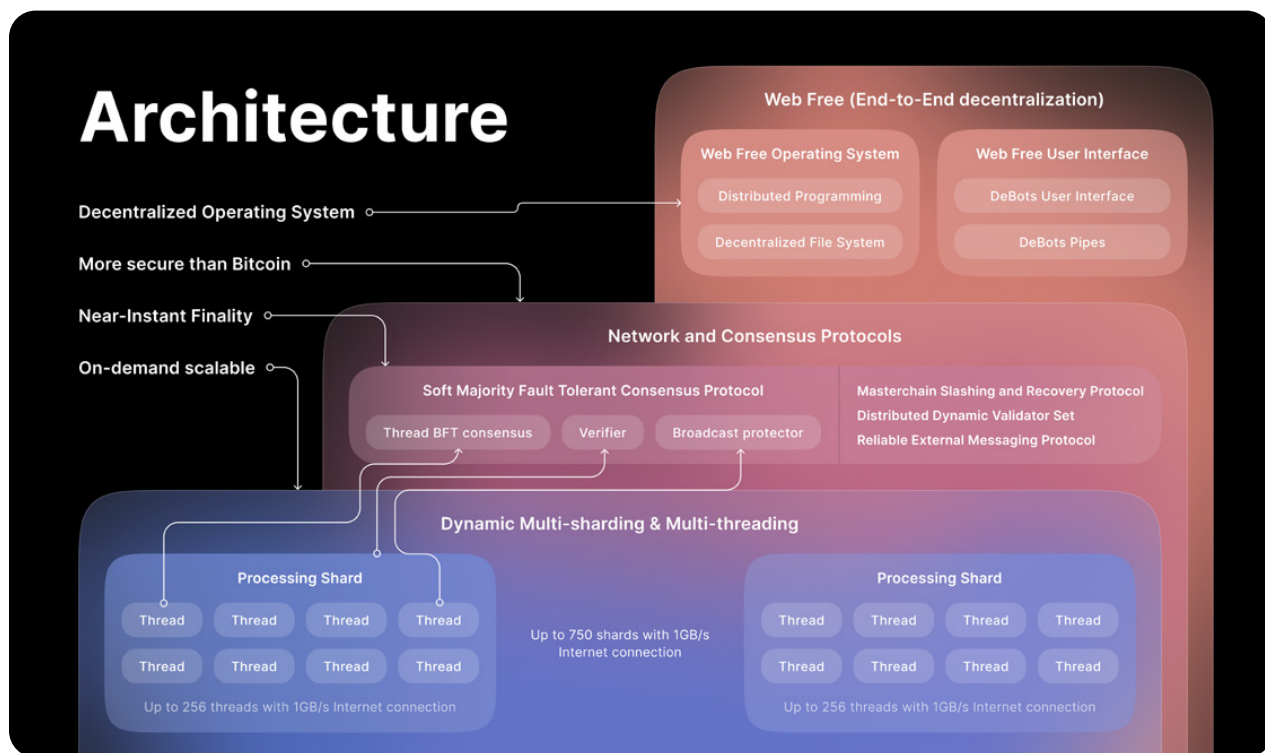
Source: *Everscale Network*

The structure of end-to-end decentralization is an entirely alternative infrastructure for the modern internet. There are three primary components to modern internet infrastructure:

○ TCP/IP — the protocol that enables the exchange of bundles of information among servers around the world.

○ Cloud infrastructure that provides on-demand data storage and computation, referred to as platform-as-a-service (PaaS). Alternatively, private servers are used for this same function.

○ Web browsers or various applications that interact with the Cloud and provide user-facing interfaces.

Out of these three components of the modern internet, Everscale utilizes only TCP/IP protocol, replacing everything else with its own offerings. The Everscale blockchain offers decentralized storage, hosting, and computation with unbound linear scalability and high security. Through these offerings, Everscale aims to directly compete with Cloud infrastructure from Google, Amazon, Microsoft and others by providing its own alternative to PaaS offered by these companies.[36]

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[36] See "Free Internet by Free TON", Everscale (formerly Free TON), Medium, Dec. 1, 2020

Tokenomics

Key Takeaways

- To prevent the accumulation of funds by initial developers and primary investors, tokens were initially distributed to network members based on their contributions.

- Soft Majority Voting optimizes community voting procedures, and Byzantine fault tolerant governance is used to ensure fair token distribution.

- At launch, more than 85% of the tokens were allocated for partnerships and adoptions, 5% and 10% were given to validators and developers, respectively, to stimulate ecosystem growth and adoption.

- DePools allow EVER holders to pool their deposits into a distributed validator, decreasing the risk of centralization through consensus power distribution

Meritocratic Token Distribution

The Everscale blockchain was launched on May 7, 2020, by 23 independent parties, with 17 acting as validators for network transactions along with six community referral and development partners (collectively, the "Initial Participants"). To coordinate development efforts of the Everscale Community, the Initial Participants formed a global governance committee, which is currently holding a number of contests for the development of the network and the ecosystem.

In order to overcome centralization of token ownership and governance, Everscale implements a Meritocratic token distribution. Importantly, tokens have not been sold to any party. EVER tokens were only distributed to network participants based on their contributions as judged by the community. Anyone can suggest a contest and earn EVER tokens. If the community agrees that it is a worthwhile contribution, a token reward and juries are formed.

At the network's launch, 5 billion EVER tokens were generated and allocated according to an agreement referred to as the Declaration of Decentralization.[37]
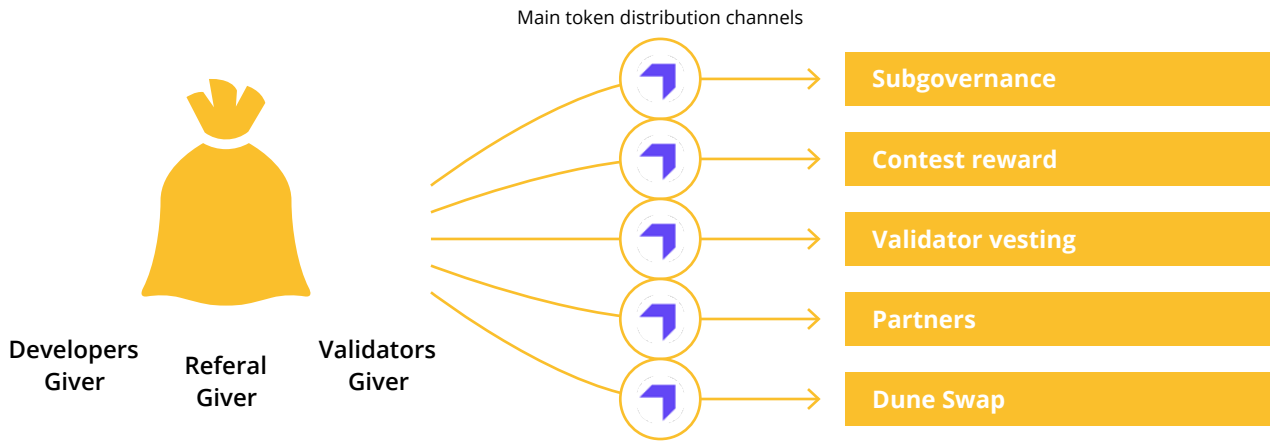
The vast majority has been allocated as rewards for future development of the network and is held in multi-signature contracts called Givers. However, 310 million vested EVER tokens was allocated to the initial validators and partners for their early contributions to the network. Since then, the community has voted to allocate an additional vested 250 million to DeFi Alliance members.

Everscale has three "Givers" contracts that collectively received the majority of the initial supply.

1. The Referral Giver (approx 85% of the initial supply) allocates funds to partnerships and adoption initiatives.

2. The Developer Giver (approx 10% of the initial supply) rewards community developers for their contributions or projects looking to build on Everscale.

3. The Validator Giver (approx 5% of the initial supply) allocates funds to bootstrap validator adoption and network security.

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[37] See "The Declaration of Decentralization", Everscale (formerly Free TON)

Figure 10 / Everscale Token Distribution

Main token distribution channels

Developers Giver   Referal Giver   Validators Giver

Subgovernance

Contest reward

Validator vesting

Partners

Dune Swap

Source: *Free TON House*

Recently, there was an approved proposal to burn 3 billion tokens from the Referral Giver. This burn was complete on Nov. 8, 2021, dramatically reducing EVER's supply[38] to just over 2 billion. As of 10th of January 2022, there is 735 million EVER in the circulating supply, with 1.18 billion unreleased tokens still in the giver contracts treasury.[39] The remaining tokens are either vested funds with the core team, validator tokens or free floating tokens. The transfer of funds from giver contracts is signed by a group of 23 initial members; however, this step will be automated in future governance updates.[40]

Figure 11 / Total Supply

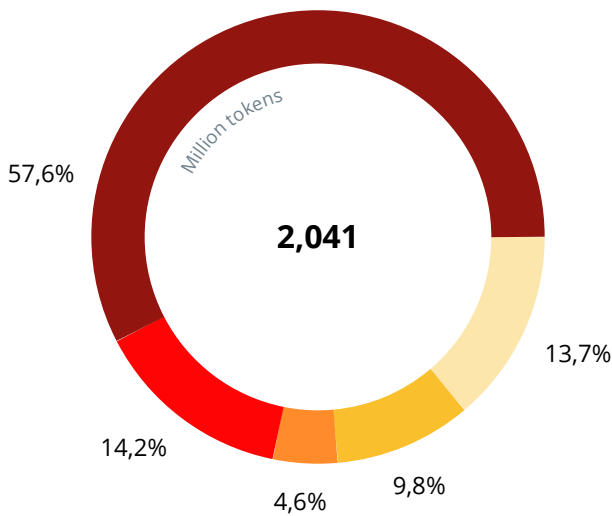Million tokens

2,041

57,6%

14,2%

4,6%

9,8%

13,7%

Table relevance: **8 November 2021**

- Treasury tokens
- Core members
- Validators
- Free Float
- Crystal Hands allocated

* Token burn was done publicly on 8 nov using a smart contract. Initial total supply was 5 bln tokens, 3 bln tokens were burned to bring total supply to 2 bln.

Source: *Everscale Network*

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[38] See "FreeTON DeFi Alliance / Partnership Extension", "cryonyx", Free TON Forum, Oct. 11, 2021
[39] Access real-time EVER data here
[40] See "FreeTON Meritocracy: How Tokens Are Distributed", "TON Crystal", Free TON House, May 26, 2021

Governance

Everscale's governance consists of the global governance and over 25 different community groups called sub-governances. Sub-governance groups develop their own roadmaps and are allocated tokens from the global governance to reward contributors of that sub-governance via a transparent on-chain voting process. Sub-governance groups conduct their own contests, which are judged by jurors appointed by each sub-governance that has proven expertise on the subject.

Governance members include GDA Capital, Warp Capital, Origin Labs and Broxus. These members have shown continuous dedication to Everscale's development, and locking-up their funds will serve as an incentive for timely completion of the roadmap's goals and the launch of novel services. The lock-up also ensures that only the members, believing in the blockchain's growth in the future, stay onboard.

Everscale plans to expand the network's on-chain governance capabilities later in 2021. The decentralized governance sub-governance group is currently working to transition all community governance decisions with respect to contests to a set of smart contracts, which will open participation in governance to all EVER holders.[41] The next generation Everscale governance system is called Governance 2.0.

Soft Majority Voting (SMV)

Everscale governance uses a similar consensus mechanism as Soft Majority Fault Tolerance, called the Soft Majority Voting (SMV) system. Blockchain governance is plagued by low participation from token holders, making a majority consensus impossible to reach and introducing centralization problems.[42] By using SMV with just a subset of network participants, the governance of Everscale does not require 100% participation. The soft majority consensus mechanism ensures that outcomes are secured by a sufficiently decentralized group of representatives.

The SMV governance protocol introduces an innovative for-and-against consensus mechanism just like the "red flag" from the SMFT mechanism. Instead of waiting for all token holders to cast their votes and then tally the results, Everscale looks at votes as they come in "for" and "against" a proposal.[43] Hence, if 100% of 10% of the network vote for a proposal, the chances of malicious cooperation mathematically tend to 0.
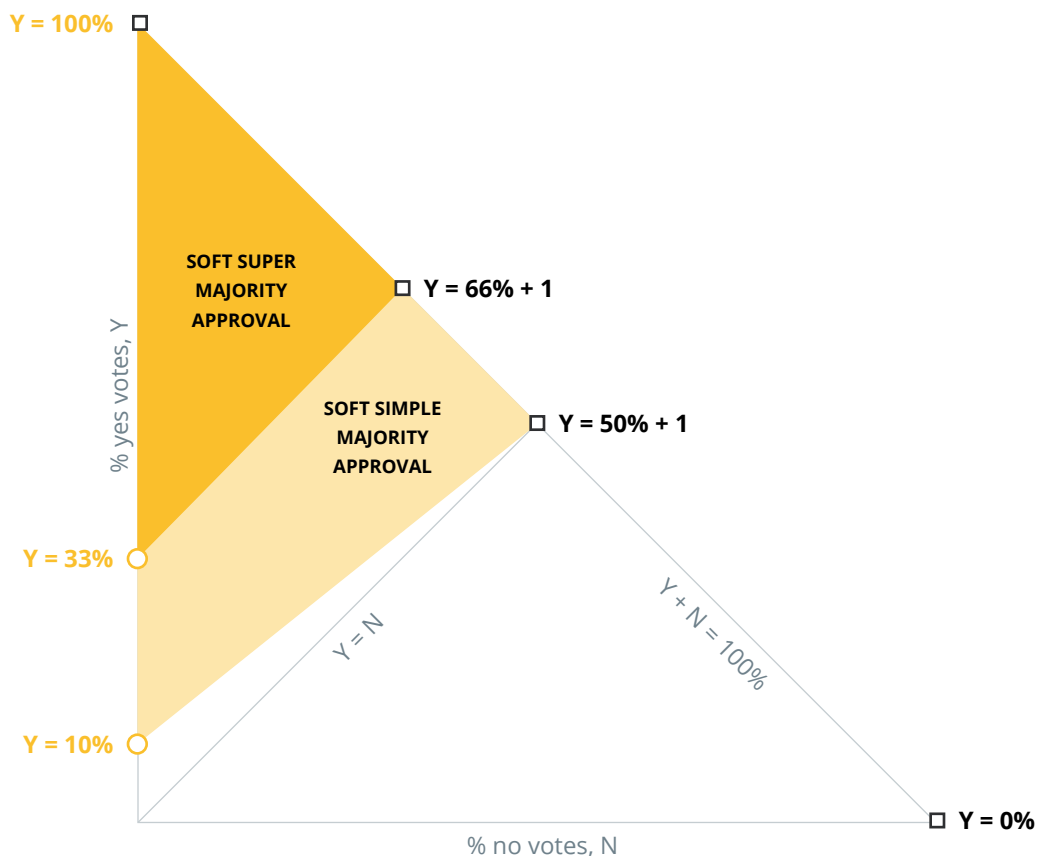
However, if there are any votes against, the majority requires an increase (see the graph below), eventually reaching a simple majority of 51% like a standard vote. This is an innovative design for a well-known flaw in decentralized governance but will have to be proven in practice.

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[41] Learn more about sub-governance here
[42] See "Moving beyond coin voting governance", Vitalik Buterin, Aug. 16, 2021
[43] See "Developers Contest: Soft Majority Voting system", "Mitja", May 3, 2020

Figure 12 / Soft Majority Voting

Y = 100%

SOFT SUPER MAJORITY APPROVAL

Y = 66% + 1

SOFT SIMPLE MAJORITY APPROVAL

Y = 50% + 1

% yes votes, Y

Y = 33%

$Y = N$

$Y + N = 100\%$

Y = 10%

Y = 0%

% no votes, N

Source: Free TON

Byzantine Fault Tolerant Governance (BFTG) — to manage the activities of the jury and ensure the judging of contest proposals.

Contests are assessed by the Everscale community on the merit of the contribution to the ecosystem and must pass a soft majority vote.[44] The assessment is overseen by a jury, which is automatically selected from the community based on their past involvement in relevant contests.[45] Each jury member relinquishes their EVER to incentivize honest judging and receives a reward or penalty accordingly. Furthermore, any EVER holder can play the role of a "fisherman" who claims rewards from the judges' stake for identifying errors or breaches of community guidelines.[46]

[44] See "Practical BFT Governance", Mitja Goroshevsky, Free TON Forum, Feb. 22, 2021
[45] Access Everscale contest statistics here
[46] See "Free TON Governance (Part II) Contest", "Mitja", Free TON Forum, Feb. 9, 2021

DePools

Everscale is a PoS system that requires validator nodes to have a material stake in the network and receive rewards or penalties to incentivize honest behavior.[47] Validators receive rewards in the form of emitted inflationary tokens and transaction fees.

Currently, Everscale's inflation is capped at approximately 1% supply growth per year, or 2 million EVER per month across the network.

Becoming a validator on the Everscale network is demanding in terms of capital and requires a 350,000-EVER deposit and dedicated hardware requirements. This prices out the majority of the community members and limits possible network decentralization.

To overcome this shortcoming of the PoS system, Everscale introduced an innovative concept called

Decentralized Pools (DePool). DePools are smart contracts that allow users to stake their tokens together like validators and earn rewards for securing the network.12

DePools allow EVER holders to pool their deposits into a distributed validator. There are currently 439 validator nodes, 413 of which use DePools. Across all validators and DePools, there are 474 million EVER tokens staked, or approximately two-thirds of the circulating supply.[48] Validators and DePool users can expect to receive returns of approximately 5.5% per annum on their staked EVER.

Sui et al. conducted a literature review,[49] calculating the "centralization factor" of different architecture levels of the blockchain. The higher the factor, the more vulnerable a particular level is to centralization:

Figure 13 / Blockchain Centralization Factors

Source: ScienceDirect

Centralization Factor
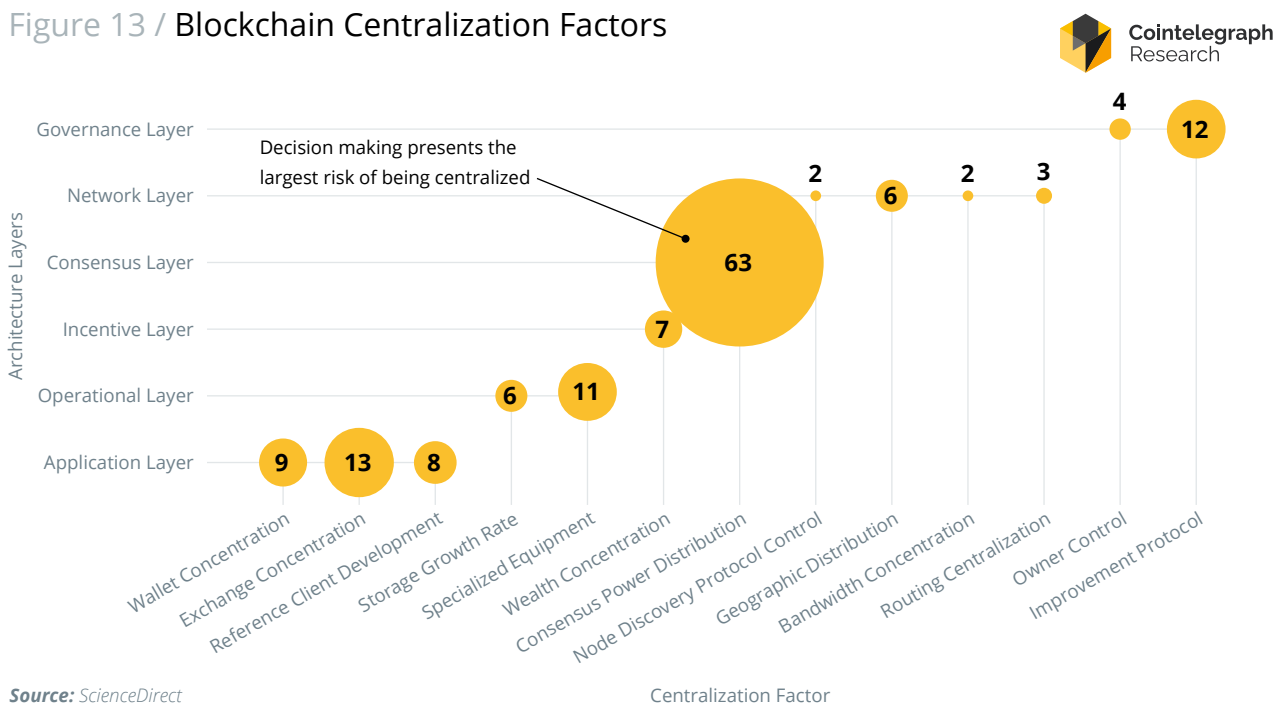
As shown above, consensus power distribution is where the highest centralization risk of blockchain lies. This refers to the distribution of miners or validator nodes in the network. In fact, despite technical decentralization, the majority of blockchains is effectively owned by a small number of parties. For

instance, Ethermine and F2Pool hold more than 50% of Ethereum's consensus power at the time of writing.[50] Based on the 17 validators from the Initial Participants in a total of 439 validator nodes, we can conclude that the founders control less than 4% (17/439) of the consensus power in the Everscale network.

[47] Learn more about Everscale validators here
[48] Access real-time Everscale validator data here
[49] See "Taxonomy of centralization in public blockchain systems: A systematic literature review", Sai et al, ScienceDirect, July 2021
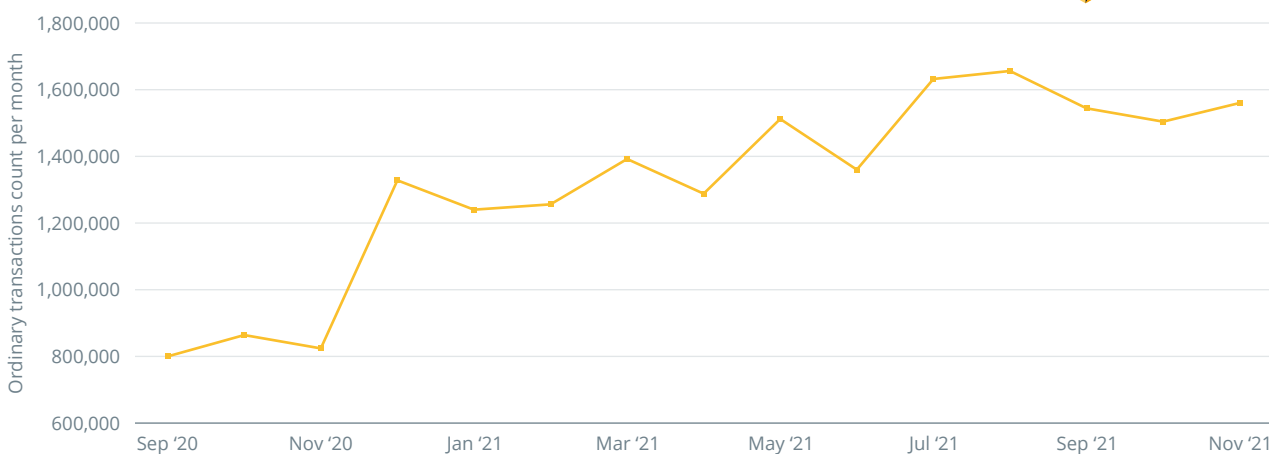[50] Access real-time Ethereum mining pools data here

Ecosystem

Key Takeaways

- The Everscale network has opened nearly 500,000 wallets and processed more than 66 million transactions in 2021.

- Everscale's innovative Octus Bridge allows interoperability among Ethereum, Polygon, Fantom and other EVM networks.

- Everscale's technology doesn't only excel in the DeFi scene but also serves real-world use cases, including a voting audit system, SSI and security cards.

Everscale has developed innovative blockchain infrastructure and can compete in terms of scalability, decentralization and security. Network effects and ecosystem growth are crucial for Everscale to grow its project into a market leader. Despite a notable decrease in EVER's price since the end of 2020, various Everscale platforms and metrics indicate significant growth, suggesting high interest in the project and potential to secure a larger market share.

In just the last year, the Everscale network has opened nearly 400,000 wallets and processed more than 66 million transactions. In addition, the number of new wallets per month has exceeded an average of 40,000 over 2021, with a peak of 87,237 in August 2021. This is a significant increase from November 2020 when only 3,000 new wallets were created.[51] In particular, the number of Everscale transactions has shown a 100% growth over the last year as the ecosystem reaches broader use.

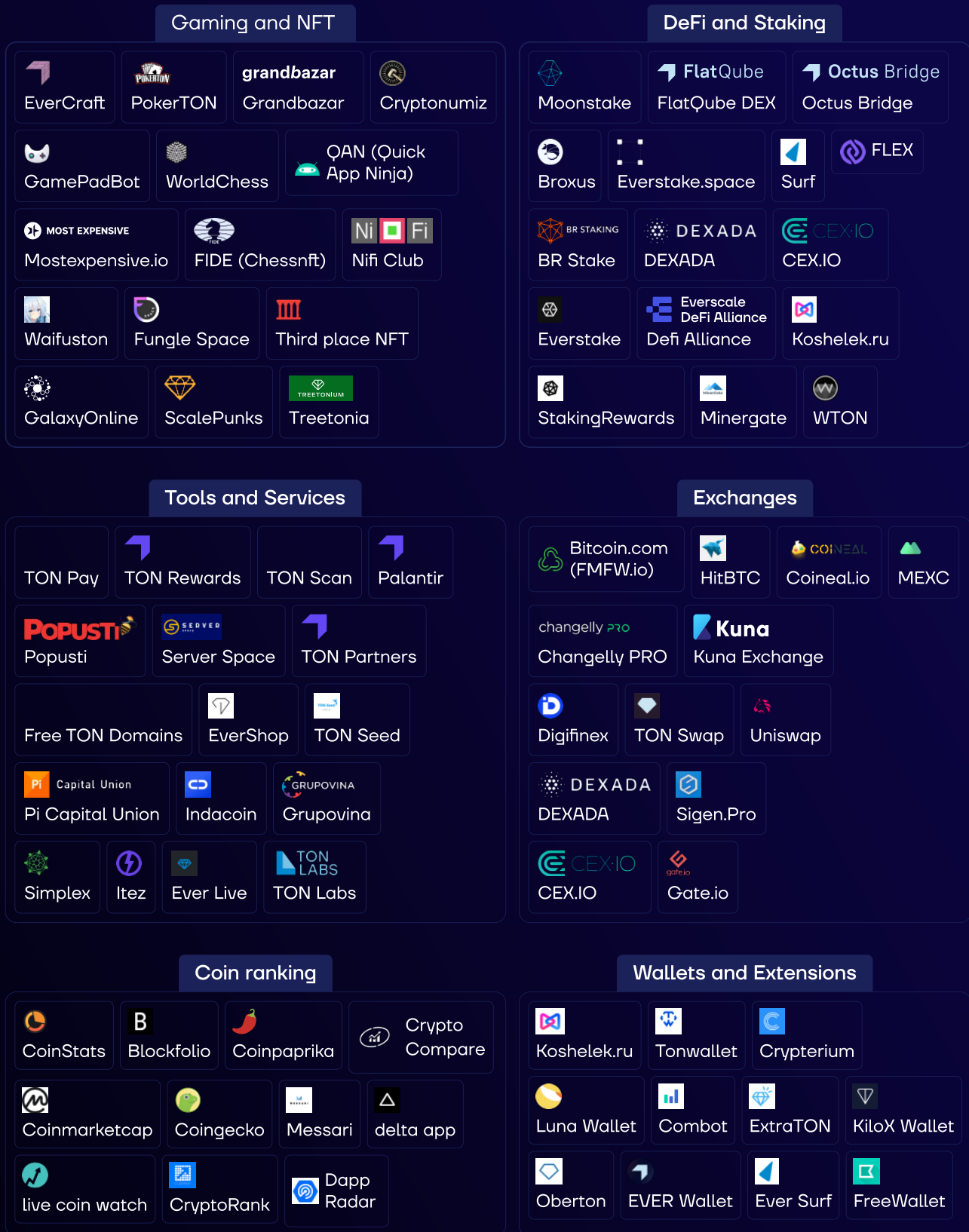## Figure 14 / Everscale transactions history

Source: ton.live

Figure 15

Ecosystem Overview

Gaming and NFT

EverCraft | PokerTON | grandbazar Grandbazar | Cryptonumiz

GamePadBot | WorldChess | QAN (Quick App Ninja)

Mostexpensive.io | FIDE (Chessnft) | Nifi Club

Waifuston | Fungle Space | Third place NFT

GalaxyOnline | ScalePunks | Treetonia

DeFi and Staking

Moonstake | FlatQube FlatQube DEX | Octus Bridge Octus Bridge

Broxus | Everstake.space | Surf | FLEX

BR Stake | DEXADA | CEX.IO

Everstake | Everscale DeFi Alliance Defi Alliance | Koshelek.ru

StakingRewards | Minergate | WTON

Tools and Services

TON Pay | TON Rewards | TON Scan | Palantir

Popusti | Server Space | TON Partners

Free TON Domains | EverShop | TON Seed

Pi Capital Union | Indacoin | Grupovina

Simplex | Itez | Ever Live | TON Labs

Exchanges

Bitcoin.com (FMFW.io) | HitBTC | Coineal.io | MEXC

Changelly PRO | Kuna Kuna Exchange

Digifinex | TON Swap | Uniswap

DEXADA | Sigen.Pro

CEX.IO | Gate.io

Coin ranking

CoinStats | Blockfolio | Coinpaprika | Crypto Compare

Coinmarketcap | Coingecko | Messari | delta app

live coin watch | CryptoRank | Dapp Radar

Wallets and Extensions

Koshelek.ru | Tonwallet | Crypterium

Luna Wallet | Combot | ExtraTON | KiloX Wallet

Oberton | EVER Wallet | Ever Surf | FreeWallet

Source: Everscale Network

Contests

Everscale houses a thriving ecosystem fuelled by its meritocratic token distribution and contest-based governance. EVER is distributed to entrepreneurs, developers and community participants rather than speculative investors. Instead of relying on grants, which introduce a barrier to participation, Everscale focuses on widely accessible contests.[52]

Exceptionally, Everscale contests govern all areas of the blockchain operations. Contests are held for validators, as well as for software development, governance and marketing. Notably, the awards for contest winners in Everscale are significantly higher than those of the competitors. While Solana, Cosmos and several other blockchains provide around $20,000 to contest winners,

Everscale's prizes often exceed the equivalent of $60,000. Moreover, an exceptional 200,000-EVER ($74,000) award was allocated to the winner of the decentralized voting audit for elections in Latin America.[53] Holding more than 150 contests a year, Everscale is one of the leaders regarding fund allocation to contests, which is likely to attract developers from other ecosystems.

One of the most recent contests was a "decentralized Wikipedia," which attracted a lot of attention and resulted in more than 50% of the community voting for its development.[54] Furthermore, the specifications for "Freecyclopedia" were also voted on, and the top seven submissions qualified for splitting the prize fund worth 165,000 EVER ($61,000).

Figure 16 / Top 10 Most Recent Everscale (Free TON) Contests

Contest Name	Total rewards (EVER)	Total rewards (USD)	Date
NFT Marketplace	430,000	150,500	17 May 2021
Everscale Website	405,000	141,750	26 May 2021
Sovereign Identity Framework	175,000	61,250	15 June 2021
Freecyclopedia	165,000	57,750	18 Aug' 2021
Online Auctions Implementations	130,000	45,500	30 April 2021
Analytics of Partner Requests	121,000	42,350	20 July 2021
Winners Works Catalog	50,000	17,500	30 June 2021
Everscale Loans	40,000	14,000	28 June 2021
DeCourses Competition (Stage 1)	30,000	10,500	21 July 2021

Source: _Free TON House_, _Cointelegraph Research_

Moreover, Everscale bootstraps promising technologies, platforms and startups through a range of other schemes. In collaboration with Ever DeFi Alliance, the "Crystal Handshake" incubation programme[55] aims to grow DeFi platforms and bolster liquidity in the ecosystem. Meanwhile, Broxus and Everscale have developed a crowdfunding platform,

Ever Seed, which has already enabled seven startups to raise initial funding.[56]

Ever Seed is a crowdfunding platform that connects community members to promising ideas and other implementation proposals. Members can choose and support the projects they like and vote with their EVER. One example of a project that reached full funding is

[52] See "Why contests are better than grants for a healthy crypto community", Connor Sephton, Cointelegraph, Dec. 20, 2020
[53] See "Free TON Contests: Their Goals and Awards Compared to Other Blockchains", Ekaterina Malisheva, Free TON House, July 29, 2021
[54] See "Decentralized blockchain project launches contest to build next Wikipedia", Chris Jones, Cointelegraph, Aug. 17, 2021
[55] See "Crystal Handshake", Free TON DeFi Alliance, Aug. 5, 2021
[56] Learn more about Ever Seed here

Aerx, which is an open-source, decentralized social network concept.[57] The project received 8,522.29 EVER (worth approximately $2,600 at the time of funding) from a 7,500-EVER goal.

DeFi

Decentralized finance (DeFi) has been a major growth driver in the crypto markets since the famed DeFi summer of 2020. However, DeFi has highlighted industry challenges such as transaction fees, scalability and regulatory scrutiny. Ethereum, the major blockchain of DeFi, hosts the most DApps and total value locked (TVL) but regularly faces issues associated with scalability and criticism for centralization.

Ethereum's lack of scalability opened the door for other blockchains to build their own DeFi ecosystems and capture a market share. The new generation of Ethereum competitors aim to provide superior value to their users by enabling and encouraging a robust ecosystem. As the competition heats up among these blockchains, it becomes crucial to attract developers who can build products for users. Overall, the immense network speed and trivial fees may give Everscale an edge over other blockchain infrastructure providers.

Figure 17 / Total value locked in major DeFi ecosystems
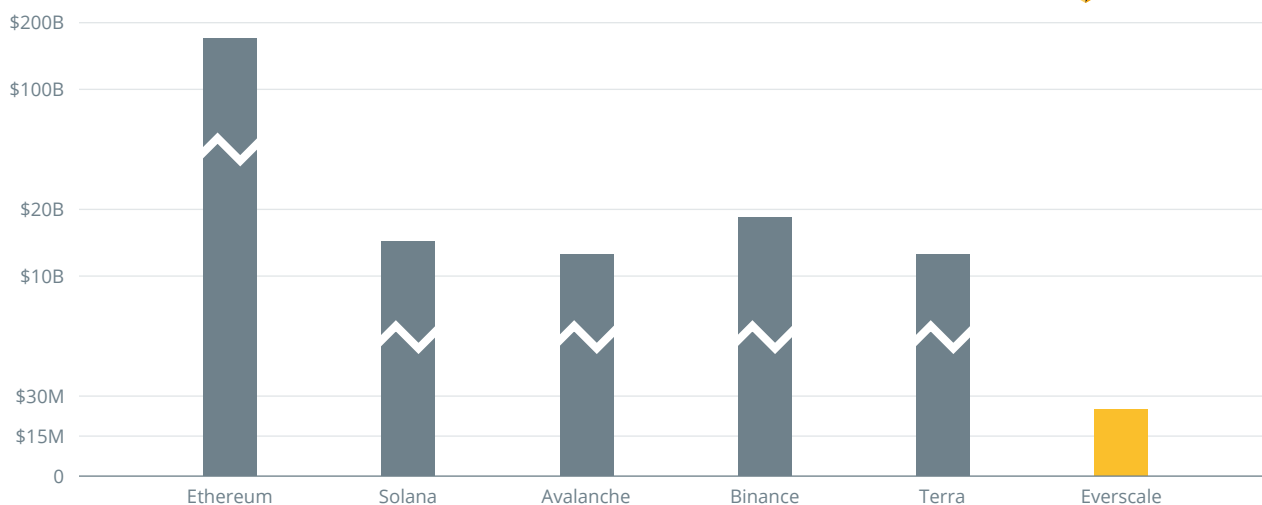
Source: Defi Llama, TON Swap

The value of DeFi largely rests on the available liquidity — this proves the platform's safety and ensures all transactions can be facilitated. As long as most of the global TVL in DeFi is on Ethereum, newer blockchains have to keep in mind that isolation means untapped liquidity. With this, cross-chain interoperability becomes vital and has caused a rise in wrapping and bridging technologies.

In order to facilitate the development of the DeFi ecosystem, Everscale DeFi Alliance was created. The community supports initiatives of projects, such as Octus Bridge and FlatQube, and is also responsible for attracting new startups into the ecosystem. Comprising prominent developers, investment funds and blockchain communities, the alliance aims to accelerate the growth of Everscale's ecosystem.[58]

[57] Learn more about aerx here
[58] See "Alliance Agreement", Free TON DeFi Alliance, Jan. 25, 2021

Octus Bridge

Different blockchains have different token standards, like separate economies have their own fiat currencies. Because Ethereum houses most of DeFi liquidity, other blockchains will encourage interoperability to attract liquidity. This is typically done through "wrapping" a blockchain's native coin and "bridging" it to another blockchain.

Learn wrapping

A wrapped token is an identical version of an original token on another blockchain. Decentralized wrapping services, often called bridges, offer this functionality. This is achieved by "locking up" the original token and reissuing an identical wrapped version on the new blockchain, which is pegged to the original token price. For example, one can wrap Bitcoin on Ether, and the Wrapped Bitcoin (wBTC) will be pegged to Bitcoin's value. Wrapping allows users to to work with an asset on a non-native blockchain. Note that some wrapped assets are custodial and introduce counter-party risk to your assets.

Therefore, to ensure interoperability with the Ethereum ecosystem, Wrapped EVER (WEVER) was created. WEVER is a version of EVER that can operate as an ERC-20 Ethereum token and aims to attract liquidity from the Ethereum ecosystem. This service is offered through the Octus Bridge DApp.[59] WEVER can then be used on a variety of Ethereum DApps, such as Uniswap. WEVER as an ERC-20 token is available on Uniswap, yet there is relatively low liquidity, only $400,000 available at the time of writing.[60]

Decentralized Exchanges

Listing on decentralized exchanges (DEX) is crucial for ecosystem growth because it taps into a different group of users who might prefer self-custody wallets over an account with a CEX. However, a common issue with DEXs is its low liquidity and high gas prices, particularly for Ethereum-based exchanges such as SushiSwap and Uniswap, which drive away many users.

One of Everscale's solutions is a liquidity-focused DEX called FlatQube, which was developed by Broxus. FlatQube offers multiple functionalities such as investing in liquidity pools, investing in liquidity provider tokens in farming pools, tracking the stats of particular tokens, and other uses. More importantly, FlatQube facilitates the exchange of 14 tokens, including Wrapped Ether (wETH), Dai and Tether (USDT). Currently, Ever Swap has more than $30 million in total value locked, and to attract more DeFi protocols and inject more liquidity to the network, Everscale has committed to adding $1 billion in EVER before the end of 2021. Most of those tokens are utilized for yield farming rewards, which was initiated on FlatQube on June 29.[61]

The Everscale DeFi ecosystem is in its nascent stage. It has FlatQube automated market maker (AMM)-based DEX with a TVL of about $30 million, and just recently, the Flex DEX featuring decentralized limit order book and AMM pools was built. Flex's order matching speed can match that of centralized crypto exchange Binance with just 15 workchains, which is a perfect example of the capabilities of Everscale's underlying technology. On Oct. 30, a launchpad called KWP was launched on Flex. Chances are that it will become a major driving force pushing Everscale's ecosystem forward with more projects creating value.

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[59] Learn more about WEVER here

[60] Access WEVER trading data on Uniswap here

[61] See "Free TON DeFi Alliance Announces 15M TON Yield Farming Program", Bitcoin.com, June 29, 2021

Nonfungible Tokens

Considering the resurgence of nonfungible tokens (NFT) this year, the development of NFT-related projects is almost essential for a developing blockchain. Notably, the network's major contributors, Surf and RSquad, have developed the TrueNFT protocol that follows the "end-to-end decentralization" principles. In particular, this implementation of NFTs has a distinct advantage in that all NFT data is stored on the blockchain.[62]

As explored in Everscale Technology, most blockchains do not allow native on-chain storage for large amounts of data. This means data is stored off-chain and may compromise the integrity of ownership and immutability. For NFTs, this is particularly relevant, as the artwork itself is stored off-chain with the token, meaning the art may be altered or removed by a third party.
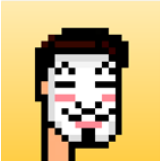
The TrueNFT protocol eliminates the need for third-party infrastructure like traditional servers or IPFS for data storage. Following the creation of a genuinely decentralized NFT-related technology, the community has massively contributed to the development of successful marketplaces and collections.

NFT Collections

Since the release of NFT-related technology on Everscale, multiple collections have emerged. The most remarkable collection is TONPunks, which appeared following the staggering success of CryptoPunks. Comprising 10,000 unique punks, the collection gained considerable traction. For instance, one of the 22 rare "Durov" punks was sold for $10,000 just 10 minutes after minting, providing a 12,500% profit to the initial owner.[63] Moreover, following Everscale's decentralized autonomous organization (DAO) governance principles, the community is currently hosting contests to further develop the TONPunk platform. This includes TONPunk staking and a TONPunks governance token.[64]

Figure 18 / ScalePunks NFT Collection Lots

Marketplace	Collection	NFT	Highest Price Sold
ScalePunks	TONPunks	Punk #910	$10,000
ScalePunks	TONPunks	Punk #57	$9,975
ScalePunks	TONPunks	Punk #7523	$5,500

Source: ScalePunks

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[62] Learn more about Everscale TrueNFT here
[63] See "Free TON's NFT was sold 10 minutes after minting with 12,500% profit" (in Russian), Forklog, Sept. 21, 2021
[64] Learn more about TONPunks staking and governance here

NFT Marketplace

There are also growing NFT marketplaces in the Everscale's NFT ecosystem. The Everscale community held a contest on March 17, 2021, for NFT marketplaces, and as a result, three winners were announced — GrandBazar,[65] NiFi[66] and Fungle Space[67] — all of which are already successfully operating at a larger scale.[68]

GrandBazar offers more typical NFTs, including a range inspired by well-recognized films and games. This marketplace provides the ability to buy NFTs at a fixed price or at an auction. GrandBazar has gained traction through integrating with the Ever Surf browser. NiFi and Fungle Space are more curated with a finer selection of artistic NFTs. Aside from this, another unique platform called Third Place NFT links real-world art objects to the world of NFTs through its marketplace where users can become owners or co-owners of masterpieces through tokenization.[69] Furthermore, the International Chess Federation also chose Everscale's technology to develop its NFT marketplace, marking the first-ever global sports federation ever to do so.[70]

Everscale NFT Bridge

The issue of compatibility is not only important for the DeFi market but for NFTs, too. In order to ensure compatibility with the Ethereum network, the community has recently hosted a contest to create an Everscale NFT Bridge.[71] The application of DeBots and the EVER Wallet browser extension is planned to facilitate this bridge, building on the practicality of Everscale architecture.

Moreover, the recent launch of Bridge DAO allowed the inclusion of blockchains such as Binance Smart Chain, Polygon and Fantom.[72] High transaction speeds (less than a minute to complete a transaction) and low fees ($0.4) have already elevated interest in the platform,[73] increasing the BRIDGE token price by 35% since the middle of October. Thus, the TVL of BRIDGE tokens on FlatQube exceeded $3.5 million, at a BRIDGE price of $9.94.[74]

Real–world Applications

Everscale's technology offers various use cases for its technology such as SSI and a voting audit system.

Self-sovereign identity (SSI) is a system that allows individuals to gain control of their digital identities that are often used for several online processes such as credentials for government services, education, healthcare, finance, trade, the Internet of Things, logistics, among others. The idea behind SSI is to confer to individuals the capacity to self-manage their data or prove claims about themselves without relying on a central entity.

Despite its nascency, governments and enterprises have taken strides in utilizing SSI tech for satisfying the needs of several market sectors. An example of this is Europass, the pan-European resume system, moving to SSI-based verifiable digital documents.[75] Another example is the World Economic Forum curating the Platform for Good Digital Identity, a project of an international non-governmental organization that aims to advance global activities toward digital identities that are collaborative and with user interest at its core.[76]

[65] Access GrandBazar here

[66] Access NiFi here

[67] Access Fungle Space here

[68] See "Contest proposal: NFT marketplace", "MIchael_Kabanov", Free TON Forum, March 10, 2021

[69] See "ThirdPlace NFT is the first Free TON NFT platform of real-world artwork", Ekaterina Malisheva, Free TON House, Nov. 4, 2021

[70] See "The Sport's First Global NFT Marketplace is Happening in Partnership with FIDE and Free TON", Free TON, Hackernoon, Nov. 5, 2021

[71] See "Contest: Ethereum-FreeTON Bridge NFT", "Amadey", Free TON Forum, July 20, 2021

[72] Learn more about bridge DAO here

[73] See "FreeTON Set to Launch Groundbreaking Bridge DAO at the End of October", FreeTON, Yahoo Finance, Oct. 21, 2021

[74] Access real-time BRIDGE data here

[75] See "Europass framework for digitally-signed credentials: Background document," Everis

[76] See "Self-sovereign identity: the future of personal data ownership?," Satoru Hori, World Economic Forum, Aug. 12, 2021

Most SSI systems operate at a decentralized capacity, making it an ideal platform to showcase distributed database features. Everscale excels in such a case because of its end-to-end decentralized architecture, mentioned in the Everscale Technology section of this report. The Everscale community held a contest from June 1 to June 22 that resulted in more than the required percentage of votes agreeing to set the first stage of development in motion.[77] Among the criteria is a complete description of how SSI will integrate with the Everscale blockchain architecture, a review of existing SSI solutions, and solutions to solve the problems of decentralized identification.

The first-place winner presented a 98-page document that satisfied the terms of the contest. It covers the design and full description of SSI's integration into Everscale through smart contracts with clearly defined roles of system participants.[78] In the end, the authors of the winning entry developed the SSI ecosystem by presenting decentralized identifiers or DID.

Voting Audit System

Everscale's initiative to tackle this increasing need to self-manage data ties in with the community's pursuit of a decentralized voting audit system, which was proposed earlier in 2021. In 2020, blockchain-based voting hype hit a fever pitch because of the COVID-19 pandemic. The U.S. presidential elections, in particular, deterred some people from voting in-person out of fear of contracting the novel coronavirus.[79]

The idea of using blockchain technology was floated as a solution because it maintains voting security through

its distributed nature but, at the same time, is entirely devoid of the present system's physical limitations. In other words, it eliminates the need for ballot papers or polling stations while lowering the risk of electoral fraud. Thus, amid the hype around blockchain voting, Everscale conducted a contest centered around finding a solution for the vote auditing procedure for the national elections in Latin America.[80]

Security Card

Everscale offers an innovative security card product[81] that can be used as a hardware wallet or programmed as a custom smart card. The Everscale Security Card is designed like a standard credit card to easily fit in a purse or pocket. Like a credit card, the security card houses a near-field communication (NFC) chip, which contains the user's encrypted private keys. The NFC chip requires no power to operate, a major advantage over competitor hardware wallets such as Ledger and Trezor.[82] Most modern smartphones are NFC-compatible, meaning users scan their security card on their phone to approve transactions.

The security card is linked to the user's Everscale Surf Browser wallet, giving full access to DeBot technology.[83] This means the Everscale Security Card can be reprogrammed to work with any smart contract on the Everscale blockchain. This turns the security card into an all-purpose smart card, which can be deployed for building access, file access, multi-signature payments and more. The Everscale Security Card also comes with an account recovery service in the event of lost private keys or passwords.

Figure 19 /
Security Card

Source: Free TON House

[77] See "Contest Proposal: FreeTON Self-Sovereign Identity Framework (Stage 1)," "VK200," Free TON Forum, May 7, 2021

[78] See "Motivation, Architecture and Business Viability of Self-Sovereign Identity Framework for a Blockchain Network," Vorobey et al, freeton.id, 2021

[79] See "Some voters are scared the coronavirus will stop them from casting a ballot," Yelena Dzhanova, CNBC, June 1, 2020

[80] See "Crowdsource Voting Audit Solutions for Latin American Elections," "XLR25t," Free TON Forum, Nov. 6, 2020

[81] Learn more about Everscale Security Card here

[82] See "Hardware Wallets: High Level of Security," Eugene Krasinsky, Free TON House, Aug. 18, 2021

[83] See "TON Labs Security Card — an alternative to a hardware wallet," Ekaterina Malisheva, Free TON House, March 12, 2021

Figure 20 / How Everscale Security Card Works
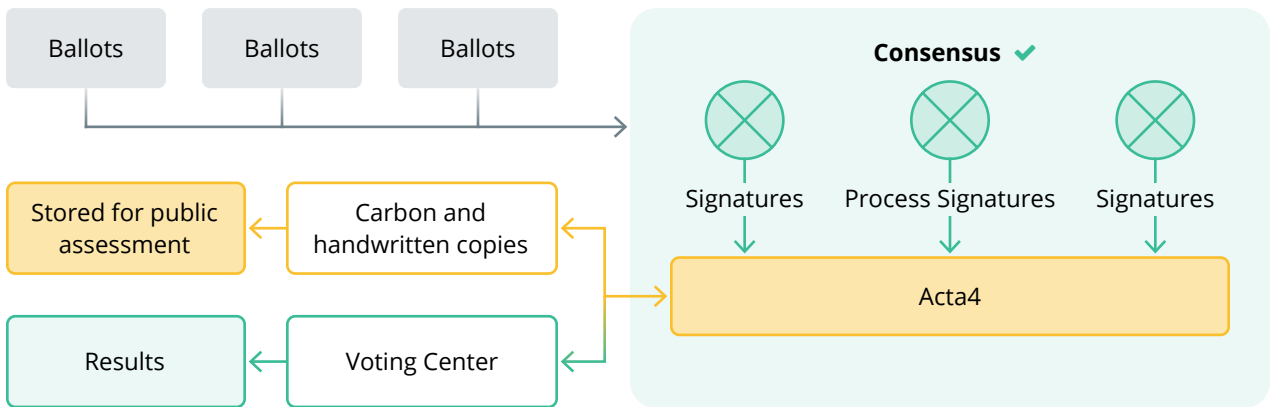
Source: *Everscale Network, Cointelegraph Research*

Acquisitions and Partnerships

Everscale's infrastructure and transaction speeds have attracted DeFi platforms,[84] including WorldChess (more than 150 million users) and DePass (more than 15 million tickets sold annually).

Another example is a partnership with with Blockchain Service Network (BSN)[85], a Chinese government-owned network focused on distributed applications. Despite the inability to function as a cryptocurrency in China due to regulation, Everscale infrastructure has claimed a stake in the Chinese economy.

Everscale also acquired Dune Network for 9 million EVER, or $3.6 million at the time of purchase, marking one of the first decentralized mergers and acquisition (M&A) deals.[86] This deal will enable a bridge between Tezos and Everscale, as Dune is a Tezos hard fork.

Moreover, Everscale has recently acquired Freeland that resulted in the burning of more than 80% of MFCoin, Freeland's native coin, in exchange for EVER. This suggests that Everscale indeed in heading in the right direction, achieving the goals other "freedom-dedicated" blockchains could not.[87] A tendency to M&A deals indicates that Everscale is reaching wider adoption, using other blockchains' technologies and networks.

Notably, Everscale has collaborated with HumanVenture, a platform for charity organizations. In particular, the "Prodkarta" project provided poorer Russian citizens with funds to buy necessary goods through the largest Russian retail groups, X5 and Magnit.[88] The blockchain has allowed for transaction transparency while maintaining the anonymity of donors and acceptors of funds. Furthermore, the parties involved aim to expand the operations of "Prodkarta" to the United Kingdom, Austria and United Nations-governed charity projects.

Furthermore, a strong community, backed by solid development teams, including Broxus, RSquad and others, allows adapting third-party solutions for Everscale without compromising on decentralization.

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[84] See "TON Swap DEX continues rapid growth, long-term farming program introduced," Free TON DeFi Alliance, Sept. 23, 2021
[85] See "AMA Session with BSN, a Free TON partner. The Discovery of China," Ekaterina Malisheva, Free TON House, April 20, 2021
[86] See "Free TON to merge with Dune Network in decentralized M&A deal," Sam Bourgi, Cointelegraph, Feb. 3, 2021
[87] See "Pavel Muntyan: About Merging With Free TON And About Freeland Passports," Ekaterina Malisheva, Free TON House, Aug. 4, 2021
[88] See "Free TON Blockchain used to issue food cards" (in Russian), Forklog, May 21, 2021

Challenges

<div style="background-color: #FCE8B2; display: inline-block;">**Key Takeaways**</div>

- Appropriate governance protocols should be established for the community to sustain growth and minimize bad PR.

- The Everscale community has set up a system that minimizes the risk of jurisdictional issues, yet regulatory authorities may still confront the blockchain in the future.

- Low liquidity poses the main challenge that Everscale aims to overcome through its native DEX and Ever Bridge, allowing for low-fee token conversion to popular blockchains.

Governance

Everscale's meritocratic token distribution and contest system aim to avoid concentrating resources in the hands of a limited number of participants. However, there are hurdles associated with managing such a distributed system. In particular, there have been incidents regarding the operation and development of the blockchain among various community members.

A vivid example is a recent suggestion[89] to change the proposal system due to issues of users seeing one another's solutions before the voting, as well as stealing ideas.

Such occasions may raise concerns about the sustainability of meritocratic governance long term, yet the system's transparency allows all the community members to control and perceive such issues. Nevertheless, as Everscale has only been operating for a short time, initial turbulence is inevitably expected. Although some challenges of community instability exist, they are not significant.

To summarize, although public exposure of internal management issues may be associated with negative PR, it allows the community to react appropriately and in time, preventing the growth of unforeseeable problems. The development of a fairer and more secure system through presenting appropriate technical and social solutions is likely to facilitate transparent and comforting community development, subsequently leading to rapid blockchain growth. Yet, one should always pay attention to the internal processes occurring in the community, and the appropriate alterations should be made to the society-related mechanisms.

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[89] See "A necessary and important update for the Contest System!," "UNIQ," Free TON Forum, Sept. 13, 2021

Regulatory Challenges

In 2018, two offshore entities Telegram Group Inc. and its wholly owned subsidiary TON Issuer Inc. began raising funds from investors in order to create the "Telegram Open Network" and "TON Blockchain."[90] After selling 2.9 billion digital tokens and raising $1.7 billion from 171 initial purchasers worldwide, including 39 U.S. purchasers, the SEC issued an emergency action and restraining order.

Today, Everscale is an entirely new network derived from the initial TON project. The team ensured that its governance and token distribution reduce the risk of EVER being considered an unregistered security by the SEC. This section covers asset classification and how Everscale is handling these regulatory challenges in light of the brand legacy.

Classification Type (Commodity or Security)

Classification relates to how a digital asset is treated by financial market authorities in various countries. Asset classification is important because many cryptocurrency projects have been stopped by regulators that deem them to be an unlicensed security offering.

The main claim made by the SEC in its case against the GRAM token offering was that the sale failed the Howey Test and was, therefore, an unregistered security offering.[91] The idea was that investors could buy GRAM at discounted or wholesale prices, which could later be sold on the open market at retail prices. The Howey test stipulates that an asset may be considered a security if it has a central entity that sells the asset to investors and is responsible for development of the project, with the promise of return.[92] Telegram Group was considered to be the centralized entity responsible for project development and profit generation. As a result, GRAM tokens were banned from being sold on U.S. territory by the SEC under the Security Act of 1933.

To ensure this never happens again, EVER developers made the project's code open source. This is where the fully decentralized project called Everscale began with its project.[93] This is governed by a DAO and contest platform. There is no initial coin offering (ICO), and no central party is wholly responsible for the network's growth. Furthermore, the project launch restricted persons in the U.S. from receiving tokens from contests until sufficient decentralization was met, which was on on Dec. 22, 2020.

Projects like Bitcoin and Ethereum are not considered to be unregistered securities by financial market regulators. Bitcoin's never had a coin offering, but instead, its coins are distributed as rewards to network operators, called miners, who earn the tokens from their decentralized contributions. Although Etheruem did have a coin offering in 2015, U.S. SEC Director of Corporate Finance Bill Hinman announced at a Yahoo Finance Summit in 2018 that Ethereum's ICO was not an unregistered security. He drew his conclusion from the lack of a centralized third party responsible for the development of the project.[94] Over a year later, the chairman of the Commodities Futures Trading Commission also announced that Ethereum was a commodity.[95]

The CFTC's definition of commodity is based on the 1936 Commodity Exchange Act. As opposed to securities, cryptocurrencies that are deemed to be commodities have a use within a platform.[96] For example, a platform can require tokens in order to pay for transaction fees or to access specific services. The Basic Attention Token (BAT) is a good example of a commodity since the Brave browser requires advertisers to pay for advertising fees in BAT, and browser users are paid for watching ads in BAT.

Following in Ethereum's footsteps, Everscale aims to be a layer-one blockchain that underpins an entire ecosystem. A diverse group of developers can contribute to the open-source code, and the EVER token can be used for transaction fees as well

[90] See "SEC Halts Alleged $1.7 Billion Unregistered Digital Token Offering," SEC, Oct. 11, 2019

[91] See "Telegram Opinion and Order: March 24, 2020," United States District Court, Southern District of New York, March 24, 2020

[92] Learn about Howey test here

[93] See "Telegram Is Losing to the US SEC, TON Community Can Launch Network Regardless," Stephen O'Neal, Cointelegraph, March 26, 2020

[94] See "Digital Asset Transactions: When Howey Met Gary (Plastic)," William Hinman, SEC, June 14, 2018

[95] See "CFTC Chairman Says Cryptocurrency Ether is a Commodity," William Sprouse, CFO, Oct. 10, 2019

[96] Learn about crypto-commodities here

as governance. Therefore, the Everscale token is not based on a centralized entity responsible for development of the project, and the EVER token has specific use cases within the platform.

If Everscale is considered to be a commodity by regulators, then it could be freely traded on digital and traditional asset markets in the United States. The CFTC focuses its regulation mostly on commodity exchanges, price manipulation and derivative contracts rather than the underlying asset or issuers.[97] Therefore, Everscale should not face regulatory action from the CFTC. However, this conclusion does not apply to projects that are building on top of Everscale that issue their own tokens. Projects built on top of the Everscale blockchain will be treated as independent digital assets, which may be considered to be a commodity, security or other classification by regulators.

Outside of the SEC's purview, regulators in Asia and Europe have their own regulation that may impact EVER.

In China, the government has demonstrated resistance to cryptocurrencies, exemplified by the ICO crackdown in 2017 and the recent total cryptocurrency ban in September 2021.[98] Therefore, EVER is likely not to operate or trade in China. However, Chinese developers are using a separate instance of the Everscale protocol for the state-owned Chinese

blockchain platform BSN.[99] Thus, if the Chinese government changes its regulation on cryptocurrency, Everscale has a foot in the door with a huge potential market.

Singaporean, Korean and Japanese authorities are more crypto-friendly. In Singapore, tokens fall under three categories: securities, digital payments and a broad utility token category. If the token falls within the securities or payment categories, strict regulatory regimes apply. However, if a token is considered a utility token, lighter regulation applies. Similar rules are applied in Korea and Japan. Based on the meritocratic token offering and decentralized network, it is likely that Everscale will not be considered a security nor payment token.

In Europe, cryptocurrencies are regulated under the Markets in Crypto-Assets (MiCA) framework.[100] This regulation applies to crypto-asset service providers, including issuers, exchanges and custodial wallet providers. However, Everscale may circumnavigate this regulation, as it has not issued any tokens, but rather enabled a meritocratic distribution. This exemption also may apply to cryptocurrencies such as Bitcoin and Litecoin (LTC), which similarly distributed tokens as network rewards to participants, but in the form of mining. On this basis, Everscale would not have to conform to MiCA regulation to operate in the European Union. However, this regulation is rapidly evolving, and few precedents have been set to date.

Liquidity

Ethereum remains the leader in the smart contracts market despite scalability limitations due to its massive liquidity and network effects. Low liquidity in a new blockchain ecosystem is a common issue, which Everscale faces. While EVER can now be bought on 12 cryptocurrency exchanges, the token still attracts fairly low liquidity. According to CoinMarketCap, total daily volume averages $3 million at the time of writing, the majority coming from Gate.io and HitBTC.

Overcoming this issue is critical for Everscale. Nevertheless, the blockchain has arranged numerous technological platforms and societal initiatives to stimulate market interest and, consequently, EVER's liquidity. The extensive functionality of the blockchain and plans to implement technologies, enhancing its utility, provide a framework that allows for continuous liquidity growth.

[97]   See "A CFTC Primer on Virtual Currencies," Commodity Futures Trading Commission, Oct.17, 2017
[98]   See "China's Crypto Ban: A Curse, a Blessing or a Learning for Indian Investors?," Mehab Qureshi, The Quint, Sept. 28, 2021
[99]   See "China's BSN partners with TON Labs to utilize Telegram blockchain," Osato Avan-Nomayo, Cointelegraph, March 1, 2021
[100]   See "10 things you need to know about MiCA: Europe's proposals for regulating crypto assets," Ashurst

Of crucial importance is the introduction of the FlatQube decentralized exchange, which has already centered the liquidity of EVER thanks to lower exchange fees (less than 1$ compared to $200 on Uniswap). Although only EVER-BTC and EVER-ETH pairs are currently available, the Ever Alliance team has recently announced the addition of multiple tokens in the future. These include euro-backed stable coin EUPI, ETH-based fractional-algorithmic stable coin FRAX, as well as numerous Everscale and Ethereum-based projects. Therefore, there are 17 tokens present on the exchange at the time of writing. These are likely to boost the liquidity further while accelerating ecosystem development. Yet, the majority of these tokens suffer from low liquidity issues, too. Thus, a relatively small liquidity boost could be expected from their addition to FlatQube. Nevertheless, the creation of facilities that allow low transaction fees with the more widely present Bitcoin and Ethereum lowers the entrance barriers for multiple crypto users. Moreover, the ability to participate in liquidity pools and farming may attract additional users to FlatQube.

Although FlatQube is attracting new users now, such an exchange platform may become detrimental to the blockchain long term, as users can easily switch to other blockchains without paying high fees. The lack of transaction fees may lead to the outflow of users in the future and generate a negative impact on liquidity. Yet, other constituents and benefits of the Everscale ecosystem, including WebFree, extraordinary scalability and security protocols, are most likely significant enough reasons to convince most users to continue using Everscale.

Moreover, as the blockchain enters a growth phase, following the establishment of a technological basis, it will attract a variety of DeFi and NFT startups and members of local communities through PR and relevant incentives, potentially increasing the liquidity of EVER in the future. In addition, network effects, emerging with the ecosystem's growth through the Broxus-supported FlatQube, Octus Bridge and Ever Seed, for example will likely boost the token's liquidity even further.

Notwithstanding, although Everscale is actively tackling the low-liquidity issue, there are significant hurdles to overcome, including, most importantly, high market competition in light of Ethereum 2.0 release and alternative blockchains, such as Solana, Avalanche and Cosmos.

Moreover, in July 2021, Everscale released an announcement regarding the "Merkle Tree Capital" case[101] of fraud that resulted in the loss of 128,000 EVER in late 2020. Although Everscale claims that implementation of slashing for validators and other techniques may boost the ecosystem's security, it also stated, "There is no quick and easy answer to all issues we face." However, the risk of fraud and hacking will always be present, as hacking technology develops simultaneously with security technologies. Yet this experience raised the community's attention, and the input from different individuals presenting potential strategies to resolve security concerns will, quite foreseeably, accelerate the development of enhanced security measures.

Growth Limitations

Although EVER's price has decreased by 75%[102] since the initial token distribution, there is a significant growth opportunity in the near future. This initial sharp drop in price was largely due to illiquidity and early price discovery, as merely 1 million tokens were available on the market at the time. Given that the smart contracts market, with major players including Ethereum and Solana, has lately

been gaining significant traction, Everscale's unique technology is capable of achieving remarkable market penetration. However, there are a number of hurdles and limitations Everscale faces, including liquidity, attracting validators and managing decentralized governance.

Most importantly, the issue of inconsistent liquidity should be solved. EVER has low liquidity across both

101   See "The bigger we grow. A lesson in trust," Free TON, Medium, July 2021
102   Learn real-time EVER price and market data here

centralized and decentralized exchanges. This will naturally grow as the Everscale ecosystem grows, but it provides a barrier to entry for prospective users looking to purchase EVER. Secondly, the lack of crypto asset regulation by worldwide agencies poses a considerable risk for the whole market. Although the lack of a centralized entity that the regulators can block or limit may help the operations in the long term, detrimental impact on pricing, growth and perception of the blockchain would be present if the whole industry is put under pressure.

Moreover, although the correlation between EVER and leading cryptocurrencies, Bitcoin and Ethereum, is relatively small, but it should not be ignored. The industry leaders heavily affect the rest of the market, and, considering crypto's volatility, Everscale may be vulnerable to rapid decreases in Bitcoin and Ether prices.

On the other hand, the nature of blockchain technology underlying Everscale allows increasing transaction speeds by growing the number of validators. However, despite the results of the Rust Cup and Magister Ludi[103] contests, validators are moving into the Everscale's ecosystem at quite slow rates.

Although the meritocracy provides more transparency to the system, members may sometimes make not fully informed decisions. Moreover, the lack of management structure can potentially cause community issues that may lead to divergences between sub-groups.

Getting into Everscale

Key Takeaways

- Everscale Surf Browser and Everscale EVER Wallet provide safe means of storage, staking and transferring native tokens.

- EVER can be bought on multiple spot exchanges, although liquidity prevails on the native FlatQube DEX.

- WEVER (Wrapped Ever) provides the ability to use the DeFi environment and participate in the blockchain governance.

This guide will assist you through the whole process of onboarding to the Everscale ecosystem, from purchasing EVER Tokens to staking and using native DeFi. The additional sources providing step-by-step instructions are shown as footnotes in the document.

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[103] See "Magister Ludi," Victor Safronov, Free TON House, May 7, 2021
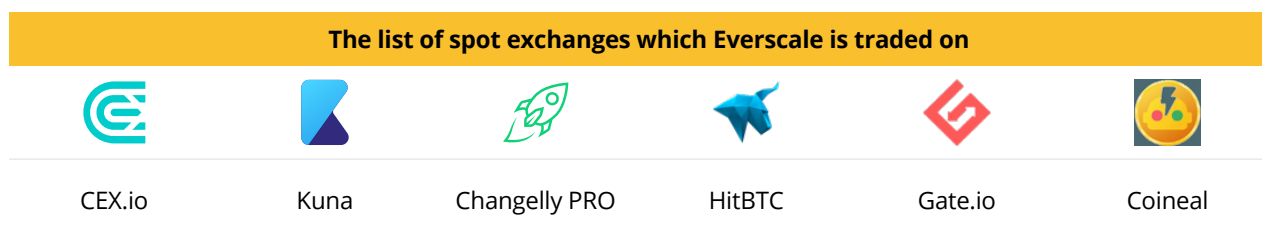
Buying and Storing Ever

> **Important note:**
> Everscale's token is EVER and not TON Token.

The first step is to buy some EVER. We will assume that the majority of users will buy EVER through a centralized exchange. Purchasing through a cryptocurrency exchange is the most convenient method because purchased coins are stored on the exchange itself, so there is technically no need to create a wallet. A comprehensive list of the exchanges supporting Everscale can be found on Everscale's website.[104] Care should be taken upon choosing the exchange, as low token liquidity may cause long execution times and unfavorable prices.

Figure 21 / Everscale Spot Exchanges List

The list of spot exchanges which Everscale is traded on					
CEX.io	Kuna	Changelly PRO	HitBTC	Gate.io	Coineal

Source: *Free TON*

Storing cryptocurrency on an exchange compromises the self-custody and security of tokens, so using a wallet is highly recommended for long-term storage. A wallet is also required to stake, use DeFi, and participate in Everscale governance. There are two wallets covered in this guide, the EVER Wallet and the Everscale Surf Browser, and the setup procedure is similar for both. Everscale Surf Browser is a fully fledged DeBot browser and desktop application that allows users to interact with the blockchain via the Everscale OS. The EVER Wallet is a browser extension focused on connecting to web-based DApps, similar to MetaMask. Furthermore, Surf Wallet allows users to buy EVER with a debit or credit card at market prices.

Upon setting up the EVER Wallet, you will be prompted to read and accept the decentralization policy.[105] You will then be provided a 12-word seed phrase, which should be saved securely. Write your seed phrase down on a sheet of paper and save it in a safe place. Unless one has an existing seed phrase, the default wallet type ("SafeMultisig") should be chosen. Otherwise, you can import a pre-existing wallet with the "Sign in with pre-existing wallet" option.

After the Ever Surf or the EVER Wallet is set up, you can send your purchased tokens from the cryptocurrency exchange, or you can purchase EVER through the Surf Browser with your credit card, which will be deposited into your wallet.

It is recommended that at least 10 EVER is stored at all times to facilitate smart contract and transaction fees. On average, transaction fees fall in the range between 0.02 and 0.03 EVER currently, less than 0.01. These steps are sufficient for users who wish to buy and hold their EVER. However, for long-term investments, you may also wish to stake your tokens and earn interest.

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[104] Learn where to buy EVER here
[105] Learn full instructions on setting up Everscale Crystal Wallet here

Figure 22 / EVER Wallet

Press the "Receive" button to reveal the private key to your wallet. If sent tokens don't show up for a long time, make sure that you have the "Mainnet" blockchain enabled on the top of the application.
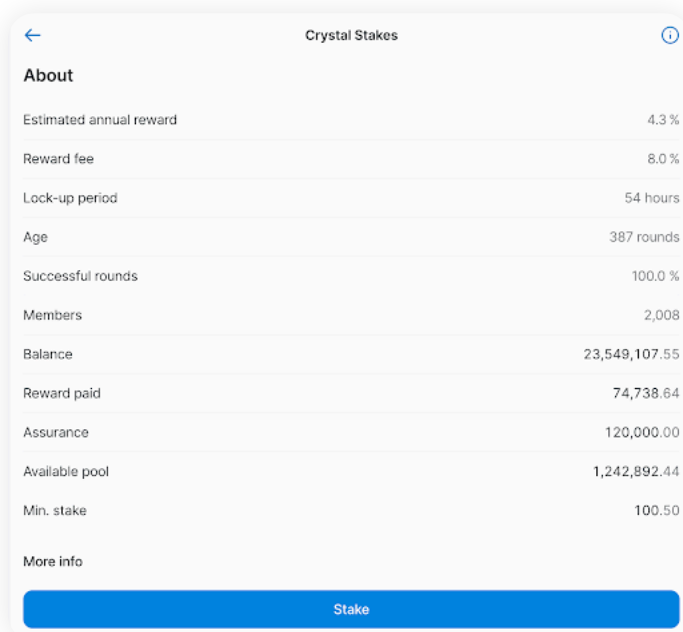
Source: *EVER Wallet Application*

Everscale Staking

Everscale allows its users to stake through DePools, native distributed validator pools that enable lowered capital costs for participants. Both the Ever wallet and Ever Surf Browser allow you to easily stake your tokens and earn approximately 5% APY.

Figure 23 / Ever Surf Staking

Relevant information on the estimated annual reward will be shown at the top of the staking page. Note that it might change over time.

Source: *Ever Surf Browser*

The "Add" button should be clicked, and the DePools type of asset should be chosen. Proceed by picking the validator, accessing DePool, and entering the desired amount to be staked. Clicking the "Send stake" button will start the process. The amount should be entered to withdraw or see how much is earned during staking.

Notably, the withdrawal may take a couple of hours and can also be canceled.[106] Third-party validator pools, including the Bitscale Capital pool, are also available.

Important staking aspects are summarized in the table below:[107]

Figure 24 / DePools Staking Aspects

Minimum stake	Maximum stake	Staking fees	Stake time	No. of DePools
100.5 Evers ($27)	Unlimited for Ever Surf 5.0 and beyond	Surf DePool charges 8%*	Lock-up period of 54 hours, or 3 validation cycles	420

*Other, non-native pools may be chosen, Surf DePool is the native Everscale validator pool*

Source: Free TON House

Everscale DeFi

In order to use Everscale DeFi, EVER need to be wrapped directly on FlatQube.io. Go to this site and connect an Everscale wallet that has some EVER in it. Pay a small transaction fee, and your EVER is now wrapped as WEVER (Wrapped EVER) and available in your wallet.

Figure 25 / Wrapping EVER
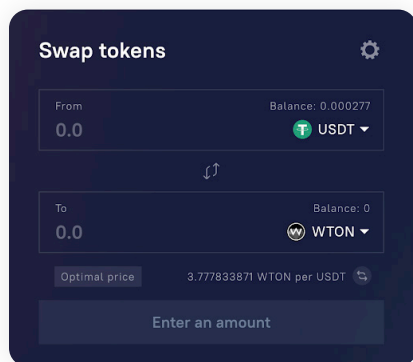
Alternatively to wrapping, WTON can be obtained by swapping USDT (OMNI Tether) using TonSwap. io, but be aware of high ETH transaction fees.

Source: WTON.IO

With Wrapped EVER and a wallet, you can now use any DeFi applications on Everscale just like you would use MetaMask for Ethereum.[108] Make sure not to convert all your EVER since they will be used to pay transaction fees.

Now you can explore and use Everscale DeFi, for example, the FlatQube[109] decentralized exchange, which allows you to swap Wrapped EVER for a variety of other assets. You can also try the Octus Bridge, which enables low-commission wrapping of ERC-20 tokens on the Everscale blockchain. The Ecosystem section provides an overview of the Everscale ecosystem that is available to use.

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[106] Learn how to participate in staking using DePools here
[107] See "Free TON Staking: TON Surf Features," Vitaly Romanov, Free TON House, April 3, 2021
[108] See "Free TON Wallet as a Chrome extension," Ekaterina Malisheva, Free TON House, July 7, 2021
[109] See "TON Swap Review: Are We Looking at The Future of Yield Farming?," Jonathan Gibson, Use the Bitcoin

Governance

EVER tokens can be used not only to provide liquidity and farming but also to participate in the network's governance. If a member of the Everscale community wants to propose an initiative to the network, they can post it as a contest on the project's website. For this proposal to pass, it will need to be put to a vote by the community. The voting mechanics are simple:

1 token = 1 vote. Governance mechanisms, their associated benefits and drawbacks are discussed throughout this report, and more information is available on Everscale's website.[110]

Community members can put improvement proposals through the Everscale Governance Portal.[111]

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[110] "Free TON — Operation Successor: Governance 2.0 Implementation Roadmap Adopted," Vitaly Romanov, Free TON House, May 31, 2021
[111] Access the Everscale Governance Portal here

Conclusion

Everscale is a novel layer-one blockchain that aims to solve the blockchain trilemma and provide a scalable, secure and truly decentralized blockchain. Unlike other "Ethereum killers," Everscale is capable of delivering linear scalability with no compromise to security or decentralization. As the number of validators grows, so does the transaction speed of the network. Therefore, theoretically, the scalability of Everscale is infinite. This is achieved through multithreading, a technique that allows the blockchain to execute many smart contracts simultaneously. The parallelization of multithreading is key to the linear scalability of Everscale.

Meanwhile, the SMFT consensus protocol, a modified version of practical Byzantine fault tolerance, allows secure transactions without imposing scalability limits. Unlike typical protocols, SMFT includes a verification and "red flag" mechanism. If no nodes raise red flags, the block is automatically accepted. However, if only one node raises concerns, the procedure defaults back to a full consensus. This means only one honest validator is required to ensure the security of a single workchain, increasing fault tolerance to above 99%. Thus, SMFT and multithreading allow unlimited linear scalability while avoiding compromising security.

The distributed dynamic validator set minimizes the risk of centralization and security breaches through constantly changing validator sets and distributing individual validator nodes into community pools. DePools, Everscale's validator pools, also ensure the decentralization of validators, which is typical for multiple blockchains, including Ethereum and Bitcoin.

Everscale's operating system provides "end-to-end decentralization." Everscale's operating system provides an alternative infrastructure to the current internet PaaS and cloud servers. Notably, Everscale provides its own DeBots Browser and DeBots, smart contracts run from a local machine. As a result, the WebFree environment is created, which excels in comparison to a more widely used yet less technically advanced Web 3.0.

The accumulation of funds by a small group is prevented through the meritocratic token distribution system. Major stakeholders do not obtain critical voting power, which ensures funds end up in the hands of entrepreneurs, developers and other community members. Tokens are distributed across the network through contests, a crucial part of Everscale governance. The contests are controlled by a set of juries elected based on their past experience. The BFTG system is used by the juries to ensure the fairness of the contests. Every community member can propose a contest, and the election procedure of the solutions is then conducted.

Contests are used extensively to incentivize further growth and are organized for every ecosystem area of the blockchain, managed by the sub-governances. With 400,000 wallets and more than 60 million transactions in 2020, Everscale is becoming more connected with major DeFi blockchains. In particular, Octus Bridge provides low-fee, fast cross-chain operations with Ethereum, Polygon and Fantom, inevitably increasing the number of potential users and developers. What's more, the blockchain's native DEX, FlatQube, concentrates EVER's liquidity, although the token is listed on multiple spot exchanges. Emerging real-world applications of the blockchain, including a voting audit system and security card, signify the ecosystem's use cases.

Nevertheless, the network's community still faces a couple of issues, including establishing more detailed governance and voting procedures, ensuring a lack of pressure from regulators, and boosting the liquidity of the native token, EVER. Overcoming these challenges is crucial for Everscale's development. Yet, Everscale is just at the beginning of Growth Phase I, and the underlying technology provides an exemplary opportunity for expansion into the DeFi space.

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