

# Unichain and the Growth of Layer 2 Networks

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[The recent announcement of Unichain](#), a Layer 2 scaling solution, has generated significant buzz in the DeFi space, promising enhanced speed, efficiency, lower cost, and integration with other Layer 2 solutions to reduce friction for liquidity movement. Before going deeper, let's start from the basics, what is a "Layer 2"? Here are the [key concepts](#) based on standardized definitions:

- **Layer 1 Networks (L1):** A base blockchain network, such as Bitcoin or Ethereum, and its underlying infrastructure that validates and finalizes transactions.
- **Layer 2 Networks (L2):** A secondary framework or protocol that is built on top of an existing Layer 1 system in such a way that it inherits the security properties of the Layer 1 system while allowing for a higher transaction throughput than the Layer 1 system.
  - Layer 2 networks accomplish this (and often lower transaction costs) by separately processing transactions proposed by users of the Layer 2 network, aggregating (or "rolling up") batches of those Layer 2 transactions, and publishing (or "committing") those batches of transactions to the corresponding Layer 1 network.
  - There are two main types of Layer 2 networks – Optimistic Rollups and Zero-Knowledge (ZK) Rollups – which use different proof mechanisms that verify transaction legitimacy. Optimistic Rollups use a fraud-proof mechanism, meaning that users have to wait between 7 and 10 days (the "challenge period") before their optimistic rollup transactions are finalized on the corresponding L1 network. ZK Rollups use zero-knowledge validity proofs, which use minimal, yet sufficient, data to prove transaction validity. Transaction finality on ZK Rollup occurs once the validity proofs are themselves validated on the corresponding L1 network.
  - Optimistic Rollups typically use transaction execution frameworks that are compatible with, or equivalent to, those used by the "Ethereum Virtual Machine" (EVM), a popular execution environment used by a variety of blockchain networks (not only the Ethereum mainnet). Examples of Optimistic Rollups include Optimism (along with other networks, like Base, that are built upon the open-source code known as the "[OP Stack](#)") and Arbitrum One. Examples of ZK Rollups include the zkSync Era, Linea, and Starknet. More examples of rollups can be found [here](#).
- **Layer 2 Sequencers:** Computer infrastructure that collects and orders L2 transactions, publishes the transactions in a batch to the corresponding L1 network, and, if required, participates in a consensus

process with other sequencers to agree on transaction ordering in an L2 batch. The operator of a sequencer for an L2 network is generally compensated for the cost of maintaining the sequencer through the receipt of transaction fees paid by users of the L2 network.

### **Now let's turn to the focus of this newsletter, Unichain.**

Unichain is a Ethereum Layer 2 solution designed to address the transactions cost and speed challenges of decentralized finance (DeFi) on Ethereum. Key aspects of Unichain include:

- *Optimistic Rollup:* Unichain is an Optimistic Rollup (based on the OP Stack) that comprises part of what is referred to as the "[Optimism Superchain](#)." The Optimism Superchain is an interoperability framework that aims to enhance connectivity among L2 networks that are built using the OP Stack. Coinbase's L2 solution, "[Base](#)," is also part of the Optimism Superchain.
- *Low Cost:* As an L2 network focused on DeFi (rather than a general-purpose L1 network), Unichain can reduce transaction costs, potentially by as much as 95%, compared to similar transactions executed on the Ethereum mainnet.
- *Decentralization:* Unichain uses a decentralized validation network that allows independently operated nodes to verify blocks of proposed transactions, adding an additional layer of security and reducing the risk of conflicting or invalid blocks, which is particularly important for DeFi transactions.
- *Speed:* Unichain aims to bring near-instant transactions to DeFi. It launched with one-second block times and plans to introduce 250ms sub-blocks, making user experiences feel almost instantaneous. This improvement is made possible through a block builder developed in collaboration with [Flashbots](#), a company focused on the execution of DeFi transactions, which uses a trusted execution environment (TEE) to enhance transparency of transaction ordering and prevent failed transactions.
- *Cross-Chain Liquidity:* Unichain is built to support seamless transactions across multiple networks, enabling users to access liquidity for a proposed DeFi transaction, regardless of the primary network being used. As part of the Optimism Superchain, Unichain supports native interoperability among component networks, allowing single-block, cross-chain message passing among Superchain L2s.
- *Open Source and Modular Design:* Unichain's block builder and node software are subject to MIT open source licenses. Its modular design means features like the TEE-based builder and validation network can be extended to incorporate new functionalities aimed at further decentralization and improving the user experience.

### **CahillNXT's Take on Layer 2 Networks:**

A core tenet of blockchain networks is decentralization. Vitalik Buterin, one of the co-founders of the Ethereum network, has proposed a widely recognized [framework](#) that assesses decentralization along three distinct dimensions – architectural (referring to the physical distribution of a system's components), political (referring to the number of persons ultimately control the system), and logical (referring to the homogeneity of the system's internal structure). We map them onto the concept of Layer 2 networks.

- **Architectural Decentralization:** Layer 2 networks inherit the security properties of the corresponding Layer 1 networks (in many cases, the Ethereum Layer 1 mainnet, with its large number of globally distributed nodes). Factors like the distribution of sequencers and validators (for Optimistic Rollups) will be crucial to determine the eventual level of architectural decentralization and, therefore, the network's resilience against attacks.
- **Political Decentralization:** The governance process that determines what changes can be made to the Layer 2 network's protocol and codebase is also critical. Are changes determined by a centralized entity, by holders of a native "governance" token, or by some hybrid model?
- **Logical Decentralization:** The extent of this centralization will depend on the flexibility and openness of a Layer 2 network's design to support various types of applications and interactions beyond its initial focus. The stated intent to be part of the Optimism Superchain, which would allow near-instant cross-chain movement of liquidity and interoperability with other applications, including non-DeFi applications, suggests further moves toward logical decentralization.

The design choices of any Layer 2 network will inevitably involve trade-offs between different aspects of decentralization. Optimizing, for example, speed and cost-effectiveness might require some compromises on architectural or logical decentralization. Key considerations include:

- **Scalability and Decentralization:** These can be competing goals; however, there is an overarching need to maintain a sufficient level of decentralization to ensure censorship resistance and network security from external attacks.
- **Governance:** A transparent and community-driven governance structure is crucial to fostering user trust and ensuring the long-term sustainability of the Layer 2 network.
- **Interoperability and Composability:** Maintaining interoperability and composability with other Layer 2 networks and the broader Ethereum ecosystem (or another corresponding Layer 1 network) will be important for avoiding fragmentation and maximizing the benefits of decentralization.
- **Liquidity and Fragmentation:** DeFi is built around attracting liquidity to optimize capital efficiency and exploit arbitrage opportunities. If any single Layer 2 network attracts significant liquidity from both new as well as from existing Layer 1 and Layer 2 networks in the Ethereum ecosystem, it could adversely impact the liquidity available natively on other networks, potentially hindering their growth and potentially leading to a less diverse and more fragmented DeFi landscape. Relatedly, any significant concentration of liquidity on any specific Layer 1 or Layer 2 network could create a single point of failure for DeFi. Accordingly, modularity and interoperability are positive features of an L2 network.

In response to these potential risks, we have already seen that many projects are building solutions to address them. These include:

- **Interoperability and Bridges:** Promoting interoperability and robust bridges between various Layer 2 networks helps mitigate the risks of fragmentation and allow for a more balanced distribution of liquidity.

- **Community-Driven Initiatives:** Encouraging community-led initiatives fosters collaboration and shared liquidity across different chains, rather than promoting a winner-takes-all approach.
- **Responsible Governance:** Prioritizing the long-term health and decentralization of the entire DeFi ecosystem. This includes making decisions after considering the impact on other chains and promoting responsible liquidity management.

In conclusion, the introduction of Unichain, together with the growth in Layer 2 networks, signifies a notable advancement in DeFi, offering benefits from scalability, efficiency, and lower cost. However, it will be crucial to approach this development with careful consideration of the potential trade-offs and risk implications. Ongoing monitoring and evaluation will be essential to its long-term success.

From a regulatory point of view, peer-to-peer exchanges of crypto assets (or activities on decentralized exchanges), whether on L1 or L2 networks, remains in a gray area, with current leadership of the Securities and Exchange Commission (SEC) aggressively arguing that DeFi transactions of this type are almost always securities transactions, a status that would introduce significant regulatory burdens to much DeFi activity. Nevertheless, the regulatory status of these types of peer-to-peer exchanges has not been finally determined. The new administration, which takes over on January 20, 2025, may revisit this question in a more favorable light. Further, we believe that the trend of more global DeFi activity moving to L2s like Unichain is set to continue and potentially even accelerate.

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If you have any questions about the issues addressed in this publication, please reach out to the CahillNXT team at [CahillNXT@cahill.com](mailto:CahillNXT@cahill.com). To learn more about CahillNXT, the Digital Assets and Emerging Technology practice at Cahill Gordon & Reindel LLP, click [here](#).