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- What is Orochi Network?

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What is Orochi Network?

Orochi Network is a **Verifiable Data Infrastructure** designed to ensure data integrity and privacy through advanced cryptographic techniques. It provides a secure infrastructure for processing and proving data without compromising confidentiality, allowing users to trust the system's outputs while keeping sensitive information protected.

Introduction

Orochi Network is a **Verifiable Data Infrastructure** that redefines how data is handled in the digital age. Built on the principles of security and trust minimization, it utilizes **Zero-Knowledge Proofs**

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(ZKP), **Fully Homomorphic Encryption (FHE)**, and **Trusted Execution Environments (TEE)** to guarantee data integrity and privacy. Orochi Network offers a platform where data can be processed and verified securely, ensuring transparency without sacrificing confidentiality.

At the core of Orochi Network lies its **Verifiable Data Pipeline** and **ZK-Data-Rollups**, two pivotal components that elevate data integrity. The Verifiable Data Pipeline ensures that every step of data processing is transparent and tamper-proof, while ZK-Data-Rollups batch data operations off-chain and produce succinct proofs of correct execution without revealing sensitive details. Together, these components provide a foundation for secure, scalable, and privacy-preserving data management.

Figure 1: Orochi Network turns **data** into **verifiable data**, operating as the backbone of the new internet

Challenges

Data Integrity

In a truly decentralized Web3 ecosystem, data integrity would be ensured through a distributed network of aggregators. Each node could independently prove the correctness of data using cryptographic protocols.

However, many Web3 solutions today still rely on oracles, which introduce trust assumptions that undermine the trustless guarantees of smart contracts. Consequently, smart contracts are often unable to confirm the authenticity of third-party provided data. This gap leads to potential losses and fraudulent activities.

Data Availability

Smart contracts run in an isolated environment, such as the EVM or WASM runtime on the blockchain. While this isolation allows smart contracts to be executed seamlessly regardless of the differences in architecture, it also limits their ability to directly interact with external data sources.

Additionally, as the number of users and transactions on a blockchain network grows, storing and accessing all data on-chain becomes increasingly impractical and costly.

Interoperability

Interoperability is a critical aspect of any decentralized Web3 ecosystem. However, many existing solutions struggle with interoperability due to the lack of standardization and compatibility between different architectures.

Existing DA Layer solutions are typically a combination of blockchain and commitment schemes, yet they fail to prove the DA state to on-chain contracts in a single succinct proof.

Scalability

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Current DA Layers leverage existing technical stacks, which means they also inherit the issues of existing blockchains, namely finality and scalability. They cannot deallocate resources stored on their system and are unable to reach instant finality.

Our Solutions

Orochi Network: Verifiable Data Infrastructure

Orochi Network positions itself as the first Verifiable Data Infrastructure, emphasizing the use of ZKPs for secure and verifiable data processing. This focus on ZKPs caters to applications and platforms requiring high levels of privacy, security, and decentralization. Here is a breakdown of our key features and the potential of our ZKP-centric approach:

- **Native ZK-data-rollups:** Unlike other DA Layers, Orochi Network natively supports ZKPs and performs rollups on the data. This allows for efficient on-chain verification of data with a single succinct proof, improving scalability and privacy for decentralized applications.
- **Verifiable Data Pipeline:** Orochi Network goes beyond just data availability. We offer cryptographic proofs at every step of data processing — from sampling to storage and retrieval. Our solution relies solely on cryptographic protocols, eliminating third-party trust assumptions and transforming **Real World Data** into **Provable Data** that can be read and verified by smart contracts.
- **Utilizes Merkle Directed Acyclic Graph (Merkle DAG):** Orochi Network leverages Merkle DAG technology, potentially offering advantages over traditional blockchain structures in terms of scalability and performance.
- **Succinct Hybrid aBFT Consensus:** This consensus mechanism allows for asynchronous finalization of states, potentially improving efficiency compared to synchronous approaches used by some competitors.
- **Proof-System Agnostic:** Orochi Network can work with various ZKP systems like Plonky3, Halo2, Nova, and Pickles, offering developers flexibility in choosing the most suitable proof system for their needs.
- **Blockchain Agnostic:** Orochi Network is designed to be blockchain-agnostic by leveraging ZKPs to improve interoperability between different blockchains, potentially enabling integration with diverse blockchain platforms.

The Future of Web3

Our **Verifiable Data Infrastructure** is a promising step towards a more secure, scalable, and user-friendly Web3. By leveraging the power of Zero-Knowledge Proofs, our Verifiable Data Infrastructure offers solutions to some of the most pressing challenges facing the decentralized future of the internet. As Verifiable Data Infrastructure continues to evolve, it has the potential to be a game-changer for Web3, ushering in a new era of innovation and user adoption.

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In essence, our suite of products, anchored by the innovative Verifiable Data Infrastructure, lays the groundwork for a future web built on secure, scalable, and user-friendly decentralized applications. By addressing the limitations of current dApps, Orochi Network has the potential to unlock the true potential of Web3, paving the way for a more decentralized and empowering online experience for everyone. The promise of Orochi Network has been recognized by leading organizations within the blockchain space. Orochi Network is a grantee of the **Ethereum Foundation**, **Web3 Foundation**, **Mina Protocol**, and **Aleo**. This recognition underscores the potential of our technology to shape the future of Web3.

built with ❤️ and 🦀

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Orochi Network Logo Orochi Network Logo
Orochi Network is the world first Verifiable Database Infrastructure for the new internet.

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