

Hierarchical Consensus: A Horizontal Scaling Framework for Blockchains

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Abstract

In this talk we present the Filecoin Hierarchical Consensus framework, which aims to overcome the throughput challenges of blockchain consensus by horizontally scaling the network. Unlike traditional sharding designs, based on partitioning the state of the network, our solution centers on the concept of subnets –which are organized hierarchically– and can be spawned on-demand to manage new state. Child subnets are firewalled from parent subnets, have their own specific policies, and run a different consensus algorithm, increasing the network capacity and enabling new applications. Moreover, they benefit from the security of parent subnets by periodically checkpointing state. In this paper, we introduce the overall system architecture, our detailed designs for cross-net transaction handling, and the open questions that we are still exploring.

Author Bio. Before joining Protocol Labs, Alfonso worked as a blockchain expert at Telefónica R&D, where he was responsible for the design and development of core technology based on blockchains, distributed systems, and advanced cryptography. Alfonso’s involvement in research and development began at Universidad Politécnica de Madrid, where he worked on topics related to energy efficiency in data centers. His broad R&D experience also includes research into the compression efficiency of video coding standards at Ericsson Research and projects related to securing interdomain routing protocols at KTH Royal Institute of Technology in Stockholm. (Bio link)

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