Introduction

With IPC, dApps can reach planetary scale through recursively scalable subnets, sub-second transactions, robust compute workloads, and highly adaptable WebAssembly runtimes tailored to developer requirements.

What is IPC?

Interplanetary Consensus (IPC) is a framework that enables on-demand horizontal scalability of networks, by deploying "subnets" running different consensus algorithms depending on the application's requirements.

Let's break that down.

What is horizontal scalability and why is it important for dApps?

Horizontal scalability generally refers to the addition of nodes to a system, to increase its performance. For example, adding more nodes to a compute network helps distribute the effort needed to run a single compute task. This reduces cost per task and decreases latency, while improving overall throughput.

In web3, horizontal scalability refers toscaling blockchains, fordesired performance. More specifically,scaling the ability of a blockchain to process transactions and achieve consensus, across an increasing number of users, atdesired latencies and throughput. IPC is one such scaling solution, alongside other popular layer 2 solutions, likesidechains androllups .

For decentralized applications (dApps), there are several key motivations to adopt scaling - performance, decentralization, security. The challenge is that these factors are known to be conflicting goals.

How does IPC achieve horizontal scalability?

IPC is a scaling solution intentionally designed to achieve considerable performance, decentralization and security for dApps.

It achieves scaling through the permission-less spawning of new blockchain sub-systems, which are composed of subnets.

Subnets are organized in a hierarchy, with one parent subnet being able to spawn infinite child subnets. Within a hierarchical subsystem, subnets can seamlessly communicate with each other, reducing the need for cross-chain bridges.

Subnets also have their own specific consensus algorithms, whilst leveraging security features from parent subnets. This allows dApps to use subnets for hosting sets of applications or toshard a single application, according to its various cost or performance needs.

IPC-powered networks will also be able to dynamically adjust their throughput by spawning and closing temporary subnets as needed.

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