// PING:PONG

PING FOR SERVICE
PONG FOR SUCCESS

The Largest DePIN Liquidity & Service Aggregator

The world's 1st DePIN liquidity&service aggregator

Version 0.1.2

Preface

Hello world, I am @one_tiny_potato, a pro-human and concerned earthing who believes that unregulated AI development will lead to the collapse of human civilization. Stakes are high and we are out of time; we need to fight it, together.

Why do I think the current development of AI will lead to a downfall of humanity? Simple - Machines and AI are on track to replace human jobs. Once the average person isn't needed for daily work, the question arises:

- When AI and machines can completely take over your "job", why would people with guns and weapons want to spare your life? What is your value to them?
- Why would we need new humans, especially when we're running low on natural resources on earth?

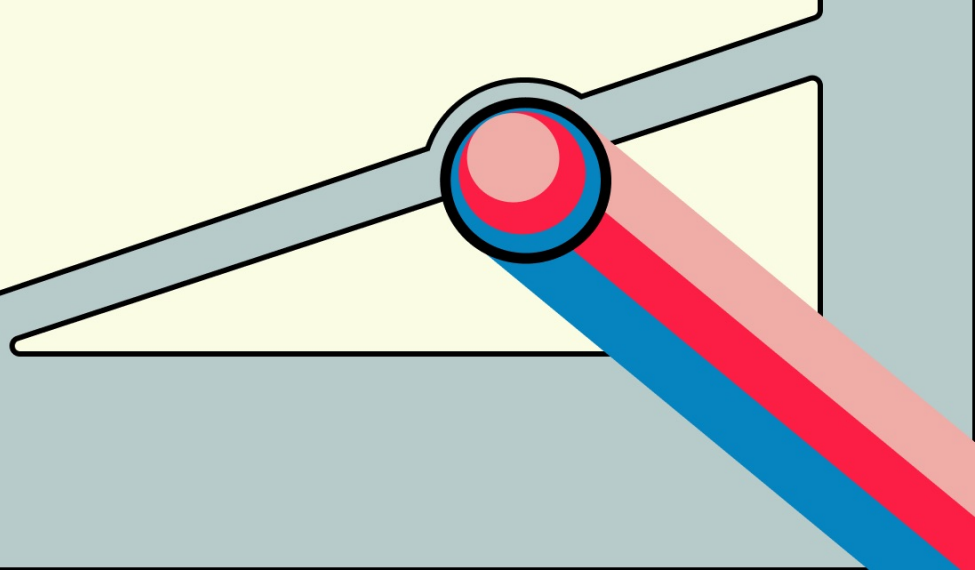
With the current unregulated development of AI, the extractable value of human labor is exponentially decreasing and our residual value will soon become none. Now, you might argue that governments will issue UBI (universal basic income) to cover our basic needs.

However, this assumes that people with guns and weapons are pro-human and are not psychopaths. I am not saying they are all psychopaths, I am saying that we don't know, and blind trust in authority is extremely risky. I could be wrong, perhaps we will find peaceful ways to achieve symbiosis with silicon life forms. But achieving a balanced division of power doesn't hurt.

How do we strike a balance of power to prevent human civilization destruction? We need to control essential production resources in the era of AI, which are energy and computational power. Collectively, with other DePIN projects, we are building a decentralized computational infrastructure to democratize AI development and put production power back in the hands of the average person. Our mission is to bring mass adoption of DePINs to support all internet applications, including AI applications.

p.s. In all of my writings, I aim to minimize communication friction by making our work easily readable, understandable, and adoptable. Our white paper is intentionally designed in such a way that reminds you of reading a manga:) Let's dive in!

content



1 WHAT IS PING:PONG ?

We have two flagship products -

- [Developer-facing] DePIN all-in-one SDK
- [Community-facing] DePIN liquidity mining through our DePIN liquidity hook money market

1.1 [DEVELOPER-FACING PRODUCT] DEPIN ALL-IN-ONE SDK

We encapsulate services provided by different DePIN networks to streamline the development process for applications building on DePINs. Based on parameters from clients' incoming requests, our SDK strategizes the selection of the underlying DePIN networks to route the requests to, based on pricing, computational resource availability, DePIN network health status, and edge/geo response time optimization.

The easiest ways to understand what we do, from the following perspectives -

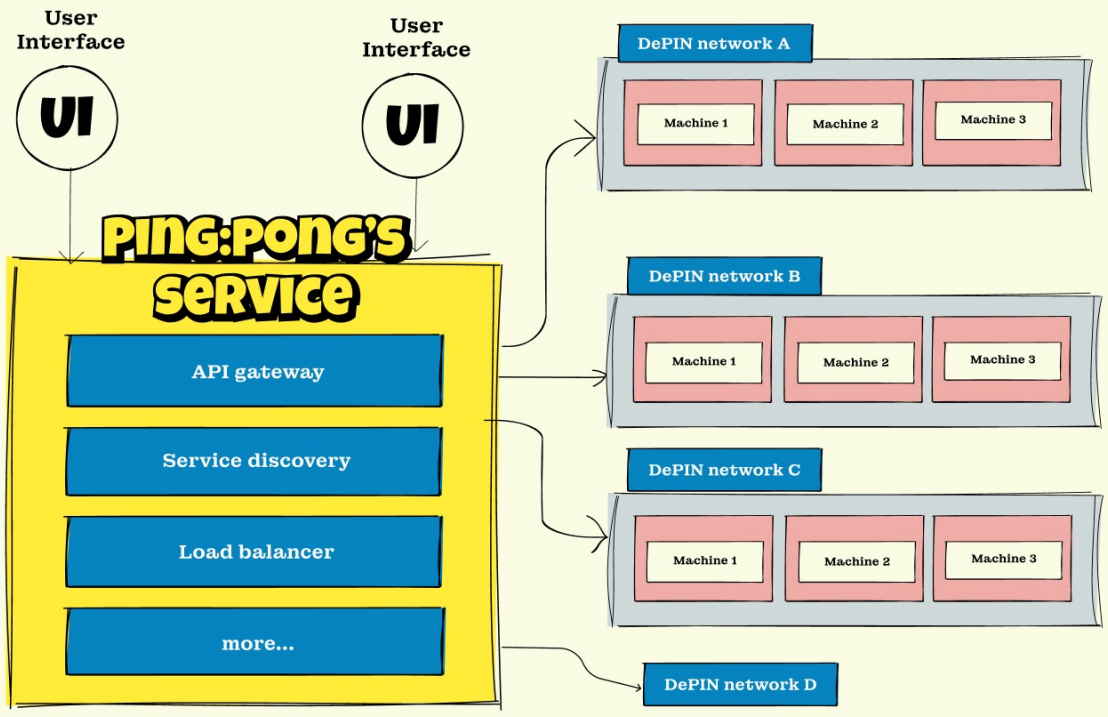
TO DEGENS

We are the 1inch for DePIN, treating computational resources as a new form of liquidity and aggregating them to streamline application development process building on DePIN technical stacks.

TO TECH FOLKS

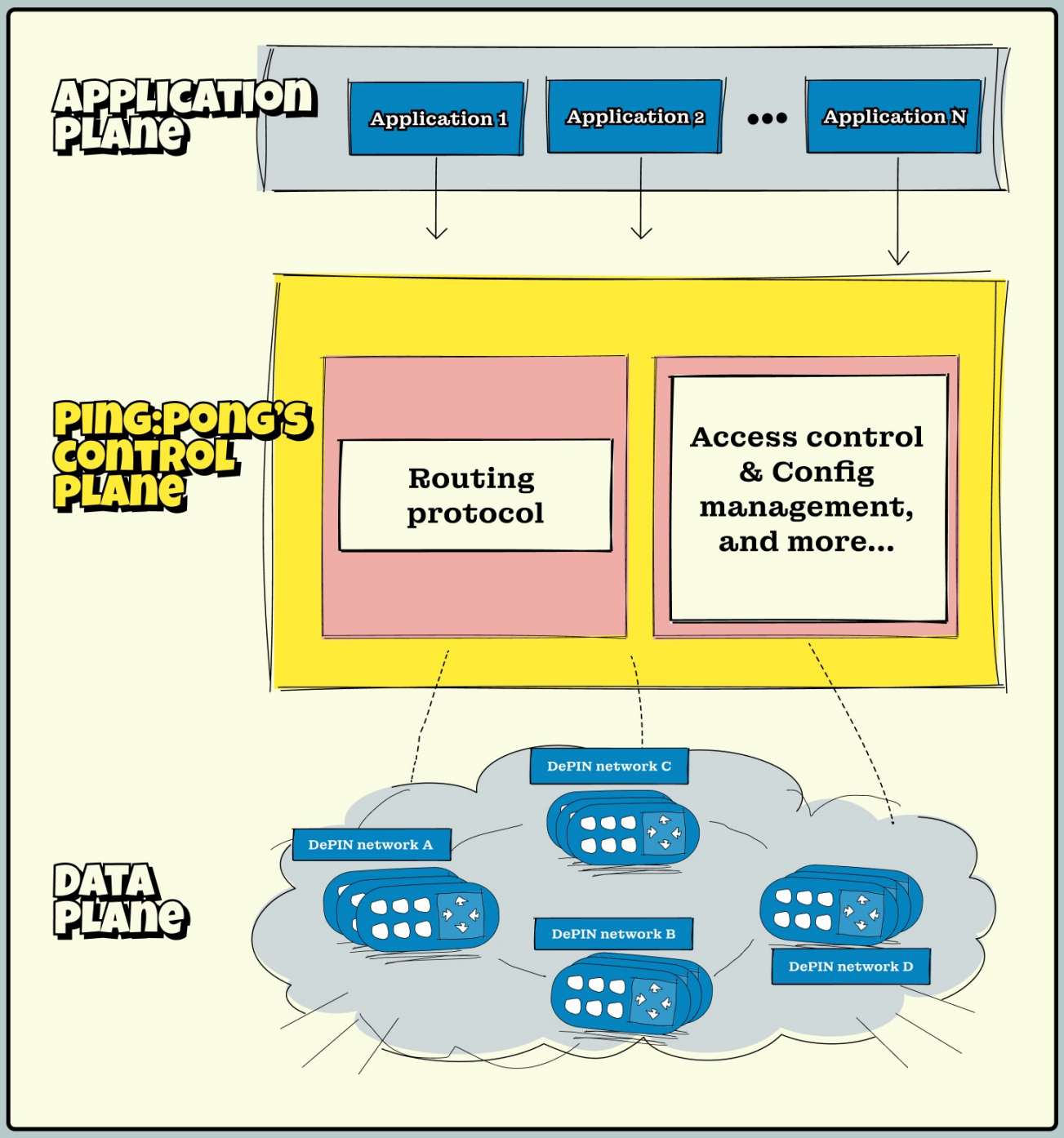
There are two similar software architectures -

1. We are the Kubernetes(k8s) for DePINs. By treating each of the DePIN networks as a microservice, we act similarly to Kubernetes Manager and provide functions such as API gateway, service discovery, load balancer, and more, in the context of DePIN.



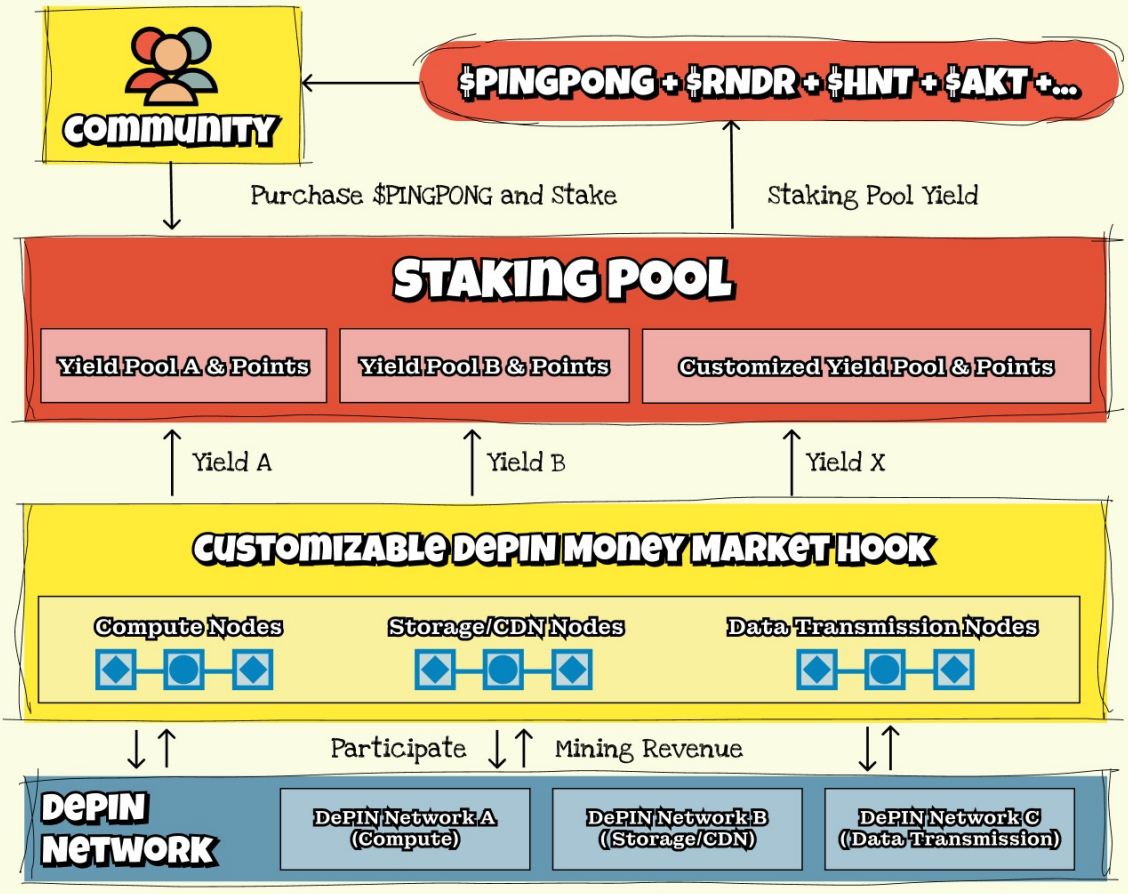
2

We are the control plane for DePINs. By treating DePIN networks as a data plane, we act as the control plane that includes routing protocol, access control configurations, and more, in the context of DePIN.

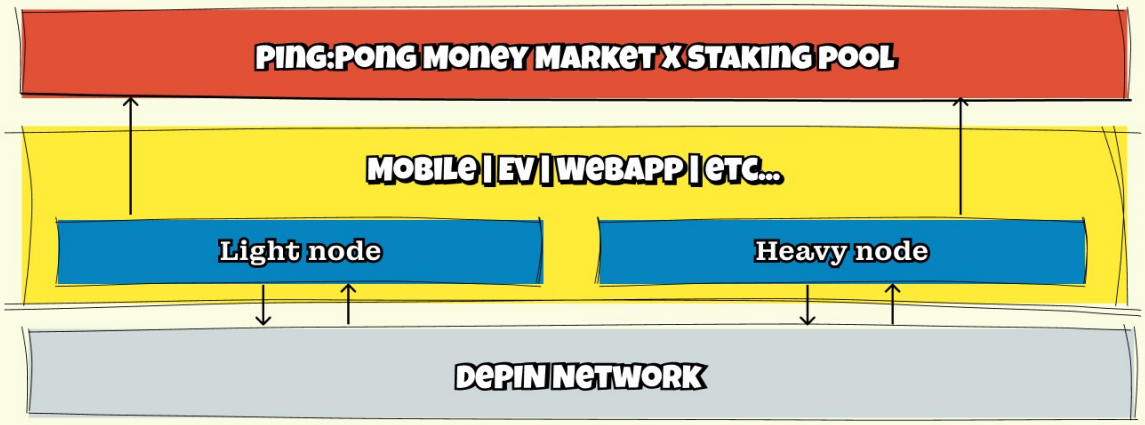


1.2 [Community-Facing Product] DePIN Liquidity Mining Through Our DePIN Liquidity Hook Money Market

We treat computational resources as a new form of DeFi liquidity. Since these resources generate profits, making them a type of yield-bearing asset, we have developed DePIN liquidity mining and a money market based on the aggregation of DePIN mining.



Our DePIN liquidity hooks aggregate different DePIN network's mining and point earning mechanisms, and dynamically strategizes DePIN mining routes to achieve highest DePIN mining yields. We then create a money market out of these DePIN mining strategies and welcome community members to customize their own DePIN mining strategies using our DePIN liquidity hooks.



We provide two types of DePIN liquidity hooks -

- [Light node hook] Aggregates WebGPU-based, data transmission/bandwidth, CDN and all other light compute resource DePIN mining.
- [Heavy node hook] Aggregates GPU-intensive computations (AI, Spatial compute, rendering), persistent storage, and all other compute resource intensive DePIN mining.

Our DePIN liquidity mining hooks are modular and can be embedded into different applications. When ecosystem partners embed our liquidity hooks into their consumer-facing applications, their users will receive additional rewards and thereby boost overall DePIN mining yields.

2 WHY DO WE BUILD PING:PONG?

Our mission is to bring mass adoption of DePINs by making decentralized cloud services comparable to centralized ones, in terms of performance, stability, edge/geolocation-based response time optimization, while at much lower prices.

To solve existing problems that are preventing mass adoption of DePINs, we must clearly define what these problems are and how our solutions tackle them. Let's think from the perspectives of supply and demand.

From the demand side, growth of demand is an issue that most of today's DePIN networks are facing. We believe that there are 5 critical issues hindering the rapid growth of demand for DePINs.

1 No streamlined process

When building an application, storage (persistent and caching), data transmission, general computations (CPU-intensive work) and AI/rendering specific computation (GPU-intensive work) are all needed. Most of the DePIN networks that exist today only provide specific functions that an

application needs (regardless of whether it's an AI application or not). This creates an issue that, when an application developer tries to build on top of DePINs, they will need to maintain different clients to connect to different DePIN networks in the backend, which creates application infrastructure overhead and potentially technical debts as well. To the majority of application developers, the complexity and the amount of infrastructure maintenance work of using different DePINs to support their applications do not justify the pros of using DePINs.

Unstable performance

Unstable, compared to centralized cloud infrastructure. Servers and machines of centralized cloud providers are being maintained in controlled environments (in data centers), where they have state-of-the-art cooling systems, dedicated network cables, fault detection and tolerance systems, and more, to ensure applications building on top of their cloud can have 99%+ uptime and consistent performance.

DePIN networks rely on penalty/slashing, staking, and/or validation systems to provide stable decentralized cloud services. However, these systems are all software-based methods, which have limitations. For example, if a machine's hardware is failing, the applications that are hosted on that machine are doomed to have downtime.

3 Limited computational resource availability

In the context of AI, especially for running LLMs, only high-end GPUs (e.g. A100) can support fastest prediction and inference. However, there are limited numbers of these high-end GPUs that exist in a GPU DePIN network, which creates a concern regarding the lack of GPU resources needed to support the influx of requests. When this happens, the requests will be queued and wait to be processed, ultimately resulting in delayed response time.

4 No edge/geo response time optimization

Centralized cloud providers set up their data centers all over the world to allow applications building on top of their cloud infrastructure to optimize response time based on geolocation of requests.

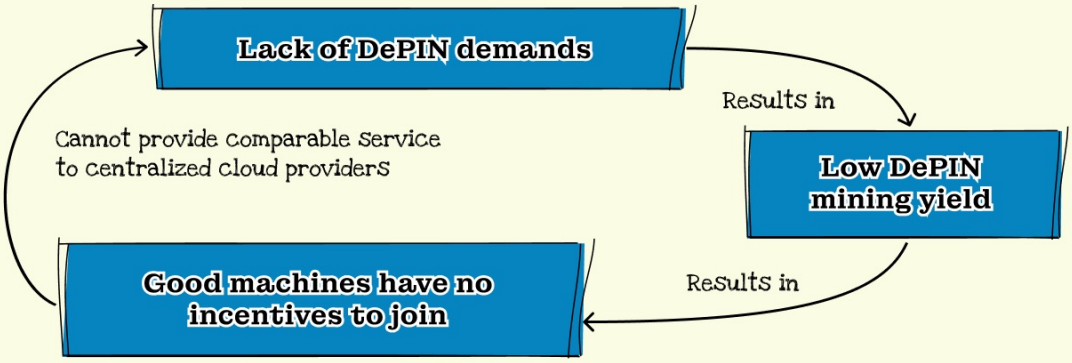
While all DePIN networks' nodes are distributed across the globe, most of them have most of their machines in clusters and gathered in one/several regions. This creates an issue that when an application needs geolocation-based response time optimization, the underlying DePIN network may not be able to support, which ultimately results in delayed response.

5 Expensive engineering operations

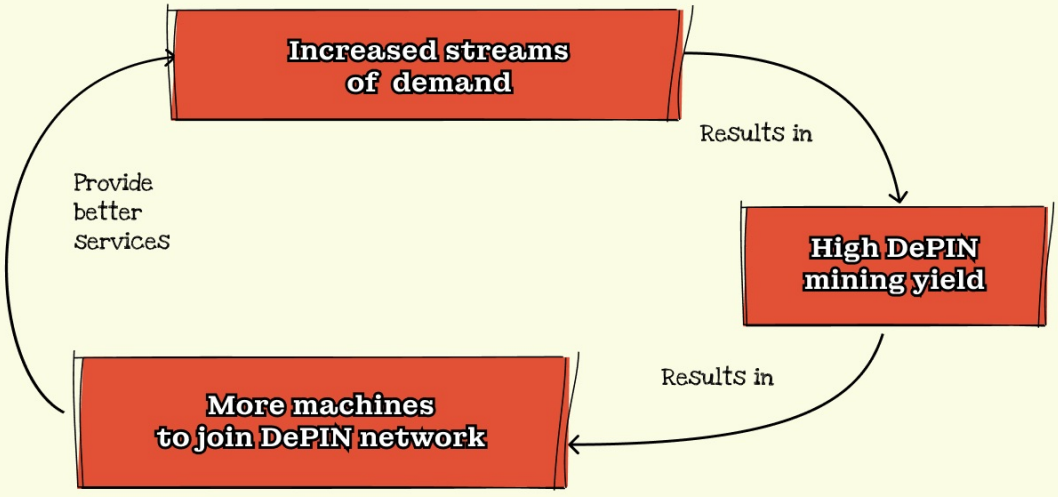
All expenses of services provided by centralized cloud providers are paid in government-issued currencies and application developers have a (relatively) good idea of how much they need to spend on infrastructure per invoice cycle.

Most of the DePIN networks' services are priced in their native tokens, and the exchange rate of their native tokens to USD-pegged stable coins fluctuate over time, which creates difficulties to predict costs. Additionally, for applications that use several DePINs for their backend, they will need to purchase and manage different tokens, which adds more work for cost control of an application, making overall engineering operations expensive.

Currently, these problems are creating a vicious cycle for the growth of demands of DePINs. Due to concerns of all the aforementioned issues, most of the DePIN networks are lacking in demands, which results in low DePIN mining yields. The low DePIN mining yields discourage good machines to join the DePIN network for mining, which further reduces the quality of services the DePIN network provides, and ultimately lead to lower DePIN demands.



By solving these problems through our SDK, and overlaying it with DeFi to invite community members to participate in supplying machines for joining, these DePINs create a positive flywheel for DePIN demand growth.



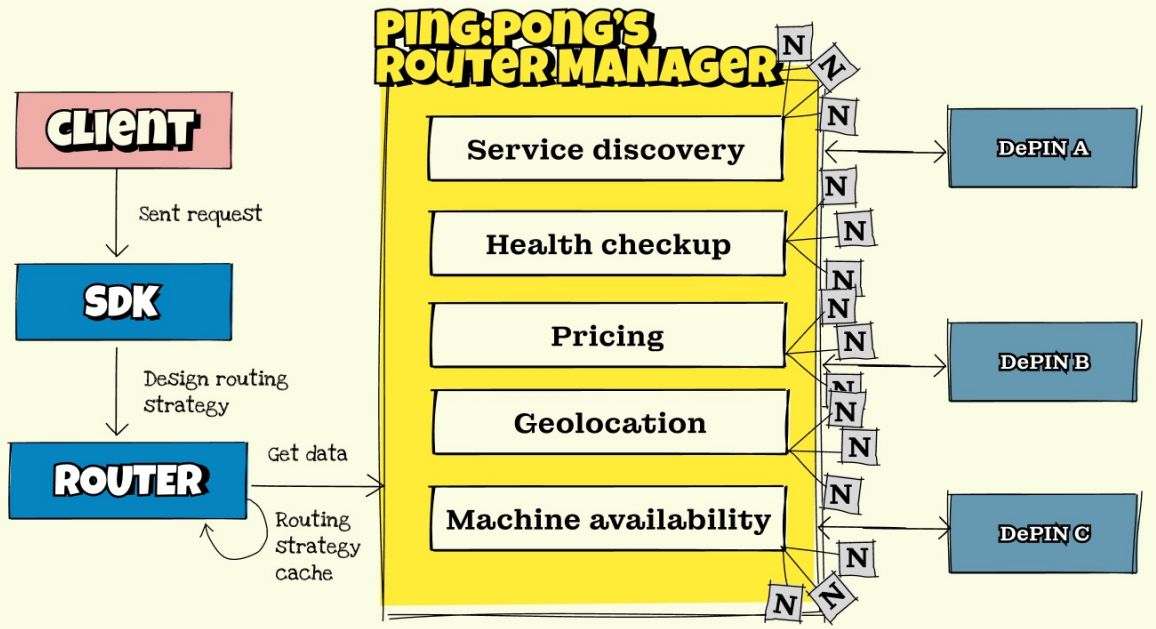
3 How does Ping:Pong work?

There are 3 major service types of DePIN -

1. Dedicated resource provision, meaning that developers either pay for bare metal machines, or rent out dedicated resources in a virtualized environment.
2. Compute resource sharing, meaning that developers deploy their software on servers that run other softwares at the same time, with no guarantee of resource availability on that machine.
3. Software hosting, meaning that a software is hosted by a DePIN network. The DePIN network will provide API/SDK for utilizing the software service that runs on it.

We aggregate the same type of services and encapsulate them into a single SDK to streamline the development process of building an application entirely using DePIN stacks. This is to help minimize engineering maintenance overhead of handling different clients and technical stacks. Additionally, our SDK designs optimized routing strategies for all incoming requests based on -

- Pricing
- Computational resource availability
- DePIN network health status
- and edge/geolocation-based response time optimization

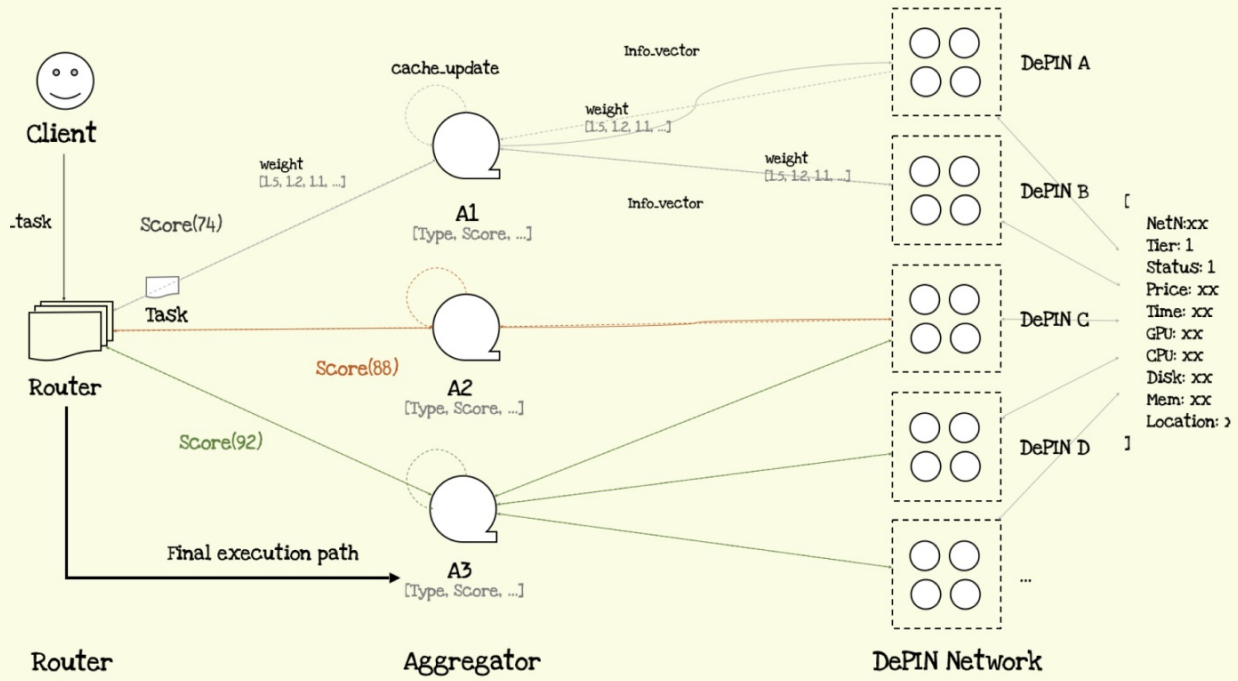


The ping:pong router manager actively gets data from the underlying DePIN networks and keeps a record for service discovery, health checkups, pricing, machine distribution status, and machine availability.

The ping:pong router will design routing strategy based on client parameter inputs and other data gathered by ping:pong router manager. By giving these four conditions different weights, our router will design routing strategy accordingly. Clients can choose to have their routing strategis cached for x amount of time, thereby optimizing overall response time.

There are two modes of routing selection in ping:pong's routing algorithm: direct
routing and dynamic routing. Direct routing refers to the process of finding a routing path where the client will designate a specific DePIN network to handle the task and then find the optimal configuration for handling the request (DePIN network A and its US servers).

This scenario is relatively simple and straightforward. Below, we will focus on explaining how dynamic routing works.



Dynamic routing is considered in complex scenarios, where a task needs to be split into multiple subtasks, and it requires dynamically finding the optimal combination across different DePIN networks. Here, we provide 3 strategies based on the client's cases:

- CORA Strategy: Cost-Optimized Routing Algorithm, which focuses on finding the most cost-effective routing path.
- TORA Strategy: Time-Optimized Routing Algorithm, which focuses on finding the fastest routing path.

In both CORA and TORA strategies, the following parameters need to be defined -

- Task: The combination of tasks that need to be executed is referred to as Task, which contains a set of weight vectors.

- Weight Vector: The dimensions of the weight vector describe the expected requirements for the DePIN computing network and machine to execute the task.

  Weight Vector = [Expected machine Tier type weight w1, Expected cost weight w2, Expected response time weight w3...wn]

- Signal Vector: In the DePIN network, a set of information corresponding to the weight vector is obtained, such as [NetName, Tier, Status, Location, GPU/CPU, Mem, Disk].

  Signal Vector = [Network machine Tier type s1, Network machine price s2, Network machine response time s3...sn]

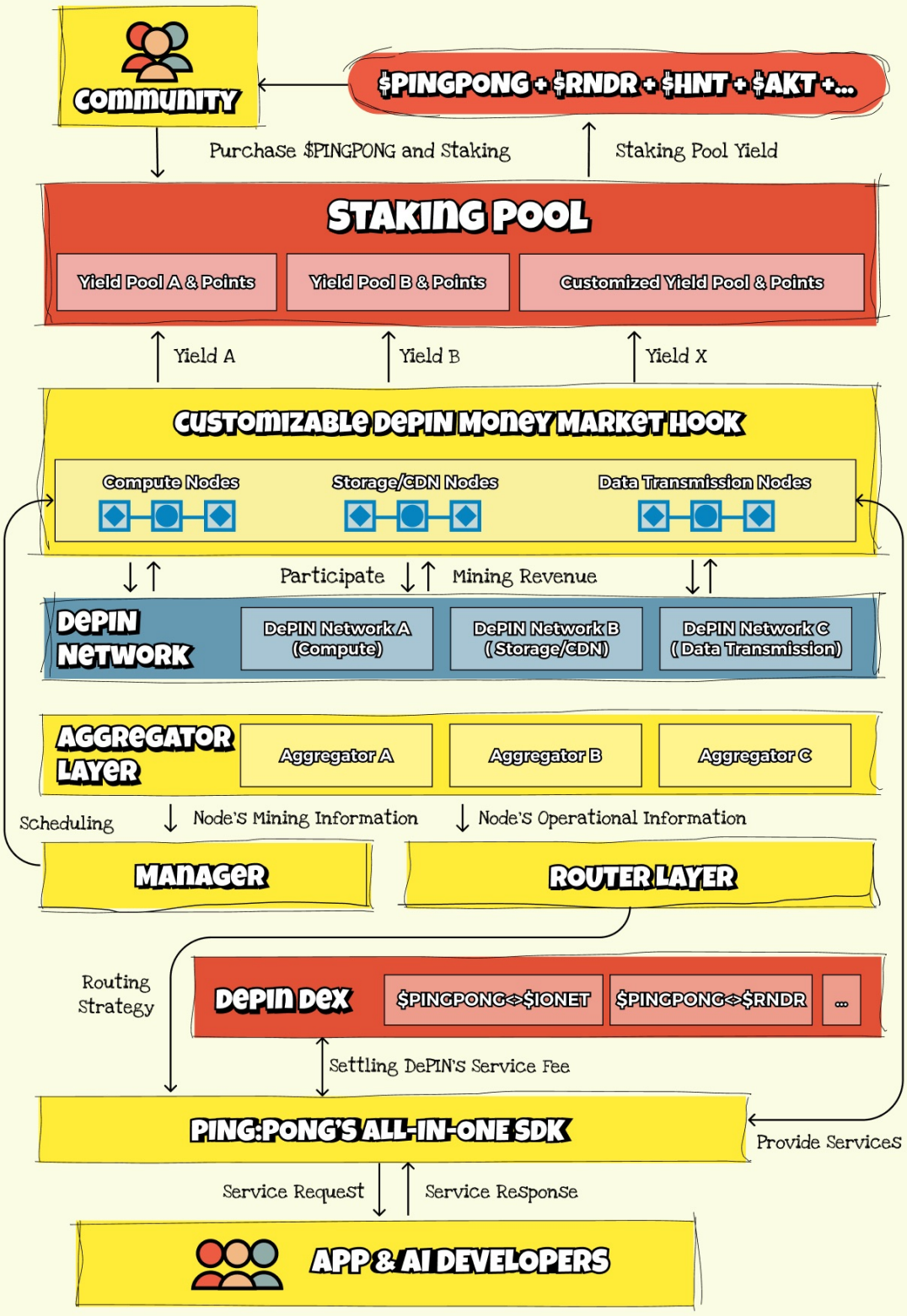
- Aggregator Score: A set of dynamic real-time scores is derived through matrix calculation of the weight vector and the signal vector, for the Router to refer to.

  Score(Aggregator) = Weight[w1, w2, w3...wn] ★ Signal[s1, s2, s3...sn]

- Route Choice: The router ultimately selects path based on the highest score returned by the aggregator for the execution of this task: max(aggregator score value)

  Route Choice = Aggregator i
  where Score(Aggregator i) is max Score for all Aggregator

Below shows how all the pieces work together.



4 WHAT'S NEXT?

Apr., 2024 - Release of tokenomics and point system
May., 2024 - DePIN liquidity mining & money market launch
May., 2024 - June TGE
Jul., 2024 - More products on DePIN liquidity mining & money market
Sept., 2024 - DePIN all-in-one SDK alpha release
Dec., 2024 - DePIN all-in-one SDK beta release
Q1-Q2, 2025 - DePIN all-in-one SDK public release

PING:PONG'S ROADMAP

ABOUT US

We are a bunch of pro-human degens with experience working at tech giants, top DeFi protocols, super well-funded Layer1 chain, and crypto funds & trading prop shop, as founding team members, senior managers, and C-levels. Graduated from top universities etc etc. However, please try to look beyond these labels on us. Labels are shortcuts to establishing authority and building blind trust, but they don't help us humans to bond and your precious trust should not be given for free.

We encourage you to feel us, feel our passion, through our products and words. We are human-made and are cooking smth smth cool for humans, for you & your kids, for making democratizing the future of compute a dream come true.🪄

202 403 040 418