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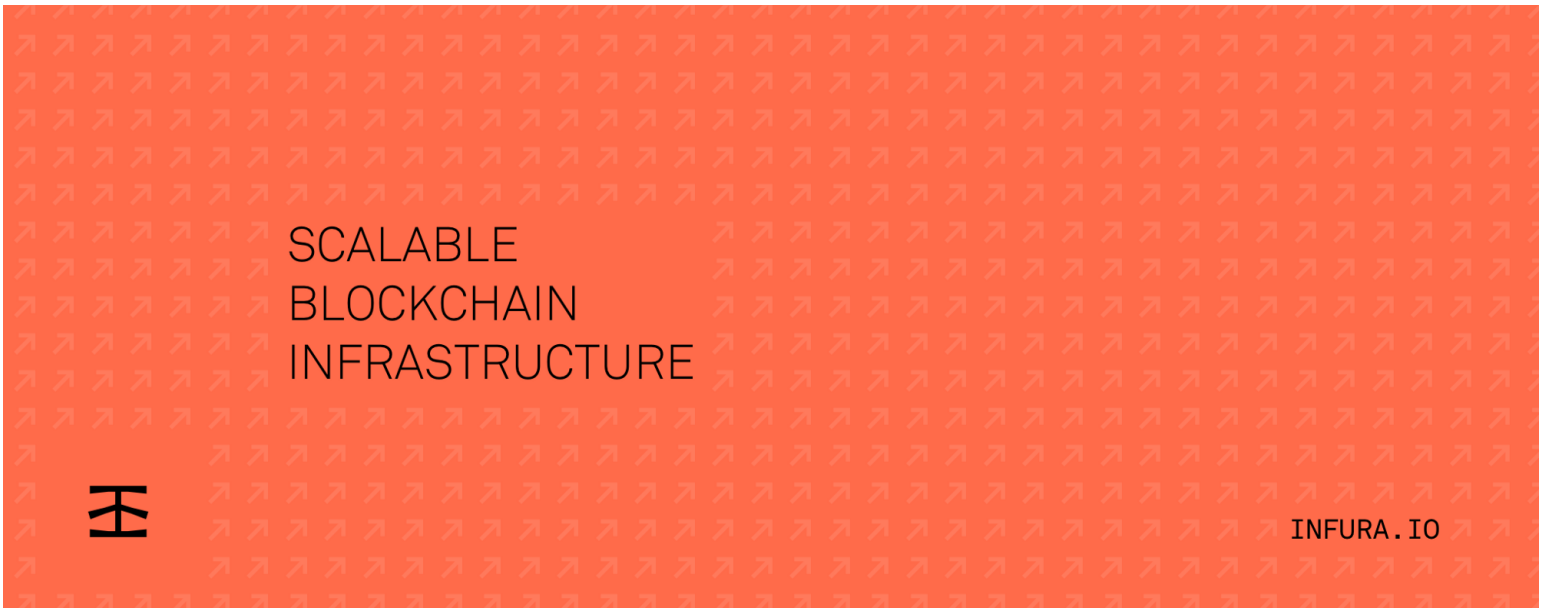
Why Infura is the Secret Weapon of Ethereum Infrastructure

Find out how platforms like Metamask, CryptoKitties, Status, and UJO all utilize Infura for scalable blockchain solutions



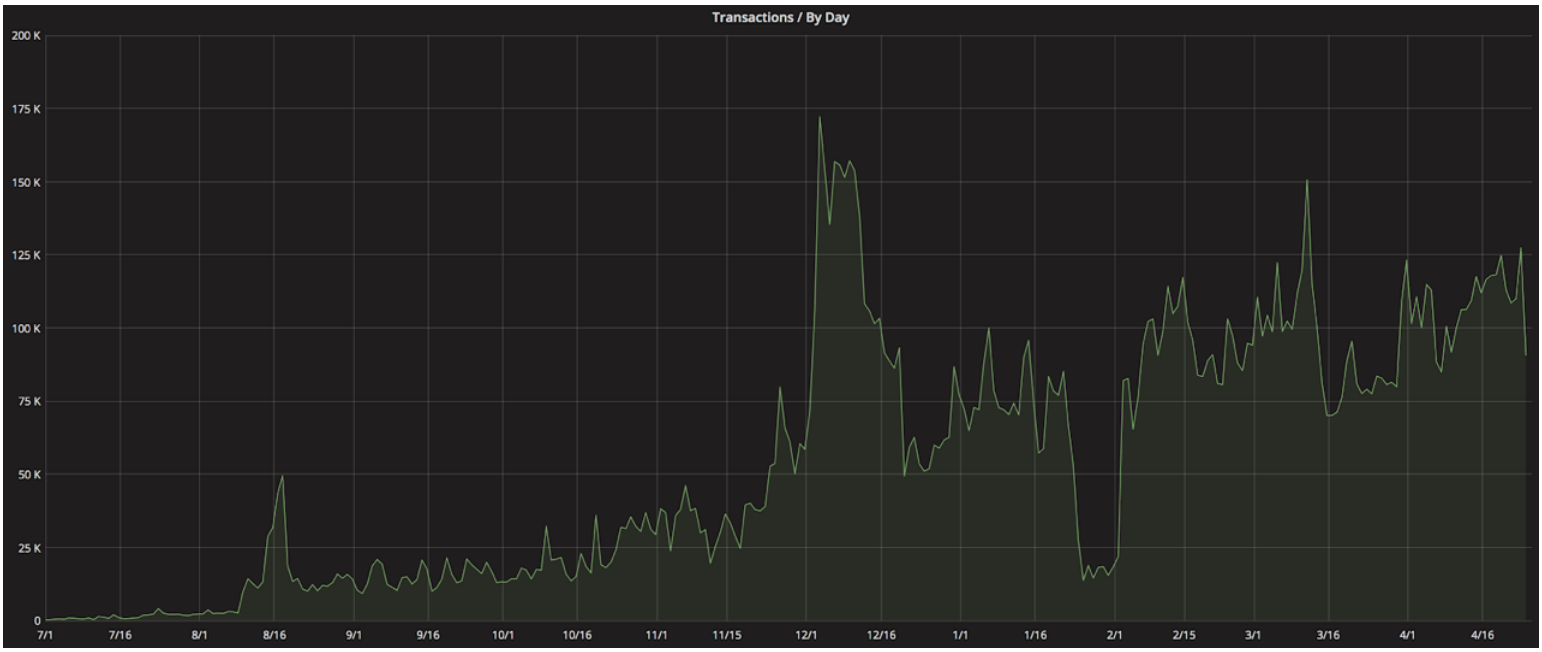
Building a decentralized future is about more than tokenomics or cryptography, institutional adoption or even regulation. For Ethereum and the entire blockchain ecosystem to grow, it falls on the community to build the infrastructure components that keep the network running. Across the Ethereum network, there is a need for utilities that lower the barrier of entry and simplify access to Ethereum data. Among the most essential of these are Infrastructure-as-a-Service (IaaS) products. Leading the way is Infura, which offers developers a suite of tools to

connect their apps to the Ethereum network and other decentralized platforms.

Many of the blockchain space's most remarkable projects—Metamask, CryptoKitties, UJO, Radar Relay, Cipher Browser, uPort—utilize Infura's APIs to connect their applications to the Ethereum network. In doing so, Infura provides the fundamental infrastructure required to handle both the short-term spikes that can often occur during token launches and essential, longer-term scaling solutions. An average of 6.5 billion JSON-RPC requests per day on the Ethereum network are channeled through Infura infrastructure, making the project an essential pillar of the ecosystem.

"Our mission is to facilitate access to Ethereum and the opportunities it provides," says Infura Lead Systems Engineer Nicola Cocchiaro. "We've always believed that only through widespread adoption can the enormous potential of Ethereum be fully realized. One of the ways that we aim to help achieve that goal is by providing infrastructure as a service. Over the the last two years, this has put us in a privileged position to witness the growth of the Ethereum ecosystem firsthand, and the growth has been explosive both for it and us."

Some numbers on the rise of Infura: "We now have more than 15,000 registered developers, we're serving over 6 billion API requests per day and transferring roughly 1.6 petabytes of data per month," says Cocchiaro. "In 2017 alone, we relayed transactions that moved more than 7 million ether, with almost 9 million more so far in 2018. And most of this growth happened over the second half of 2017."



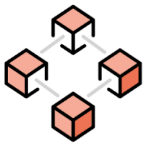
A view of transactions served by Infura from June 2017 to April 2018. The spike in December is the CryptoKitties launch.

"Infura essentially provides the necessary tools for any application to start developing on Ethereum immediately, without the need to run the complicated infrastructure themselves," says Mike Godsey, Product Manager. "This is equally necessary for developers with no traffic testing on networks such as Kovan, Rinkeby, or Ropsten, or ones with tons of traffic running on Mainnet. Infura provides a connection for all developers utilizing the Ethereum blockchain."

The most well-known portion of the Infura infrastructure is the network of hosted Ethereum clients that spans four Ethereum networks: Mainnet, Ropsten, Rinkeby, and Kovan. "These are load-balanced groups of nodes, that we can scale to meet demand fairly easily, and that we keep up-to-date and secure," says Cocchiaro. "We have TLS-enabled APIs including JSON-RPC, REST and websocket endpoints as ways to access our node network as if it was your local node. Infura also has additional features built on top of these endpoints for reliability and added value, like the feature we call Transaction Assurance."

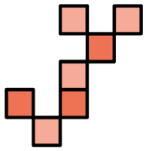
Ethereum nodes are only one part of Infura stack: "We also host IPFS nodes and a public IPFS gateway. We're in the process of building

additional decentralized storage products based on both IFPS and Swarm, that we will detail in the near future," says Cocchiaro.



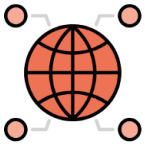
BLOCKCHAIN BASED

We eliminate the need to install, configure, and maintain costly Ethereum infrastructure.



RELIABLE AND SCALABLE

Our Ferryman™ middleware improves reliability and helps us scale quickly to meet your demand.



DISTRIBUTED STORAGE

Access IPFS seamlessly without the hassle of managing the infrastructure.

One of the central pieces of the Infura architecture is a middleware layer called Ferryman. Cocchiaro explains: "Ferryman is Infura's internal middleware layer that enables smart routing, which allows requests to be sent to different ends of the Infura infrastructure based on the RPC method and other factors. This provides the ability to scale and tune portions of the infrastructure independently depending on traffic needs; in addition to aggressive caching and indexing of blockchain data, smart routing can make it so that incoming requests don't need to hit a live node at all, and response times are greatly decreased."

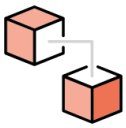
Infura's modular scaling solutions unlock essential network capacity for any project that is or expects to be pushing large amounts of traffic through the Ethereum Network. "With an ever-growing blockchain, keeping a local node synced and up to date has traditionally presented challenges that typically relate to a combination of storage, bandwidth and memory usage," says Cocchiaro. "Additionally, ICOs and other high-traffic dapps have concerns of scaling, sometimes transient, sometimes more permanent, that are not easily solved with local infrastructure."

The range of projects that utilize Infura's network is broad. For example, MetaMask uses Infura with a zero-client approach, connecting to Infura's remote infrastructure in order to serve over one million installed users.

Some projects—like Mist and Status—are working towards utilizing a hybrid approach that relies on Infura's remote nodes in moments of network stress. In cases where scale is the main concern, like that of CryptoKitties, Infura worked together with developers across the ecosystem to keep the network running smoothly.

TLS-ENABLED ENDPOINTS

Public endpoints for the Ethereum Mainnet and all testnet networks

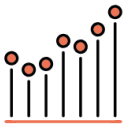


TLS-ENABLED IPFS GATEWAY

Decentralized storage with custom reliability features

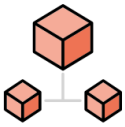
PORTABLE ETHEREUM INTERFACE

Compatible with the standard JSON-RPC API and popular web3 libraries



FERRYMAN™ SERVICE LAYER

A custom reverse proxy for scaling and reliability



MULTI-CLIENT BACKEND

Both Geth and Parity for robustness and resiliency

CUSTOM INSTALLATIONS

Private infrastructure deployments for your organization

Looking forward, Infura's growing platform of utilities will include a developer portal to give insight and monitoring to developers using the Infura network as well as more advanced scaling solutions. "In order to better serve developers using Infura, we are introducing a new version of our API key that will give apps better visibility into how they are using the network. We are also introducing an "Infura for Business" product that will help prepare developers for production traffic and provide them with the necessary support to keep their applications running smoothly," explains Mike Godsey.

"We are actively involved in the expanding landscape of Ethereum and plan to incorporate many of the new developments directly into our infrastructure services," says Godsey. "We are very excited to see

sharding, Plasma, Casper, and advanced state channels start to come online, and will continue to watch those very closely."

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