POCKET NETWORK

Economics Overview

(Version 1.0)

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This document is an explanation of the strategy and rationale of the economics and monetary policy behind Pocket Network. Numbers stated in the overview are not final. For further details on the protocol please read the white paper.

Introduction

Pocket Network is a two-sided marketplace that links application developers building blockchain-enabled or decentralized applications (DApps) ("Applications"), with infrastructure providers running full nodes for external blockchains ("Service Nodes"). These Service Nodes can range from professional outfits providing resources for the bulk of the throughput to individuals running full nodes in their homes.

Pocket Network is a permissionless protocol that can be thought of as having two layers:

1. A **coordination layer** which links Applications with Service Nodes; and
2. A **resource allocation layer** which facilitates the value transfer from Applications to Service Nodes in a censorship-resistant, trustless manner.

Pocket Network is an independent, application-specific blockchain. It is a Proof-of-Stake (PoS) protocol using the Tendermint consensus engine with a native cryptocurrency, denominated as "POKT". Applications and Service Nodes must stake POKT to access the network. Service Nodes receive rewards in POKT for carrying out work which the protocol determines to be valuable. Similarly, Service Nodes may have their POKT stakes slashed for behavior which the protocol determines to be malicious or in contravention of the agreed rules.

The atomic unit of work in Pocket Network is an API request ("Relay") created by an Application. All inflation in the supply of POKT occurs as a direct result of Relays serviced by a Service Node. Service Nodes batch and submit all of the Relays they processed for an Application during their service relationship ("Session") into one transaction on the Pocket Network blockchain. Once those Relays are validated by other nodes in the network, a new block is confirmed and POKT is minted and issued to the relevant Service Nodes as a reward for their work. Ultimately, the supply and velocity of POKT within the network are directly tied to the number of Relays serviced by Service Nodes on behalf of Applications.

The monetary policy of Pocket Network is designed to enable a sustainable infrastructure service capable of supporting scalable and resilient node infrastructure for any blockchain. At maturity, Pocket will be a globally-distributed, redundant-by-design network, providing decentralized infrastructure at a fraction of the current cost.

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Helping Web3 Succeed by Reducing the Cost of Coordination

This section explains how it is economically feasible for Pocket Network to compete with centralized infrastructure alternatives. Skip to the next section for a detailed specification of Pocket Network's economic primitives.

Pocket Network's Cost of Coordination

We define the cost of coordination (C) in any blockchain simply as the cost of production (P) of the supply side plus any incurred fees (F) by the demand side of the network.

$$C = P + F$$

The cost of production (P) of the supply side in Pocket Network for a single Service Node is the electricity and bandwidth that a server expends to provide service to any application. This electricity and bandwidth are spent by providing Relay work, block production, and downloading blocks for the Pocket blockchain and any other blockchains that are supported. All Relays get batched into one native blockchain transaction per Session, allowing Service Nodes to reach web scale by reducing their need to continually reach consensus on Relays. As Service Nodes increase scale, there are one-time startup costs in purchasing hardware, space, and data centers. Marginal costs are primarily affected by electricity, bandwidth, and salaries.

The fees (F) incurred by the demand side in Pocket Network are a result of any layer 1 transaction fees that Applications pay when staking POKT. Applications only need to stake once, incurring additional fees only when they choose to reduce or add to their existing throughput capacity. Service Nodes earning via inflation avoids the need for Applications to continue paying on-chain fees for their service, which is a process that scales to any number of Relays, meaning that Pocket Network is not subject to the scalability issues affecting most blockchain protocols.

In sum,

$$P = \textit{electricity, bandwidth, hardware, space, data centers, salaries}$$
$$F = \textit{one-time staking transaction fee}$$

Understanding Pocket's cost of coordination helps to understand how Pocket provides a more cost-efficient option than existing alternatives.

The Web2 Tax

If blockchain protocols and DApps ("Web3") want to successfully acquire a mainstream customer base, they must provide services more effectively and/or cost-efficiently than existing Web2 alternatives. Unfortunately, Web3 currently has a cost of coordination that exceeds the costs borne by Web2 applications. This is largely because Web3 infrastructure currently has no choice but to sit on top of Web2 infrastructure, which isn't optimized for Web3.

Web3 applications that require a high amount of Relays, such as wallets, decentralized exchanges, or games, must decide whether to run their own infrastructure or use a third-party Web3 API provider. Applications typically choose third-party Web3 API providers in the name of scaling their Relays to more effectively meet demand.

Meanwhile, it is infeasible for these Web3 API providers (who are startups as well) to purchase data centers, build server farms, and put in the hardware research to support the thousands of Web3 applications being built today. As a result, Web3 API providers typically run on existing Web2 cloud platforms like Amazon Web Services. Infrastructure is a commodity service, and by leveraging economies of scale, centralized Web2 cloud platforms can provide enterprise-grade infrastructure at much greater efficiency and at a lower cost than a Web3 API provider could on its own.

In pursuit of scale, Web3 has had no choice but to pay an expensive tax to the Web2 infrastructure monopoly and, in doing so, sacrifice cost efficiency. Web3 applications must compensate Web3 API providers for their Relays, who must, in turn, compensate Web2 cloud platforms for their server costs. By the time an end-user accesses a Web3 application many middlemen have already charged rent for the infrastructure services provided, leading to Web3 users bearing the brunt of the cost of coordination in the form of fees.

The cost of coordination ($C=P+F$) for Web2-powered Web3 is:

$$P = \textit{electricity, bandwidth, hardware, data centers, salaries}$$
$$F = \textit{continuous payment transaction fees, Web3 API provider fees, Web2 cloud platform fees}$$

This is a massive barrier to user adoption, which means that cost efficiency is an existential problem for the success of Web3.

Decentralizing the Cost Structures of Cloud & API Providers

We posit that application-specific blockchains like Pocket Network have the ability to design greater cost efficiencies at the base protocol layer of the Web3 stack while enhancing security and censorship resistance.

Pocket achieves this through an incentive design that rewards Service Nodes for collectively achieving economies of scale:

1. Load balancing at the protocol level incentivizes decentralization and minimizes the need for buffers
2. Staking and inflation enables more efficient resource allocation
3. Low marginal costs reduce barriers to entry, allowing anyone to participate at any scale

1. Load balancing at the protocol level incentivizes decentralization and minimizes the need for buffers

Due to the protocol using pseudo-random mechanisms to load balance work evenly across all nodes in the network, the optimal deployment strategy for node providers is to horizontally scale the number of Service Nodes they run (rather than to scale vertically by increasing the POKT stake of the Service Nodes they already have) to increase the probability that they'll receive work. By decreasing the average work per Service Node, participants of all scales are encouraged to provision their compute to Pocket Network. This aspect of Pocket's system design means Pocket Network's node counts will increase as it scales.

To minimize the marginal cost of each Service Node, it will ultimately become more profitable to run nodes out of homes and local data centers, which will, over time, create a lower-cost, more efficient decentralized network.

Pocket's distributed nature makes it redundant-by-design, removing the need for node operators to provision extra infrastructure to handle surges in user traffic. Web2 cloud-powered infrastructure requires large buffers of redundant server capacity, which can increase the costs of coordination borne by Web3 users by up to 50%. Conversely, instead of one entity providing all the work, Pocket Network naturally splits demand up amongst Service Nodes through its Session data structure, tumbling new, pseudo-random nodes every Session to give all Service Nodes the opportunity to provide work. As a result, the buffer that each Service Node must provide is significantly lower. Additionally, because Applications must stake POKT to access the service, Service Nodes can account for all potential requests paid for in aggregate, using Application Stake as a gauge of network capacity.

2. Staking and inflation enables more efficient resource allocation

For a decentralized infrastructure service like Pocket Network, on-chain payments via Bitcoin, ETH, or DAI would be inefficient due to the frequency of Relay requests. While state channel implementations do improve the cost of coordination for micropayments, Pocket matches Applications with 5 pseudo-random Service Nodes every 25 blocks for security purposes; creating and breaking on-chain state channels to communicate with each of these nodes would make the cost of coordination impractically high.

Pocket uses Proof-of-Stake (PoS) to secure the state machine and falls under the umbrella of generalized mining or useful proofs of work, where inflation is directly tied to work validated by the network. Applications stake just once to access the protocol (assuming they don't change their throughput), using the native cryptocurrency POKT which is tied for single use to the Pocket blockchain. Service Nodes batch all requests received in a Session to one Pocket blockchain transaction, a "Proof-of-Relay" that Applications can validate client-side and other nodes can validate in block production, removing the need for Applications to pay constant transaction fees for this work. Once those Proofs-of-Relays are validated by the network, a new block is confirmed, then POKT is minted and issued to the relevant Service Nodes as a reward for their work.

Pocket's staking and inflation mechanisms enable a more efficient resource allocation structure by limiting the number of transactions (and thus block validation costs) to one-time staking transactions. All nodes are able to focus primarily on servicing and validating Relay requests by Applications, with minimal energy spent on block validation. By being eventually consistent and tying rewards directly to inflation, Service Nodes are in effect, receiving micropayments for work validated by two parties without the need for constant on-chain fee payments.

3. Low marginal costs reduce barriers to entry, allowing anyone to participate at any scale

The marginal cost of running an individual Service Node is only as high as your electricity and bandwidth costs, ensuring a low barrier to entry for new Service Node operators. Because work is load balanced evenly across the protocol, the stake, size or capabilities of the Service Node does not increase the probability of receiving work, which enables hobbyists and small providers to participate and contribute alongside major infrastructure providers. As smaller Service Node operators scale up, they can then choose to bear the costs of hardware, equipment and salaries needed to add more Service Nodes to their operation.

While the bulk of work will most likely be serviced by professional infrastructure providers, Pocket also enables a long tail of individuals to participate and increase the resilience of the protocol, with potential for upward mobility for those who choose to purchase more Service Nodes.

Economics Specification

TLDR;

- Pocket Network has a dynamic issuance rate based on its usage
- Applications pay for Relays through dilution by staking POKT and incurring inflation
- Service Nodes earn POKT via a block reward (inflation) mechanism calculated based on the number of validated units of work (Relays)

Initial Parameters

- Total Supply: 500,000,000 POKT
- Mint rate: 0.01 POKT per validated Relay
- Minimum Service Node Stake: 15,000 POKT
- Minimum Application Stake: 1 POKT
- Minimum Application bonding period: 21 days
- Minimum Node bonding period: 21 days
- Double sign block validation penalty: Tombstoned
- Missed block penalty: 10 blocks before jailing
- Fraudulent Relay batch penalty: 100% slash of node stake and jailed

The Purpose of POKT

POKT is not a transactional cryptocurrency. The Pocket Network blockchain is not meant to have sub 5-second blocktimes, provide 10,000 transactions per second, facilitate direct payments (generally speaking), or act as a smart contract platform. The majority of the transactions occurring will be staking by Applications and Service Nodes, Proof-of-Relay batches by Service Nodes, and block reward payments to Service Nodes for facilitating Relay requests, which all POKT holders will pay for via inflation.

This is in contrast to most layer 1 chains, which will eventually need to rely predominantly on transaction fees. At network maturity, Pocket will become a simple fee market with the demand side

(Applications) burning POKT and the supply side (Service Nodes) receiving newly minted POKT via the block reward inflation mechanism. This allows for the transfer of value without using direct fees and incurring further costs of coordination.

By building a set of crypto-economic mechanisms to ensure the validation of Proofs-of-Relays, Pocket's architecture can provide blockchain infrastructure at an order-of-magnitude lower cost than other options by virtue of being a permissionless, non-rent-seeking and open marketplace for anyone to participate.

Pocket Network uses these validated Proofs-of-Relays to reward Service Nodes through inflation. Leader-elected nodes are rewarded for facilitating P2P transfers of POKT on the Pocket blockchain via a transaction fee. This is required for the security of the network in order to prevent spam or "dust" attacks. A transaction fee is paid by the individual or entity making a transaction, 99% of which is burned, and the remaining 1% is awarded to the leader-elected node for including transactions in the relevant block. The 1% fee provides an incentive for block producers to include transactions in the next block.

Both Applications and Service Nodes must stake POKT to access or provide work to Pocket Network. For Applications utilizing the Pocket network, POKT represents an ongoing right to an allocation of the network's throughput, whereas for Service Nodes, POKT represents a right to provide ongoing work on the network and the future inflation rewards for performing that work.

Pocket Denominations

While we use POKT as the primary denomination for ease of use and understanding, in reality, the protocol only understands the smallest denomination of POKT, which we call MicroPOKT.

Level	Denomination	Name
10^24	EPOKT	ExaPOKT
10^21	PPOKT	PetaPOKT
10^18	TPOKT	TeraPOKT
10^15	GPOKT	GigaPOKT
10^12	MPOKT	MegaPOKT
10^9	KPOKT	KiloPOKT
10^6	POKT	POKT

10^3	mPOKT	MiliPOKT
10^0 *Code Uses This	uPOKT	Micro or 'you'POKT

Monetary Policy

Pocket's monetary policy will be dictated by how its primary economic levers are adjusted over time with the mandate to ensure long term stability, sustainability, and accessibility of the protocol. The monetary policy will be governed and controlled by the Pocket DAO and its participants. The primary economic levers managed by the monetary policy are (but not limited to):

1. Application Cost
    a. BaseRelaysPerPOKT
    b. StabilityAdjustment
2. Application Burn Rate (ABR)
3. $USDPerRelay Target
4. Minimum Service Node Stake

Applications

Pocket Network is a developer-driven protocol, with demand from Applications driving the rewards the Service Nodes earn. Applications use Pocket Network to retrieve data and write state to and for their blockchain applications. Each Relay that is created by an Application results in the creation of newly minted POKT as a reward for the Service Nodes facilitating such Relays.

Access to the Service

There are two distinct types of stake functions within Pocket: `StakeApp()` and `StakeNode()`. Both stake functions use the POKT cryptocurrency. Applications pay for the service in advance by staking POKT. When they invoke the `StakeApp()` function, the minimum staking period is 21 days. By incurring the minimum unstaking period, Applications forego the potential of using their staked POKT for other alternatives as an opportunity cost. Additionally, Applications pay through dilution, where each time a Relay is serviced and validated by the network, a specific sum of POKT is awarded to the relevant Service Nodes in the next block reward.

The protocol limits the number of Relays an Application may access based on the number of POKT staked in relation to the Protocol Throttling Formula (as defined below). Once an Application stakes

POKT, the Maximum Relays (`MaxRelays`) it can use is locked in perpetuity unless the Application re-stakes that POKT or their stake is burned.

To gain access to more Relays an Application must purchase and stake more POKT, or if the `MaxRelays` has moved in their favor they can un-stake and re-stake their existing POKT at the more favorable price, locking in the new rate.

Choosing a $USDPerRelay Target

Due to the oracle problem, the protocol cannot infer external factors that might influence the market price of POKT, or therefore account for these factors in the Protocol Throttling Formula. This introduces a risk to the demand side of the protocol, where fluctuations in the market price of POKT may affect the price Applications must pay for Relays.

We aim to allow the market to find a $USDPerRelay Target for POKT, to ensure the real price borne by Applications is within a relatively stable and acceptable range. This $USDPerRelay Target is not an on-chain variable, but a publicly agreed price that the DAO will target with its monetary policy, by adjusting variables in the Protocol Throttling Formula.

Protocol Throttling Formula

When Applications stake POKT, their rate for the number of Relays they may access (`MaxRelays`) is locked in for the entire length of the stake. We use the following simple formula to calculate the amount of Relays Applications are entitled to per Session.

```
MaxRelays = StabilityAdjustment + (ParticipationRate *
                  BaseThroughput)
```

These three variables, `StabilityAdjustment`, `BaseThroughput`, and `ParticipationRate`, aim to dynamically reflect POKT's usage and ensure that Applications will be able to enter the ecosystem adjusting to changes in the market price of POKT.

BaseThroughput

`BaseThroughput` is the baseline number of Relays we aim for an Application to get per POKT staked, assuming no external factors influencing POKT. This is calculated as:

```
BaseThroughput = BaseRelaysPerPOKT * StakedPOKT
```

BaseRelaysPerPOKT is a uint64, governed by the Pocket DAO, which describes the baseline number of Relays the Pocket DAO aims for each Application to receive per POKT staked. As a multiplier, changing this number more significantly impacts MaxRelays than changing StabilityAdjustment. For further granularity, BaseRelaysPerPOKT can be expressed as:

BaseRelaysPerPOKT = BaseRelaysPerPOKTNumerator/ BaseRelaysPerPOKTDenominator

This allows the protocol to express decimals in the form of fractional integers, enabling more granularity for the BaseRelaysPerPOKT number.

Due to the oracle problem, it is not possible to automatically adjust BaseRelaysPerPOKT based on the market price of POKT. The DAO will track indicators (such as ParticipationRate as well as the rate of change of new POKT being staked on the demand side), and adjust Pocket's economic levers, as necessary, to ensure that Relays remain affordable for Applications.

To keep the real $USDPerRelay price as close to the $USDPerRelay Target as possible, the Protocol Throttling Formula multiplies BaseThroughput by the total ParticipationRate of the protocol to reflect any changes in demand for Relays, then the DAO will use the StabilityAdjustment in the short-term to correct deviations from the $USDPerRelay Target that are most likely attributed to short-term changes inherent in the random walk of the cryptocurrency/FOREX markets. If the StabilityAdjustment persists above/below zero without resetting, we can attribute the deviation from the $USDPerRelay Target to a more permanent change in POKT's market value, at which point the DAO will update BaseRelaysPerPOKT and reset StabilityAdjustment to zero.

StabilityAdjustment

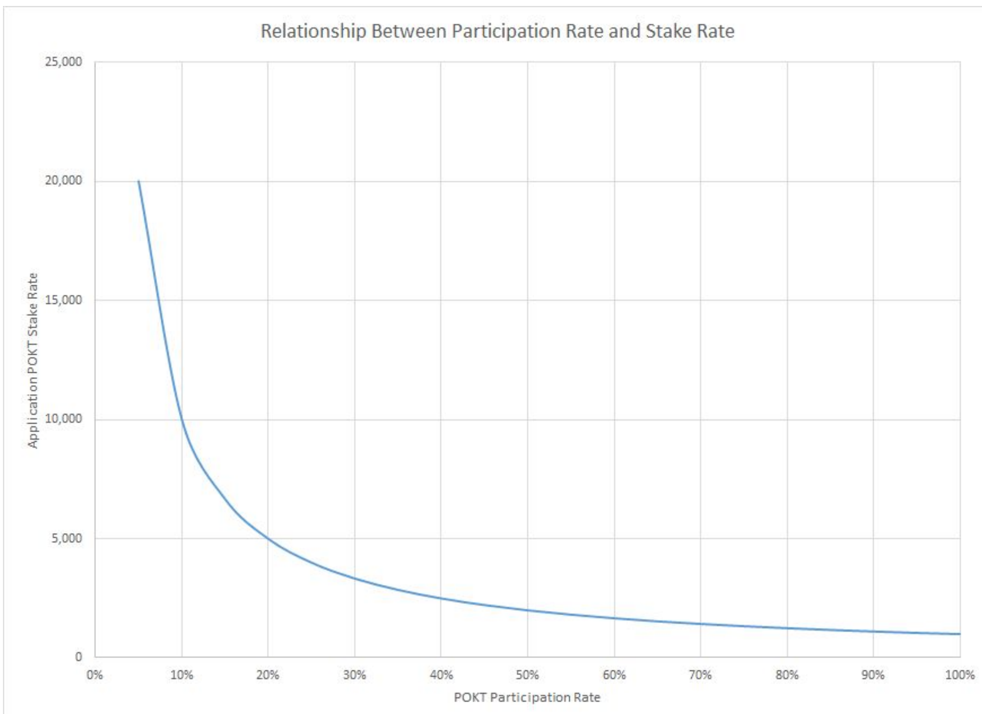
There is a menu cost associated with changing BaseRelaysPerPOKT too often. Applications will be reliant on a relatively stable real $USDPerRelay price to access throughput. Community resources and consistent communication will help them make decisions about how much POKT to stake at any given moment.

Pocket's price target optimization problem will rely on off-chain data about a given currency's current exchange rate with POKT, e.g. using $USDPerPOKT to measure how close the real $USDPerRelay price is to the DAO's current $USDPerRelay Target. Short-term fluctuations will therefore be arbitrary depending on which currency has been chosen to anchor the DAO's price target against and what is happening day-to-day in the crypto and FOREX markets; today $USDPerPOKT might change by 5% but €EURPerPOKT only changes by 1%. It is important that we don't let short-term fluctuations impact the stability and accessibility of the network.

We can therefore use the `StabilityAdjustment` to dynamically adjust the `MaxRelays` computed in the Protocol Throttling Formula, while only changing our "menu price" (`BaseRelaysPerPOKT`) when there is a long-term deviation that can be more assuredly attributed to long-term changes in POKT's value.

ParticipationRate

The `ParticipationRate` acts as a proxy for utilization of the network and is reflected on a block by block basis, adjusting an Application's `MaxRelays` dynamically based on the growth or decline in network-wide stake rates.



The `StabilityAdjustment` and `BaseRelaysPerPOKT` help calibrate the natural `ParticipationRate`. Changes to the $USDPerRelay Target will be made by the Pocket DAO using a proposal system similar to MakerDAO's Stability fee votes.

As the protocol matures, the market will dictate what price Applications should be paying for Relays, reflected by the Pocket DAO deciding on the $USDPerRelay Target. As the on-chain `MaxRelays` for Applications adjusts over time, existing Applications with locked-in rates for `MaxRelays` will be faced with two scenarios.

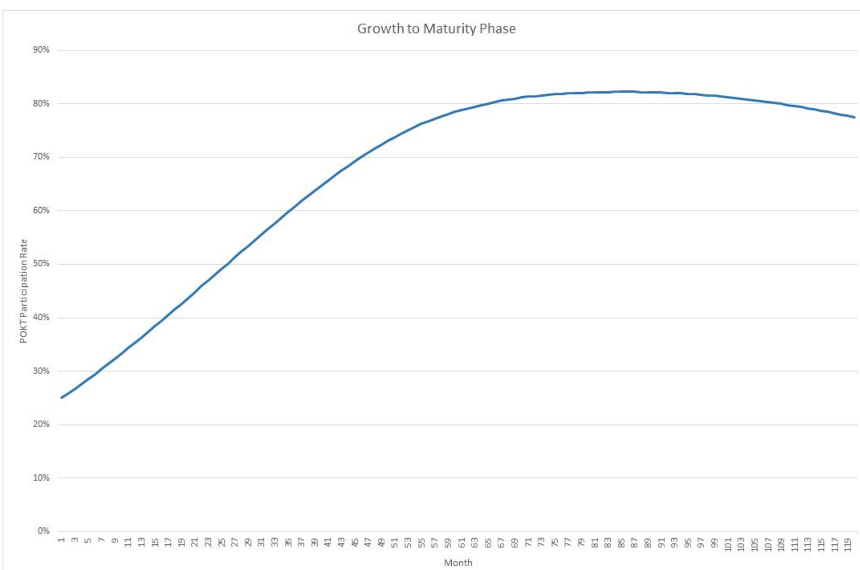
In a *downside scenario*, where the rate for `MaxRelays` drops below an Application's current locked-in rate, Applications are incentivized to keep their POKT staked to continue receiving throughput at an above market rate.

In an *upside scenario*, where the rate for `MaxRelays` rises above an Application's current locked-in rate, Applications will be incentivized to un-stake and re-stake their POKT to receive more Relays for the same amount of POKT.

Activating Application Burn Rate

Application Burn Rate (ABR) is the mechanism that ensures a leveling-off in the total supply of POKT once the network reaches maturity. Once activated, the ABR results in a shift from Applications paying through dilution, to Application POKT being burned on a block by block basis to balance the minting of POKT as inflation awards to Service Nodes. To properly explain when Application Burn will be enabled, we must divide the protocol into two phases, its *growth phase* and *maturity phase*.

The ABR is only activated during the **maturity phase** of the protocol.



Growth Phase

The growth phase is the period from launch which will see the greatest increase in the overall `ParticipationRate` of the protocol. When Applications stake during the growth phase, they earn more `MaxRelays` as the network grows (assuming they un-stake and re-stake), and don't pay for anything else until the network has matured and the Application Burn is activated.

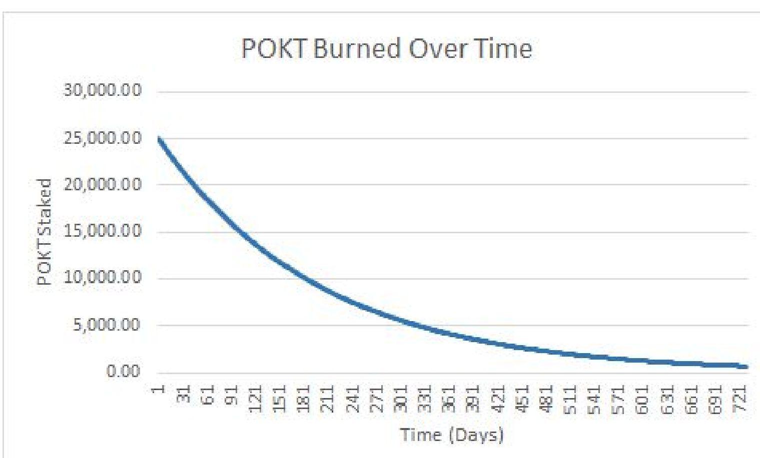
If both sides of the marketplace (Applications and Service Nodes) grow, there will be continuous demand for Relays resulting in Service Nodes spinning up new Pocket nodes to increase the number of Relays they can service.

Early Applications will receive more infrastructure throughput as the network grows providing an incentive to early adopters of the network. When both the percentage of POKT staked and Service Node margins begin reaching their [equilibrium](), the protocol will have entered its maturity phase.

Maturity Phase

The Maturity Phase is defined as the point in which Pocket Network has crossed equilibrium and the growth in inflation begins outpacing growth in the total staked supply of POKT. This should result in a decline in the `ParticipationRate` and Service Node margins due to an imbalance from more supply than demand for POKT.

To ensure the continued sustainability of POKT, reasonable margins for Service Nodes, and to eliminate unnecessary overinflation of POKT, the Pocket DAO will activate the ABR at network maturity. The ABR will cause Application stake to be burned in proportion to the number of POKT staked per Application, on a block by block basis. Unless an Application increases the number of POKT they have staked, their holdings will decay. This results in a logarithmic decay until the minimum stake of 1 POKT is reached.



The growth phase is inflationary, designed to incentivize active participation and supply side staking for the security of the network. Once the network reaches equilibrium, the focus shifts towards burning to ensure POKT supply is stable in the long-term and doesn't lose its value as a form of consideration to Service Nodes. At maturity, Pocket becomes similar to traditional Software as a Service pricing models, where Applications must top up their stake periodically to avoid going below their needed Relay limit.

Service Nodes

Service Nodes are the supply side of the network, coming online to serve the demand created by Applications, as well as providing network security through Proof-of-Stake. It is assumed for the purposes of modelling the incentive structure of Pocket Network that all Service Nodes are rational economic (and non-altruistic) actors and must earn a reward, i.e. POKT, per validated Relay they serve.

The Cost of Becoming a Service Node

There are two initial costs to becoming a Service Node:

1. Hardware
2. 15,000 POKT Security Deposit

Pocket Network is neutral to the hardware utilized by Service Nodes, meaning that hardware can be a physical server that is run in a home or a local data center, or it can be compute purchased through popular cloud providers. The specs required for a Service Node's hardware is dependent on the blockchain(s) that a Service Node chooses to support. For example, if a Service Node were to choose to support Ethereum, the server would need to have at least 1TB of storage (as of writing) to support an archival node for Ethereum.

The minimum stake at launch required to become a Service Node is 15,000 POKT. This minimum stake also allows Service Nodes to participate in PoS consensus. If a Service Node stake falls below the minimum amount through serving incorrect data or incorrect block validation, 20% of the minimum stake for that Service Node will be slashed and jailed. If a Service Node submits a fraudulent Relay batch, 100% of their stake will be slashed. The initial amount of POKT needed to stake as a Service Node is not dynamic, but can be raised or lowered by the Pocket DAO to ensure a stable barrier to entry.

Once the initial costs of a Service Node are covered, the only additional cost is electricity and bandwidth for providing the compute to complete Relays. Marginal costs for Service Nodes are extremely low and increase linearly as work increases.

Earning POKT

Service Nodes are pseudo-randomly assigned to a Session. Every Service Node who has staked the required node security deposit has an equal chance of being chosen in every available Session within the protocol regardless of how much POKT they have staked. New Sessions get created every 25 blocks with a new, pseudo-random set of Service Nodes.

For each Relay served and validated by the protocol, 0.01 POKT is added to the next block reward. Service Nodes receive 89%, or 0.0089 POKT for each Relay served. As part of the Proof-of-Stake consensus, each Service Node has a weighted chance of being selected to be the block producer for any given block based on the total amount staked for that given node. The block producer is eligible to receive 1% of the entire block reward. The remaining 10% of the block reward is received by the Pocket DAO, providing it with continuous and sustainable funding subject to supporting the continued adoption and utility of Pocket Network.

The optimal economic strategy for node operators is to replicate as many Service Nodes as they can with the amount of POKT they hold, thereby spreading out their POKT holdings. By replicating Service Nodes, node operators maximize their chances of being chosen in as many Sessions as possible, providing them with the opportunity to serve Relays within the network. These incentives promote further decentralization, redundancy and the number of nodes available for each blockchain network supported by Pocket.

Distribution of Service Nodes

While Pocket Network will depend on professional infrastructure providers to provide the bulk of the infrastructure for applications, due to the low marginal cost of running a full Service Node, we expect there to be a long tail of individuals running Service Nodes. There are two primary objectives that the network will focus on to avoid any stagnation in the number of Service Nodes in the network:

- Continuing to lower the barrier to entry for non-technical users to run full nodes by providing clear documentation as well as technical support in the bootstrapping days of the network
- Ensuring that the minimum stake to become a Service Node within Pocket is kept low enough to maximize the number of nodes within the network

Additional efforts to prevent stagnation include supporting distribution channels such as local mining pools through data centers, run-your-own node distribution partners and the Pocket DAO's R&D efforts.

Incentivizing the long tail of individuals running Service Nodes and keeping barriers to entry low is important to keep large node providers honest, and to minimize the odds of having an entire set of Service Nodes in a Session owned by one entity, which could lead to collusion attempts.

Network Overview

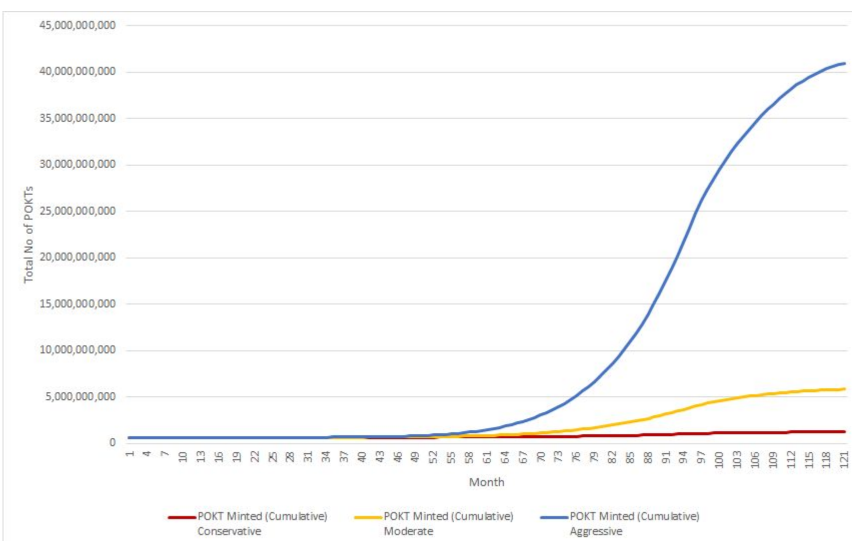
The following provides an overview of the inflation rate of POKT, its total supply and considerations for bootstrapping the network.

POKT per Relay schedule

Rewards per Relay (in POKT) decrease overtime on a tiered basis as the total supply of POKT reaches predetermined milestones. At launch, the total reward per Relay will be 0.01 POKT. Once the total supply of POKT reaches 1 billion POKT, the reward per Relay will drop to 0.001. Once the total supply reaches 2 billion POKT the reward per Relay will drop to 0.0001. From then on, the reward per Relay will remain at 0.0001 POKT unless adjusted in accordance with Pocket's governance mechanisms.

POKT Total supply

The size of the market for Relays on Pocket Network will ultimately determine the final figure for the total supply of POKT.



At network maturity, any new inflation is balanced out by Application stake being burned at the same rate. The rate of Application burn is determined by using indicators such as the decay in the growth of Application and Service Node stake over time.

The total market for Relays captured by Pocket is measured by the total number of POKT in issuance. In the above graph, using the conservative estimate (10B daily Relays) as a baseline, POKT's total supply caps out at around 1.5B POKT in existence.

Bootstrapping the Network

During the bootstrapping phase of the network, we want to ensure that Pocket is secure and has as many individual entities running nodes as possible. We do this by creating an environment where it is simple and inexpensive for initial Applications to access the network, and significantly profitable for Service Nodes to provide infrastructure.

Application usage and traction dictate the initial rewards that the Service Node pool will receive. By decreasing the barrier to entry for Applications (freemium access, low cost), the demand for Relays should be high at launch, providing the initial pool of Service Nodes with ample opportunities to earn the high rate of POKT (0.01 POKT per validated Relay) awarded for Relays serviced in the bootstrapping phase of the network.

As inflation and revenue increase per Service Node, the potential for competition increases, as rational, profit-seeking agents discover the protocol. This creates the flywheel to spur the network effects of Service Nodes purchasing and using POKT to participate until an equilibrium is found.

As the Protocol Throttling Formula adjusts to market demands, Applications being able to purchase more Relays results in more revenue for Service Nodes, further increasing the incentive for existing Service Nodes to re-stake their earned POKT. Increased participation in Pocket Network from Applications and Service Nodes ultimately benefits all parties by providing new revenue opportunities for Service Nodes and improving the service and resilience of the network for Applications. Due to Pocket Network being a permissionless Proof-of-Stake protocol and Service Nodes having an extremely low marginal cost of operation, the barriers to entry are significantly lower compared to Proof-of-Work mining based protocols. Pocket's economic primitives incentivize a diverse set of entities and individuals such as data centers, existing infrastructure providers and hobbyists to participate as node operators within the network.

Conclusion

Web3 applications face a massive barrier to wide-spread user adoption. The reliance on and use of Web2 infrastructure has created an unnecessary cost of coordination for Web3. To make matters worse, reliance on Web2 infrastructure inherently creates centralization in protocols and applications which are designed to be decentralized. For these projects to go mainstream and reach a global scale, the cost of coordination must be reduced. Pocket Network is purpose-built to decentralize and incentivize the infrastructure layer that Web3 applications rely on, alleviating, and eventually obviating, the Web2 tax. This document outlines the economic primitives used to incentivize the coordination of infrastructure through the Pocket Network throughout the entirety of the protocol's lifecycle. The numbers stated in the overview are not final. For further details on the protocol please read the white paper.

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