



Tierion Network Token

July 16, 2017

Background:

Tierion has come a long way since launching the company in late 2015. We've created a product that customers love and have made significant progress towards our mission to build a global proof engine. On July 10th we announced the Tierion Network, a global utility for data verification that operates at massive scale. With this next step, Tierion is transforming from a SaaS company, to a global distributed network.

Business Need:

Running a SaaS business has constraints that make it challenging to build a globally available utility for data integrity, timestamping, and blockchain anchoring. To truly build a global utility requires:

- An always available, distributed network of nodes.
- An economic incentive to run nodes.
- A means to make it possible for anyone to join the Tierion Network without having to ask anyone's permission or enter into a contractual relationship with Tierion.
- A way to make anchoring data in the blockchain cost effective for the Internet at a global scale.

The Future:

We're building a robust global network of Nodes that provides a trust dial tone for the Internet. An ecosystem of applications will use the Tierion Network as a global utility for utility for data integrity, timestamping, and blockchain anchoring. Tierion Network Tokens are used as a payment mechanism for services on the network, and as an economic incentive to maintain the network's uptime and reliability.

The core Chainpoint service will be complemented by several unannounced services that use TNT. Examples include services for securely sharing verifiable data, document notary and archival, and attestations related to blockchain verifiable identities.

Node Operators

Running a Node is like operating your own mini-Tierion. You get a full set of services for creating and verifying Chainpoint proofs that run on computers you control. You don't have to run a Bitcoin and Ethereum node, nor bear the significant expense of paying to anchor data. You simply download the software and acquire a modest amount of Tierion Network Tokens.

Nodes are capable of operating on a \$5 per month VPS server, or as part of a microservices architecture at massive scale.

A Node Operator is typically a company that wants to integrate Tierion as part of its product offering or as a service it provides for internal use. Examples:

- Microsoft is using Tierion to build a service to generate blockchain verifiable attestations.
- Accredible uses Tierion to issue and manage blockchain verifiable credentials
- Cloud storage providers could use Tierion as part of data integrity solution for enterprise customers.
- Clinical research facilities could run a Tierion Node to safeguard the integrity of their research data and documents.
- A SaaS software provider in the healthcare industry could run a Tierion node to integrate Tierion into their product for tracking patient care.

There is an almost infinite number of use cases. Over 1,000 customers have used Tierion's SaaS product in a wide variety of scenarios and industries. Many Tierion customers have expressed an interest in running Tierion on-premise or in a private cloud, but they don't want the hassle and expense of running Bitcoin and Ethereum nodes. These customers will now be able to run a Node, giving them increased performance and satisfying their IT requirements.

Node operators can offer services for a fee using the payment method of their choosing.

Getting Started

Each Node Operator requires a minimum balance of TNT. The node operator can acquire TNT by purchasing it in the token sale, or afterwards on the open market. We want a robust global network of nodes, so the minimum balance for receiving rewards will be set at a low price. Initially, the price will be similar to the price of a mid-range graphics card. This will be adjusted over time as the market price of TNT fluctuates.

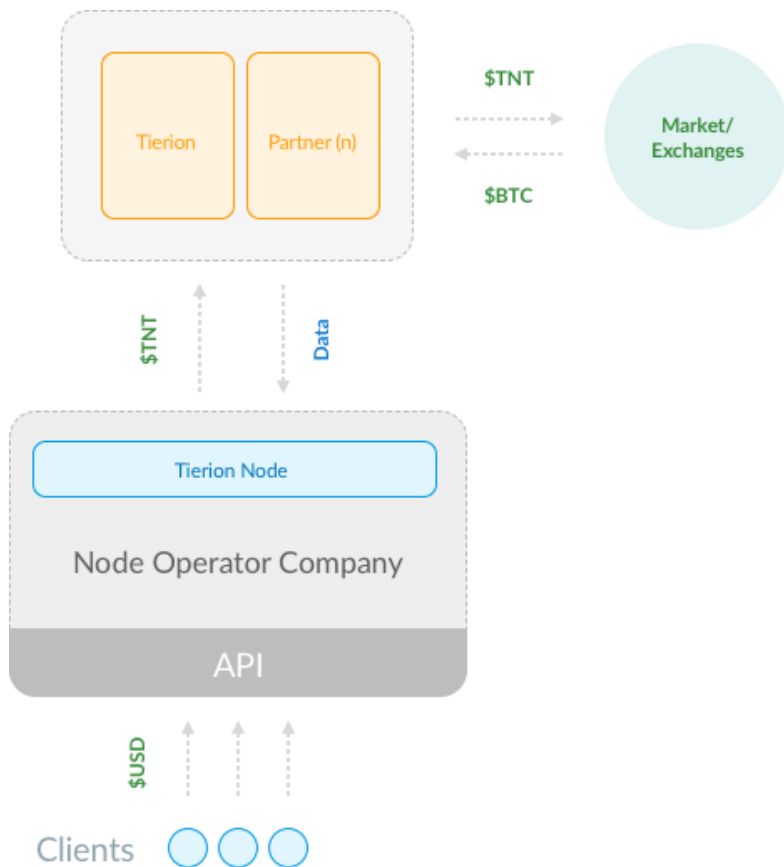
Node Operators that run a public node can earn TNT via the rewards process. This TNT can later be used for anchoring and to maintain the minimum balance requirement.

Operating a Node

Nodes pay Tierion Core TNT to anchor data. Core is a network of partners that run a highly scalable and always available infrastructure. The cost to Core to anchor data to Bitcoin and Ethereum is currently about \$3.50 per transaction and expected to rise. Based on current market prices, anchoring one transaction every ten minutes to the Bitcoin and Ethereum blockchains costs \$181,332 per year, making it far too expensive for most businesses.

With TNT, the cost to anchor data is affordable. Furthermore, each Node has the ability to create many proofs with a single transaction to Core.

Figure 1. Node Operations

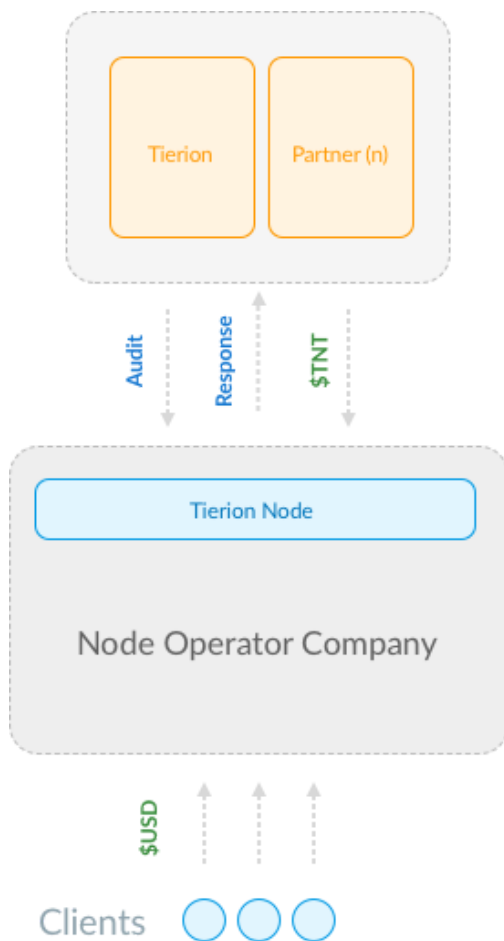


Node Rewards

Node Operators maintain a copy of a blockchain created by Core. This blockchain is called the Chainpoint Calendar. It contains data needed to verify any Chainpoint proof created by any node on the Tierion Network. The Calendar grows at a rate of approximately 4GB per year regardless of the number of proofs generated. This keeps the cost of node operations low.

Nodes mirror Calendar from Core, and are periodically audited by Core to ensure they are providing current and accurate data. A successful audit of a Node gives the Node operator a chance to earn TNT for that reward period

Figure 2. Node Audit & Reward Process



Reward Details

Nodes can earn Tierion Network Tokens for providing part of the Tierion Network infrastructure. To be eligible a Node must:

- register a unique Ethereum address
- maintain a minimum TNT balance for that address
- provide public network services
- pass all audits and health checks from Tierion Core
- have enough credits to send hashes from a Node to Core

The current required minimum TNT balance is 2,500 TNT.

The current required minimum credit balance is 10,800 credits.

The current credit conversion rate is 200 credits per TNT.

The cost to submit a hash to Core is one credit.

These values will be periodically adjusted based on the value of TNT and network activity.

Nodes are audited every thirty minutes. To pass the audit, a Node must be publicly accessible, Node time must be within five seconds of Core time, the Node must have a complete copy of the calendar and valid audit challenge solution, and the minimum credit balance must be maintained. Nodes are required to pass four consecutive audits to be eligible to receive rewards.

Every thirty minutes one of the Nodes that meets all of these criteria will be selected to win the reward for that period. One Core server will be elected to run the lottery for that period. The lottery reward for that period will be divided in the following way:

- 95% to the Node operator address, payable immediately in TNT
- 5% to the Core operator address for the Core Operator that anchored the last BTC block
- Tierion is ineligible to win rewards. If Tierion is selected to anchor, 100% of the reward goes to the Node operator.

The following data will be published into the Chainpoint Calendar:

- The address of the Core anchor creator for the last anchored BTC block as determined by querying the Calendar.
- The address of the winning Node, as determined through random drawing of eligible Nodes.
- The Total amount of TNT awarded for this period.

By publishing these values in the Calendar we provide a publicly auditable mechanism to verify reward distribution.

Rewards are issued every thirty minutes to a Node that passes the eligibility criteria. Three Hundred Million Tierion Network Tokens will be distributed via rewards over nearly eight years. This schedule is divided up into fourteen epochs. Each epoch lasts 200 days and contains 9600 reward periods. Rewards decline 20% per epoch.

In the first epoch, the reward per period is 6,537.16 TNT.

