



node.sys

White Paper

Node.sys

A self-replicating platform for the decentralized Internet of Things

Node.sys aims to create a platform for building a decentralized self-replicating Internet of Things (IoT and IIoT) based on the **Cellframe** blockchain. Node.sys integrates the physical world of things with Web3.

Node.sys is a platform that connects people, companies, devices, cloud computing, analytics and software into a self-replicating, decentralized factory that manufactures products both for the established Internet of Things (IoT) and for the emergent Industrial Internet of things (IIoT).

The goal of the project is to enable people, regardless of their location and at minimal cost, to implement a scalable production system. This system will facilitate the decentralized production of physical objects and devices used in everyday life and industry.

Internet of Things (Internet of Things, IoT) is a system that connects devices into a computer network and allows them to collect, analyze, process and transmit data to other entities through software applications and technical solutions.

Industrial Internet of Things (Industrial Internet of Things, IIoT) is the Internet of Things for corporate and industrial applications. It is a decentralized system that integrates machines, cloud computing, analytics and employees to increase the efficiency of industrial processes.

Introduction

The COVID-19 pandemic caused a global disruption in trade, finance, logistics, health and education systems, business and society. Previously existing supply chains of commodities, materials, and finished products have been disrupted.

Many companies have been cut off from suppliers or customers and faced increasing costs of energy, raw materials, packaging and shipping due to the energy crisis. The effects of the pandemic have affected more than 70% of global companies, some of which have

been forced to close their operations, and many have significantly reduced production volumes and the number of employees.

We see a global problem of lack or inaccessibility of goods and raw materials: price rises and shortages of goods ranging from medical masks and antiseptics to microcircuits, semiconductors and hardware for everyday life. These facts indicate that the global economy was not ready for global threats like COVID-19.

After the lifting of restrictions associated with the global pandemic, part of the production, logistics and trade chains is gradually being restored. However, the risk of shortage of resources and shortage of goods still remains. Many people and companies have financial resources but lack good opportunities to buy raw materials, components and everyday goods. There are long queues and waiting lists for some types of goods.

The pandemic has exposed previously hidden problems and negative aspects that existed in the old supply chains and the global logistics system. Logistics turned out to be a vulnerable link in the global economy. As soon as these chains were broken, world production was gripped by a crisis.

The current situation has served as a springboard to find ways to restore international supply chains and develop strategies to prevent similar problems in the future.

This is how the idea of **Node.sys** arose — a decentralized platform for the self-sustaining Internet of things, thanks to which any supplier, manufacturer and ordinary person has the opportunity to independently provide themselves with parts and products without being dependent on global logistics.

Node.sys aims to create a decentralized blockchain network for the dynamic interaction of people and devices, streamlining the reproduction and self-reproduction of components, parts, real goods and services, and other elements of the decentralized Internet of Things (IoT and IIoT).

NYS, the **Node.sys** native token, is the medium of exchange for an emerging blockchain-based labor market, which acts as a decentralized factory capable of self-replication (DRepRap), as well as manufacturing all kinds of embedded devices for a custom-built Internet of Things. This includes industrial, corporate, and B2B solutions.

DRepRap (Replicating Rapid Prototyper) is a decentralized initiative to create a self-replicating 3D device that can be used for rapid prototyping and manufacturing.

This White Paper will look at the features of the **Node.sys** system and its advantages, as well as the tokenomics model.

Advantages

Node.sys has a number of characteristics stemming from deep integration into **the Cellframe Network ecosystem**:

■ Security

Node.sys uses advanced security protocols such as post-quantum cryptography to ensure that all data stored on the platform is secure and out of the reach of intruders or hackers.

■ Reliability

The platform has been designed with scalability in mind so that it can handle large volumes of traffic without any downtime.

■ Efficiency

Instead of using cloud solutions, **Node.sys** services will be served by specially built energy-efficient hardware nodes in the **Node.sys** network. These machines will also serve to demonstrate possible solutions for future **Node.sys** projects.

■ Transparency

Fully transparent financing, plus flexibility in allocating the funds raised. Thanks to blockchain technologies, crowdfunding can be leveraged to bring to market new devices and goods produced by a decentralized factory.

■ Progressive management methods

As well as transparency in the distribution of responsibilities and profits, can create fundamentally new forms of business, more efficient than traditional ones.

Structure

The **Node.sys** system orchestrates the dynamic interaction of people, devices and software in a decentralized network.



The core element **Node.sys** is a backbone hardware node. This is a ready-made hardware solution based on publicly available components, which can be self-assembled and the device case printed on a 3D printer. The hardware node processes transactions on a decentralized network and generates blocks, thus supporting the blockchain network.

In addition to processing transactions, the owner of a hardware node has the opportunity to earn income by connecting a production device and completing relevant orders. Production devices include sensors, actuators, controllers and human-machine interfaces, 3D printers, machining tools, or industrial assembly and packaging lines.

The user experience for such orders flows through a website and a mobile application. The system is backed by a community of users who, collectively, can manufacture products in volumes comparable to traditional industrial enterprises.

The community can include professionals such as electrical engineers, industrial designers, 3D scanning and modeling specialists, microcontroller developers, low-level programming specialists, as well as almost any user who is passionate about DIY.

The hardware operated by community members can range from basic 3D printers and a soldering iron to complex industrial SLS systems, soldering machines or infrared stations. In fact, the list can include any equipment that a particular person has access to.

Thanks to the high-performance services of the Cellframe ecosystem, the system is scalable while requiring no additional hardware extensions or engineering skills. These scalable, distributed services include a variety of decentralized VPNs, CDNs, file storage, and AI training. Hardware node holders can earn income by being a service provider, depending on the computing power they can offer. Processors, RAM, graphics accelerators, AI modules, hard drive space and bandwidth can all be monetized in this way.

The **Cellframe** network is well positioned to continue to develop and implement a variety of novel solutions in areas such as GIT repositories, virtual machine services, CI/CD services, and file storage.

■ Network (parachain)

Node.sys is a native network in the Cellframe Network ecosystem. All events are recorded internally on a custom blockchain with Proof-of-Stake consensus.

■ Validators

Validator rights are available to master node holders who provide collateral in the form of 300,000 NYS tokens. A collateral delegation mechanism is possible, where the collateral is provided by one user while the master node (validator) is implemented by another user in exchange for 50% of the staking income.

■ Hardware node

Validators run on **Node.sys** hardware solutions, which are specially designed to support the network.

■ Interchain interaction

For communication with other blockchains and networks, Binance Smart Chain is used by default. In the future, interaction with other networks such as Ethereum, Polygon and others will be implemented using the Cellframe bridge.

■ User experience and interface

Users interact with the **Node.sys** platform via the website, the mobile application, and the Cellframe Dashboard. The platform interface includes the following functionality:

- ✓ Registration/authorization of user profiles and hardware nodes
- ✓ Directory of RepRap platform sections
- ✓ Database of customers and producers with a rating of previously completed orders and geolocation
- ✓ Catalog of ready-to-use digital designs for physical objects
- ✓ Encrypted user chat
- ✓ Search and navigation module
- ✓ Voting module

Tokenomics

The **Node.sys** token has a maximum supply of **550'000'000 NYS** with the following distribution:



Pre-Seed
15'000'000 NYS

Advisers
30'000'000 NYS

Hardware RnD
25'000'000 NYS

Pre-Sale
20'000'000 NYS

Reserves
100'000'000 NYS

Software Development
25'000'000 NYS

Factory Incentive
150'000'000 NYS

Validators
55'000'000 NYS

Marketing
40'000'000 NYS

Team
60'000'000 NYS

Staking
20'000'000 NYS

Airdrops
10'000'000 NYS

Max supply: 550'000'000 NYS

Burned tokens: 11'915'005 NYS

Total supply: 67'740'000 NYS

■ Vesting

Pre-Seed tokens are unlocked, while all subsequent rounds and distribution channels will use a token locking mechanism with a vesting period of 24 months from the start of the Pre-Sale. Gradual unlocking of tokens ensures a controlled release of tokens into free circulation, minimizing the risk of a sudden price drop.

■ Burning

50% of the Reserves tokens will be burned by sending to the unavailable default address 0x0 in 4 equal parts on the following dates: July 15, 2027, January 15, 2028, July 15, 2028, and January 15, 2028.

■ Minting

New issuances beyond the maximum supply of tokens can only be approved by a “yes” vote from the majority of current NYS holders.

The distribution of subsequent emissions can be distributed among validators, staking programs, team payroll expenses, as well as marketing and PR expenses.

The total time window for subsequent issues is limited to a period of 10 years, after which all validator rewards and operating budgets will come from income from commissions and service fees within the network.

■ NYS token: use cases

Native NYS tokens on the native network are used for:

- ✓ Payment of network fees
- ✓ Payment for services within the network
- ✓ Use as collateral in production chains where liability is assumed

- ✓ Stakeholder management of the native network
- ✓ Validation and participation in the Proof-of-Stake consensus

NYS tokens on other blockchains can be used for:

- ✓ Participation in liquidity-providing programs
- ✓ Using services from the NYS network or providing them to the NYS network

Conclusion

Node.sys takes decentralized IoT solutions to the next level by connecting manufacturing service providers to their customers directly. Blockchain integration with Cellframe's post-quantum technology enables a new way to organize production chains in a new transparent, decentralized model. By cutting out the intermediaries that significantly affect the cost of a final product, **Node.sys** gains a major competitive advantage over traditional industrial supply chains.

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