

The ThreeFold Grid

Launching end of March 2018

WHITEPAPER DRAFT 0.9.15

Note: This paper is a work in progress. The active soul searching on improving our message continues. The current version can be found at <https://threefoldtoken.com> website. For feedback and suggestions please contact us at info@threefoldtoken.com.

Welcome

We are excited about the opportunity to share this project with you. It is very dear to our hearts because we want to create a neutral, sustainable and greener world. We are thrilled to invite you to join us on this mission to help save the planet by creating a new neutral and more green internet!

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Abstract

The ThreeFold Foundation (“TFF” or “Foundation”) is promoting a new neutral and sustainable Internet, the ThreeFold Grid (“TF Grid” or “Grid”). In this Grid, your data is local to and controlled by you.

To create the TF Grid, the TFF has developed the ThreeFold Token (“TF Token” or “Token” or “TFT”), a new digital currency. The TF Token is a currency with a specific commercial utility, backed by physical Internet infrastructure (compute & storage) and is managed by the ThreeFold Blockchain (“TF Chain”).

ThreeFold Farmers (“TF Farmer” or “Farmer”) generate compute & storage capacity (internet capacity) that is registered on the TF Grid. With ThreeFold’s innovation in core algorithms and without the need for redundant copies of data, the ThreeFold Operating System, Zero-OS, is able to deliver compute and storage to the TF Grid using up to [10 times less energy](#). Internet capacity is produced, purchased and allocated locally - similar to the way electricity and other utilities are purchased today. This allows any digital service or application provider to host their services and applications in proximity to the end user leading to significantly greater performance, a lower price point, and better margins. This solution is both much more cost effective and green. Note that, TF Farmers are independent of the ThreeFold Foundation.

By connecting IT equipment, consisting of storage and compute servers, to the TF Grid and producing IT Capacity a Farmer is issued Tokens from the TF Chain each month. In addition, the Farmer also earns Tokens from selling this Capacity.

TF Tokens are the payment instrument for purchasing compute and storage capacity from the TF Grid at Farmer defined prices on a blockchain-based Directory Service. TF Tokens are distributed on the TF Chain that is linked to a fully decentralized exchange on which users can exchange Bitcoin and Ethereum for TF Tokens.

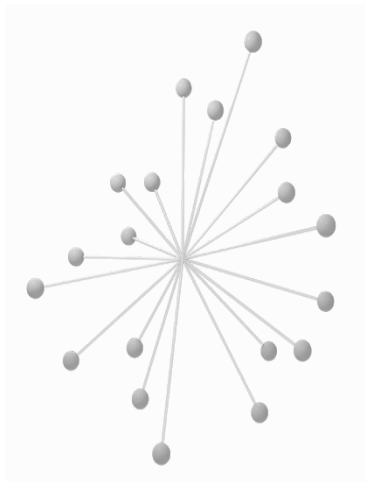
We believe that the Capacity generated using the ThreeFold model and software is capable of changing the world of IT and have an ambitious goal to have more than USD \$1 Billion invested into Farming activities within 1 year.

Mission Statement

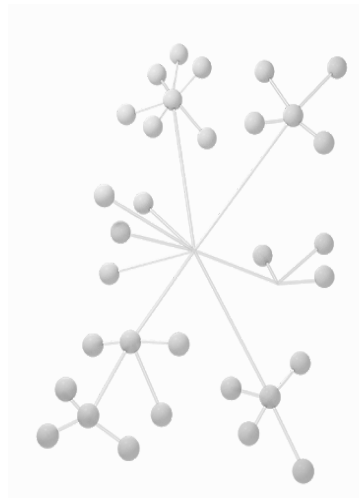
Empowering the new Internet of tomorrow.

The ThreeFold Foundation is bringing internet capacity near to the source of the data (Edge Cloud) by using a “hyper-distributed” network architecture with internet capacity where TF Farmers run efficient computing & storage devices in a decentralized environment spread all over the world.

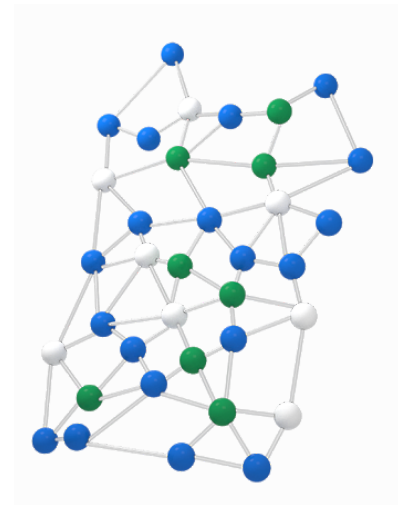
Our goal is to make the Internet accessible for all people; securely, equally and seamlessly through environmentally-sustainable technology.



Centralized



Decentralized



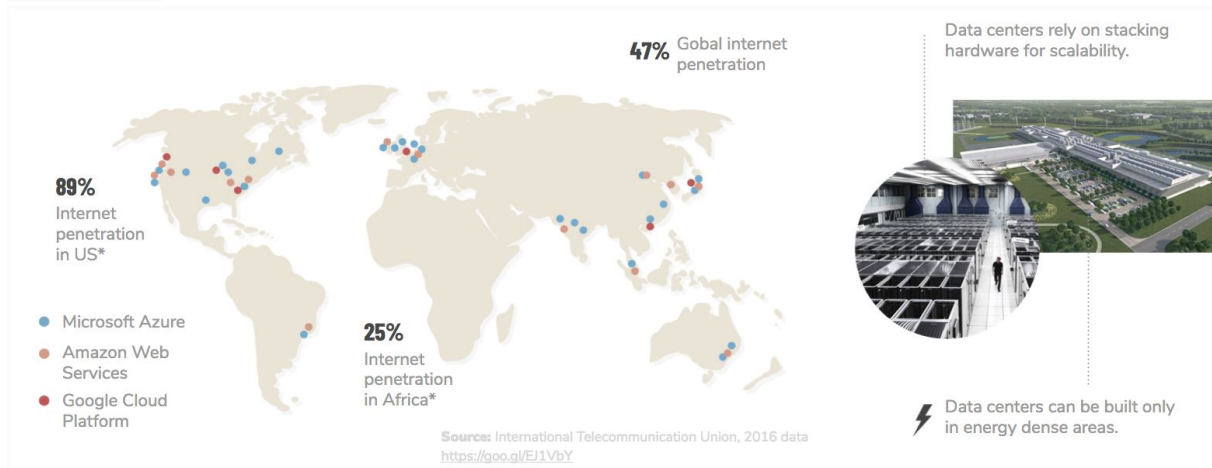
Distributed TF Grid

With the advent of blockchain technology, this type of structure has only recently become commercially feasible. Employing blockchain technology substantially increases the security of the network, significantly lowers the cost of administering and paying for the network and its usage, and enhances privacy. The distributed architecture enables delivery at a fraction of the cost and power consumption of conventional technology.

The distributed nature of the technology allows anyone to host applications (storage or compute bound) close to the end users of that application; no manual interaction with the nodes is required due to the technology’s self-healing capabilities. As a result, it enables up to 10 times better power efficient IT capacity and is more secure.

Background

The spectacular growth and advances of Internet technology over the last decade were due in large part to “hyper-scale” efficiencies (i.e. centralized Internet infrastructure in large multi-billion dollar datacenters.)



However, there is an urgent need to innovate this model. Short-term demand for internet capacity is far outpacing available supply due to new power intensive applications like Big Data, Artificial Intelligence (“AI”) and the enormous volume of devices coming online like the Internet of Things (“IoT”). Current hyperscale data center architecture is not and will not be able to support the increasing demand.

Data centers compute and store massive amounts of data. The data needs to travel back and forth, often thousands of miles, between users and data centers. As demand grows, the data centers would have to accommodate ever increasing data exchange complexity in addition to ever larger data volumes. As such, network infrastructure simply cannot grow fast enough to keep up with the growth of compute and storage demand amid already significant performance and latency issues.

Governments around the world are also becoming ever more concerned about data leaving their borders. In other words, governments prefer Internet infrastructure to be “in country”. For most countries, Hyperscale data centers are based overseas. This exposes a country's' data to third-party intervention. The ThreeFold solution prevents data from being migrated unless expressly authorized.

IoT workloads require local compute capacity integrated with lots of fast storage capacity. Hyperscale data centers are physically too remote and/or too expensive to do this.

There are plenty of well publicized problems concerning security¹, outages² and lost data stemming from the inherently insecure nature of centralized, hyperscale data center architectures with failures at a single hyperscale location causing widespread Internet outages.

Finally, today, data centers consume more than 400 terawatt hours of electricity. This significantly exceeds the total electricity consumption of the United Kingdom or about 3 percent of the global electricity supply, accounting for about 2 percent of total greenhouse gas emissions³. This data center

1 <http://www.informationisbeautiful.net/> - updated September 10, 2017 - <http://www.informationisbeautiful.net/visualizations/worlds-biggest-data-breaches-hacks/>

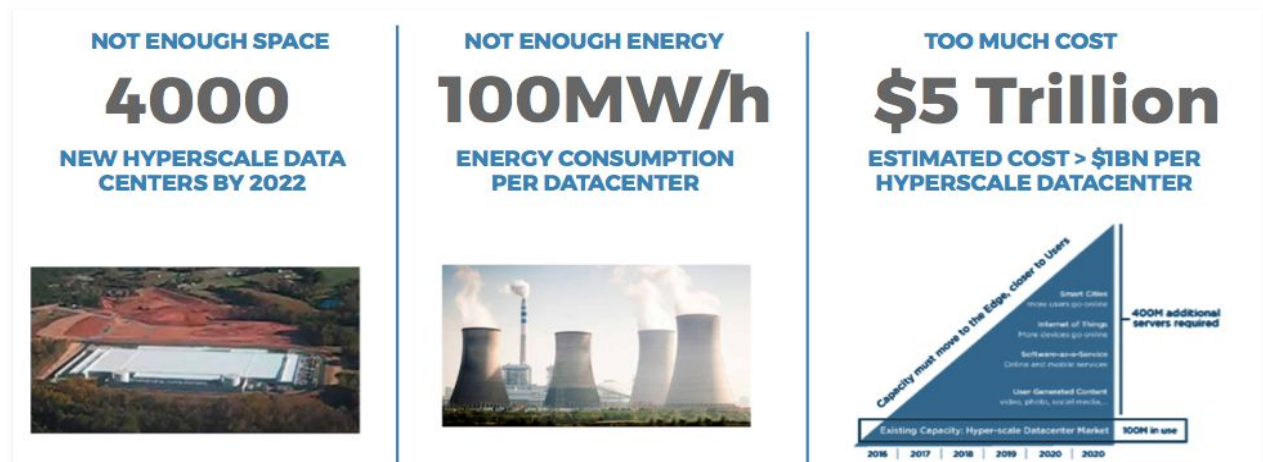
2 Network World [Brandon Butler](#), Senior Editor - March 2, 2017 -

<https://www.networkworld.com/article/3175608/cloud-computing/read-the-full-text-of-amazons-post-mortem-from-its-s3-cloud-brownout.html>

3 The INDEPENDENT - Tom Bawden Environment Editor - January 23, 2016 -

<http://www.independent.co.uk/environment/global-warming-data-centres-to-consume-three-times-as-much-energy-in-next-decade-experts-warn-a6830086.html#commentsDiv>

carbon footprint is comparable to that of the entire global airline industry and would rank 11th highest on a list of all world countries and the electricity each consume⁴.



To meet IT capacity demand within the next 5 years 4,000 new data centers⁵ will be needed. Those would cost an estimated US\$5 trillion⁶ to build and consume additional 400GW/h. This is roughly an equivalent of consumption of the economy of Japan and an insurmountable strain on electricity grids worldwide. This is simply unsustainable.

ThreeFold provides a practical solution that is greener, cost effective and locally distributed..

4 Global Energy Statistical Yearbook 2017 -

<https://yearbook.enerdata.net/electricity/electricity-domestic-consumption-data.html>

5 400 Million new servers needed by 2020 - Think Different or Lose - Mark Thiele - March 7, 2016 -

<https://www.linkedin.com/pulse/400-million-new-servers-needed-2020-think-different-mark-thiele>

6 Data Center knowledge - Nov 22, 2010 - <http://www.datacenterknowledge.com/data-center-faqs/apple-data-center-faq>

World's Top Data Centers - June 2, 2014 - <http://worldstopdatacenters.com/facebook-altoona-ia/> <http://worldstopdatacenters.com/google-lenoir-north-carolina/> <http://worldstopdatacenters.com/apple-maiden-north-carolina/>

Respect The World

ThreeFold believes everyone is entitled to the internet capacity that will allow them to be an integral part of the new digital economy of Edge Computing. All people should have access to education, healthcare and informative resources no matter their economic status or where in the world they are located.

This new distributed digital economy will allow people to work together across country borders, without being a part or a product of a large corporation whose priorities are on the bottom line.

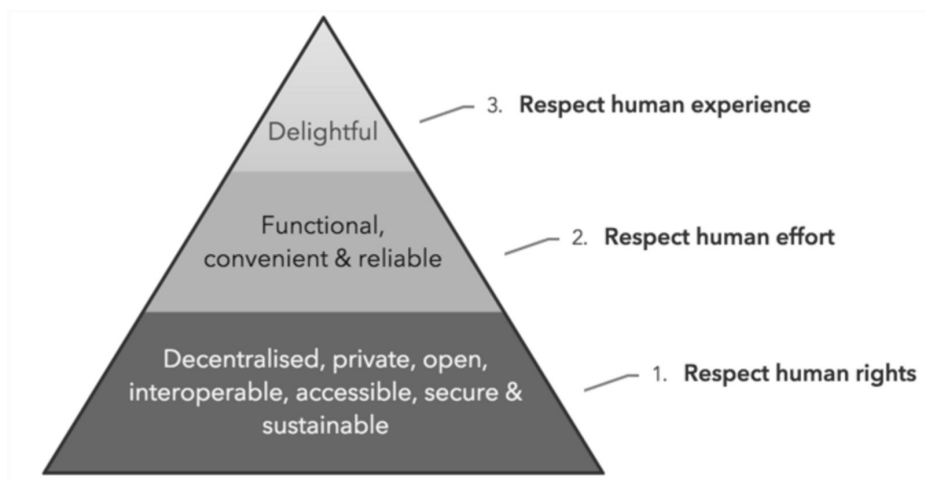
We want the world to be driven by love and respect, not fear and ego. In this same esteem, is how we run the ThreeFold Foundation to be 100% transparent and empower all individuals globally.

Respect Human Effort

The current IT industry is based on complications of technology. Business models have been invented and built around complexity which is ever increasing and growing, creating requirements for trained engineers to administer and operate infrastructure and software. This is expensive, not green and error prone.

We want to create easy-to-use, simple “IT As Energy” solution, where IT can be used just like electricity, i.e. available everywhere at low cost.

Respect Ethical Design



The Foundation and its product to reflect these values, and as such, we underwrite a concept called Ethical Design.

To read more about this please visit our wiki based extranet which has plentiful content on these topics: http://tiny.cc/values_extranet

ThreeFold Foundation & ThreeFold Grid Principles

ThreeFold Foundation is a nonprofit foundation which promotes a new global network of IT capacity. For more details see our website: <https://ThreeFoldtoken.com>

ThreeFold Foundation has created a new digital token, the ThreeFold Token. This Token is managed by the TF Chain. The TF Chain can issue a maximum of 100 Billion Tokens = TFTs.

ThreeFold Farmers ("TF Farmers") are independent, third parties who invest in IT hardware consisting of storage and compute servers (the "Farming Pools") which are connected to the ThreeFold Network ("TF Grid") and are registered on the TF Chain. Each Farming Pool runs the TF Operating System and TF Blockchain Software which allows anyone in the world to use this IT capacity to host their IT workloads (storage apps, archive capacity, web applications, artificial intelligence, IoT, docker containers, etc). To use this IT Capacity, through the TF Grid, people need to own ThreeFold Tokens ("TFTs") as they are the only possible mechanism to purchase this capacity on the TF Grid. As such, TFTs represent a true utility. The Company is independent of the ThreeFold Foundation and wants to become a TF Farmer.

In addition thereto, the ThreeFold Foundation has created a fully neutral and distributed exchange, which runs on top of the TF Chain (the "TF Exchange"). The TF Exchange is neutral and not linked to any organization or company. TFTs can be exchanged for Ethereum ("ETH") or Bitcoin ("BTC") on the TF Distributed Exchange. ETH and BTC can be bought on any public exchange. In addition to using digital currencies a TF Farmer can sell or buy TFTs (for any accepted currency). As such any TFT owner can exchange their TFTs for existing fiat and digital currencies ETH or BTC at any point in time. There are no transaction fees on this exchange.

ThreeFold Foundation is planning to make their TF Chain and TF Exchange public by the end of March 2018. The launching price of the TFT will be US \$0.10 per TFT (initial Farmers have agreed not to sell below US \$0.10 during the first month). After the launch, any person or company in the world can freely trade TFTs for BTC and ETH using their ThreeFold Wallet which communicates with the TF Exchange.

ThreeFold Foundation did not organize an ICO (Initial Coin Offering) and there are no Tokens issued which are not backed by IT capacity. TFTs are exclusively issued (created) by the TF Chain for each active Farming Pool which gets and remains connected to the TF Grid. Such issuance of TFTs is called "Farming", i.e. just like certain cryptocurrencies get "mined". In that sense a ThreeFold Farmer is the equivalent of a miner on the Bitcoin network. In the case of ThreeFold, Farming means the connection of a server and storage hardware (IT Capacity) to the TF Grid and producing useful IT capacity which can be used on a global scale. All connected capacity gets registered on the TF Chain. End of March the TF Foundation estimates that less than 0.5% of the total amount of TFTs will have been Farmed. The first Farming has been done by over 100 Farmers.

ThreeFold Tokens (TFTs) are the only possible means to buy or sell IT capacity as delivered by the Farming Pools through the TF Grid.

The TF Chain issues new TFTs and transfers them to Farmers, for each Farming Pool each month, using the following calculation:

Monthly Issued Tokens (TFTs) per Farming Pool =
average monthly sales price of connected Farming Pool capacity (*)
/ difficulty level

(*) at connection time expressed in tokens

Difficulty level for 2018 is 6. If required the difficulty level can be adjusted with a 80% majority vote of the ThreeFold Ambassadors, by means of the TF Chain.

Because of this mechanism, TFTs are undervalued by a factor of 6. If 100% of this capacity is bought at connection time, then 6 times more TFTs would be required as have been issued. This mechanism allows the token to grow in value while being backed by revenue potential of the TF Grid.

The TF Farmer needs to specify the uptime they want to achieve when they register their capacity in the TF Chain. The TF Foundation expects most pools to achieve an uptime of more than 98%, commercial providers can go as high as 99.9%. The TF Chain will only issue TFTs if the capacity was connected to the internet and was usable during the last month at least up to the specified uptime guarantee; this will stop after 60 months. The TF Chain software will execute these checks on a random basis; these are peer checks done by independent Farming Pools.

Thanks to the unique ThreeFold software the Farming Pools use a lot less power compared to traditional data centers. Internet capacity is produced and allocated locally - similar to the way electricity and other utilities are purchased today. This allows any digital service/application provider anywhere in the world to host their applications near to the users leading to greater performance and overall efficiency; more details in this respect can be found on the ThreeFold website.

ThreeFold's objectives are three-fold:

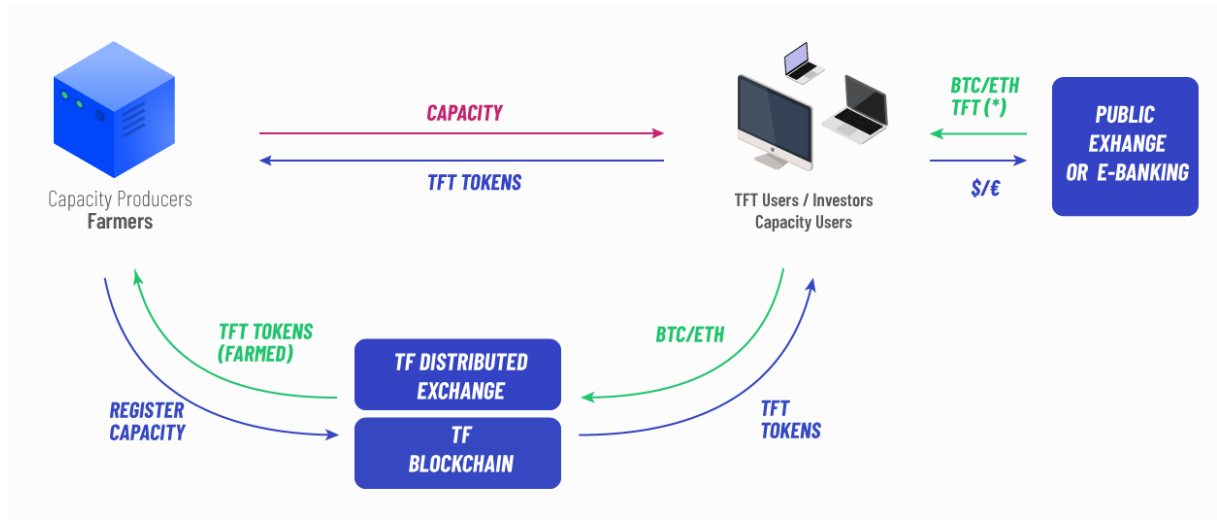
Utility - The TFT is designed to have specific commercial utility as the designated currency for buying and selling IT capacity on the TF Grid.

Green - The ThreeFold Chain Operating System (OS) runs on a decentralized and distributed network of dedicated hyper-efficient Zero-Node (Node) infrastructure, which enables extreme scalability delivered at an extremely low carbon footprint.

Neutral - ThreeFold Foundation aims to build a neutral and digitally responsible world by connecting humanity to a neutral and green internet. ThreeFolds Foundation does not have any shareholders and is not owned or controlled by any other corporation. ThreeFold Foundation is only a promotion organization. All technology used by ThreeFold is open source. All users and ThreeFold Nodes are registered on a blockchain-based identity management platform enhancing security and privacy.

The TF Chain has been built using our technology blockchain stack [Rivine.io](https://rivine.io). It is a distributed, "proof of stake" blockchain. As a multi-chain platform, the TF Chain is not constrained in terms of scalability and slow transaction processing times as others are and does not consume huge amounts of energy for mining purposes and scales indefinitely.

ThreeFold Tokens can be bought from any of the ThreeFold Farmers or by means of Ethereum or Bitcoin using the ThreeFold distributed exchange. The TF Grid will launch at the end of March and the first group of TF Farmers have agreed to sell Tokens at a price higher than US \$0.10 per Token for at least the first month. This ensures a Token launching price of \$0.10. Please contact the ThreeFold Foundation if you would like to purchase Tokens now and we can point you to Farmers who are willing to sell.



Utility-Driven

The ThreeFold Token has tangible, intrinsic value as it is backed by the internet capacity on the TF Grid.

“Utility” means that the TF Tokens can be used to buy and sell the internet capacity and/or products and services on the TF Grid. In this way, the Token’s value is supported by the intrinsic value of the TF Grid.

The community will have access to all metrics of the TF Grid, required to determine its economic value.

ThreeFold Farmers (“TF Farmer” or “Farmer”) are independent, third party, individuals and/or companies who invest in IT equipment consisting of storage and compute servers (“Farming Pools”), thus becoming ThreeFold Nodes (“TF Nodes” or “Nodes”), that are connected to the TF Grid and are registered on the TF Chain.

By doing so, internet capacity is produced on the TF Grid and is sold via the TF Directory (on the TF Chain). Each Farming Pool runs the ThreeFold Operating System, Zero OS, and TF Chain software which allows anyone in the world to use this IT Capacity to host their IT workloads (storage apps, archive capacity, web applications, artificial intelligence, IoT, docker containers, etc).

Note that to use this IT Capacity, through the TF Grid, people need to own TF Tokens as they are the only possible mechanism to purchase this capacity on the TF Grid. As such, TF Tokens represent a true utility.

There are two kinds of TF internet capacity: Managed and Unmanaged.

- ❖ **Managed capacity** is capacity that sits in a datacenter environment where people operate and maintain supervision of the capacity connected to the Grid and published in the TF Directory. SLA (Service Level Agreements) are provided on this capacity like uptime, guaranteed bandwidth, response times, ...
- ❖ **Unmanaged capacity** can exist everywhere; in people’s home, in mobile telephone masts, in utility cabinets, next to railways or motorways, anywhere where internet lines meet electrical outlets. This capacity is deployed to the Grid and has no people involved to manage its operations (apart from the physical aspects). Farmers have no access to the TF Nodes purchased. They can only use the capacity produced in the exact same way as any other user, i.e. through the TF Chain, in a secure private and neutral way, equally applicable to all. Who is responsible for maintaining the unmanaged capacity?

Tokens are only issued on the TF Chain when capacity gets connected to the internet. The TF Chain software validates the capacity of the connected ThreeFold Node and issues new Tokens using the following formula each month:

$$T_{for\ connecting\ per\ month} = \frac{[(CU \times ACPT) + (SU \times ASPT)]}{D}$$

T = number of Tokens

CU = Compute Units deployed

SU = Storage Units deployed

ACPT = Average Compute Unit price in Tokens at the time of connection

(Avg Compute Unit price divided by Token price at connection)

ASPT = Average Storage Unit price in Tokens at the time of connection

(Avg Storage Unit price divided by Token price at connection)

D = Difficulty level = 6 for YR 2018

When selling capacity, Farmers will earn the following amount of Tokens in a given month:

$$T_{tokens\ from\ capacity\ sales\ per\ month} = [(CU \times CP) + (SU \times SP)] \times U$$

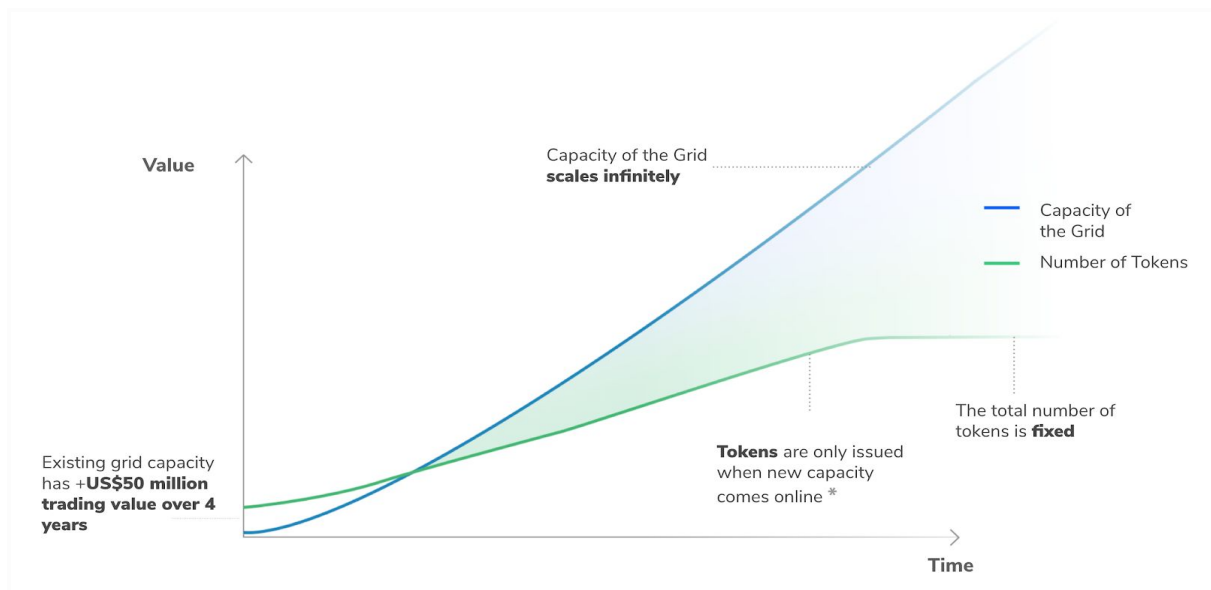
CU = Compute Units deployed

SU = Storage Units deployed

CP = Farmer’s Compute Unit price - expressed in Tokens

SP = Farmer’s Storage Unit price - expressed in Tokens

U = Utilisation



This mechanism guarantees that Tokens are always backed by real internet capacity.

Example:

❖ **Given Parameters:**

- Farmer deploys 1,000 Compute Units (CU) & 2,500 Storage Units (SU)
- Average price defined on the TF Directory is US \$10 for CU & SU
- Token price at initial connectivity = US \$0.20
- Difficulty Level = 6
- Utilization = 50%
- Token average monthly price = US \$0.80

➤ **Tokens per month - When capacity is initially connected:**

- The number of Tokens released for connecting and producing capacity to the grid per month:

$$29,166 \text{ TFTs} = \frac{[(1000CU \times \frac{\$10}{\$0.20}) + (2500SU \times \frac{\$10}{\$0.20})]}{6}$$

- In the above example, the Farmer will receive 29,166 Tokens each month for 60 months.

➤ **Tokens per month - When capacity is sold:**

- The number of Tokens earn by selling capacity per month:

$$19,687 \text{ TFTs} = [(1000CU \times \frac{\$10}{\$0.80}) + (2500SU \times \frac{\$10}{\$0.80})] \times 50\% - 10\%$$

- In the above example, the Farmer will receive 19,687 Tokens per month but only when the capacity was up more than the specified Service Level Agreement e.g. 99.5% uptime during the last 30 days.
- 10% of the Tokens go to ThreeFold Foundation for the further promotion of the TF Grid.
- This has been calculated for unmanaged capacity and not using a ThreeFold cooperative.

How Can You Help?

ThreeFold Foundation is promoting this new Internet, and we need a lot of people who want to help to make this dream a reality. Our ambitious aim is to have more than USD \$1 Billion invested in Farming activities within 1 year.

Farmers

We are looking for people who want to farm IT Capacity for this new Internet.

See the section below about Farmers Business model to see how this would work.

Farmers need to be somewhat technical and be willing to operate a new business.

Farm by using a Farming Cooperative

If you like the model of Farming but do not want to operate your own Farm you can work with a Farming Cooperative. In such a case, you would purchase IT Capacity producing hardware that is operated and monitored by the Farming Cooperative.

The advantage of Farming through a Cooperative is that it gives you piece of mind that your hardware is being attended to at all times; most effectively and efficiently.

With Cooperative there is initial one-time hardware acquisition and setup cost. and there are monthly hosting and management fees. Also, if Farming Managed capacity there would be an additional licensing fee.

Finally, the Cooperative might also charge a percentage in the form of Tokens of all capacity sold.

There are already 2 Farming Cooperatives and others are in the process of being created. Please contact us for more information.

Token Buyers

Tokens can be bought through the distributed TF Exchange starting end of March 2018. If you would like to buy them sooner, they are available for purchase from Farmers that have already farmed them. Please contact us for more information.

Tokens represent internet capacity as such, each Token when issued is by design undervalued in relation to the revenue potential.

Ambassadors

We need people helping us promote our message and help us to build our ecosystem, people who share our values and who want to make the world a better place.

Farmers Business Model

Farmers - Purchase or manufacture ThreeFold Nodes and connect them to the TF Grid to produce IT Capacity. Once this capacity has been validated by the TF Chain, the Farmer is awarded Tokens every 30 days. The Farmer also gets Tokens for selling this capacity via the TF Directory.

Estimated costs and revenue associated with operating an environment is laid out below:

FARMER BUSINESS MODEL - TOKEN SIMULATION		managed (=1) / unmanaged (=0)	1
		use cooperative (yes=1, no=0)	0
Cost (estimates)	Converged	Rack	Container
Investment Cost of environment (hardware + install)	\$34,408	\$231,632	\$2,556,440
Cooperative / TF Foundation - Setup	\$6,882	\$46,326	\$511,288
Power/Rackspace Cost - over 60 mths	\$18,553	\$52,082	\$446,977
Management (est) - over 60 mths	\$12,000	\$120,000	\$300,000
Maintenance on Licenses & Upgrades GIG	\$13,763	\$92,653	\$1,022,576
Total Cost over 60 months	\$85,606	\$542,694	\$4,837,282
Farming/Mining (at point of connection)			
Token Price at Point Of Connection	\$0.10	\$0.10	\$0.10
Capacity in Compute Units	116	1,040	8,341
Capacity in Storage Units	258	2,041	25,617
Sold in Network Units	15,214	122,851	1,447,667
Avg Price Compute Units	\$20	\$20	\$20
Avg Price Storage Units	\$15	\$15	\$15
Avg Price Network Units	\$0.10	\$0.10	\$0.10
Tokens Mined	618,288	5,141,334	55,107,922
% of capacity sold over 60 months	60%	60%	60%
% price erosion (over the years of avg pricing)	20%	20%	20%
% license fee to GIG (only for managed)	20%	20%	20%
% transfer to Farming Cooperative & ThreeFold Foundation	10%	10%	10%
Income from IT Capacity	\$179,663	\$1,484,485	\$16,250,829
Income	Converged	Rack	Container
Token Price averaged over 5 years (60 months)	\$0.80	\$0.80	\$0.80
TF Tokens Proceeds from initial Farmed Tokens	\$494,631	\$4,113,067	\$44,086,337
TF Token Proceeds from selling IT capacity	\$179,663	\$1,484,485	\$16,250,829
Total Income over 60 months	\$674,295	\$5,597,553	\$60,337,167
ROI = Return On Investment	15.33	19.14	18.67

Please note, the above model uses estimates for the cost of the hardware and installation as well as for the utilization and potential price of the Token. Your individual results may materially differ from the above. As such, please click [HERE](#) to link to the above Sheet and use your own parameters to make your own assessment in this regard.

Technology

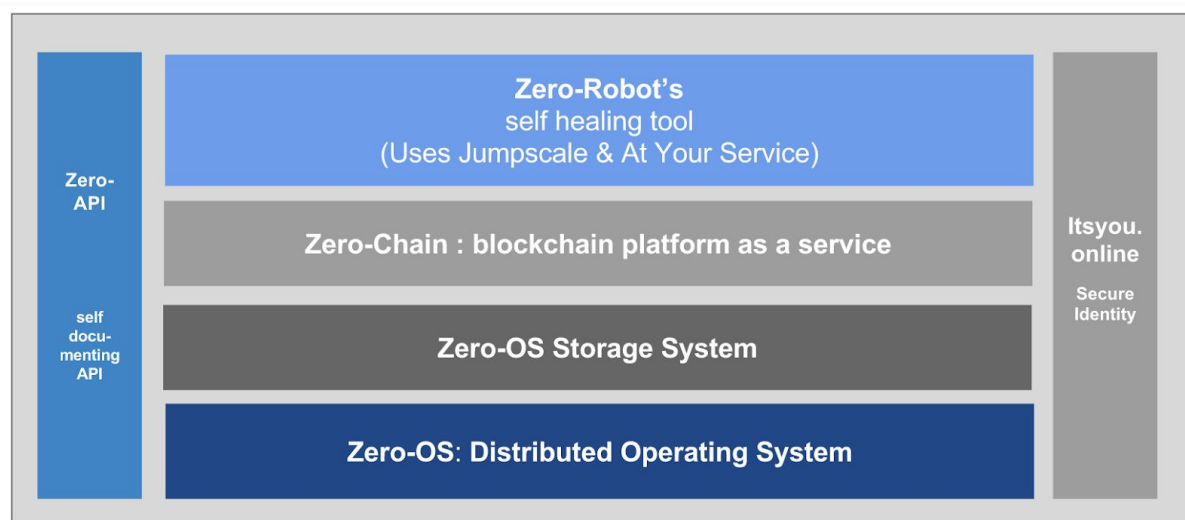
ThreeFold Foundation creates, promotes & uses open-source technology. Our sister company [GIG Technology NV](http://www.gig.tech) (www.gig.tech) has been actively developing components of the core technology of the ThreeFold Grid for the past 10 years which are all open-source.

There are three building blocks of our technology:

Zero-OS is a stateless operating system which enables distributed hardware to form the TF Grid which generates IT storage and compute capacity.

Zero-Robot is a self-healing Intelligence system which controls and operates the TF Grid without the help of people and reserves, procures and executes workloads on the grid using our Jumpscale and At Your Service automation platform.

Zero-Chain is our blockchain framework which along with our identity management platform, ItsYou.online (<https://itsyou.online/>) enables user authentication, access control, provisions secure workloads and provides better security.



Please click [here](#) for details.

Zero-OS = Stateless Operating System

The global TF Grid is composed of thousands (eventually millions) of nodes (called Zero-Nodes) distributed geographically running our operating system called Zero-OS.

To manage this complexity a stateless operating system is a requirement, such a system avoids upgrades, has no local filesystem or many of the other complex layers you would find in a standard operating system like linux. This OS has no human user interface components like UI or Shell Console, only API's which are used by the Zero-Robots.

Benefits:

- **Performance:**
Lightweight Operating System ("OS") without overhead for running bare-metal machines. This means there are no complex install procedures required, just a thin efficient software layer on top of hardware.
- **Private:**
No data left behind when workloads move from one node to another.
- **Distributed:**
Capacity is generated without the need for data centers at The Edge (which means as close as possible to where end users use the internet capacity)
- **Highly-available:**
Any of the Zero-Nodes running the Zero-OS can go down without impact of the applications running on top of the TF-Grid.
- **Portability:**
Moving software from one node to another within the Grid is easy.
- **Secure:**
Much less layers & open-source software deliver better security.
- **Green:**
Advanced algorithms and less overhead (less layers) result in very low node power consumption (upto 10x benefit).
- **Integrated storage system:**
Block & Object based storage systems which selfheal, autoscale & are fast enough for any scale out workload.

This technology is available today and can be found on our [open-source repositories on github](#).

Zero-Robot = Self-Healing Technology

Zero-Robots are intelligent virtual (no humans involved) system administrators which guarantee the uptime, security and performance of the TF-Grid.

The purpose of the Zero-Robots:

- **Self-Healing:** Zero-Robots are smart enough to deal with all kinds of expected issues like broken hardware, sites being disconnected from the internet, resource overload situations (e.g. overload of CPU or hard disks almost full), and will rebalance the workloads without causing downtime.
- **Data-driven decisions:** Zero-Robots capture information from the Grid and make data-driven decisions (measurements leads to knowledge).
- **Lifecycle Management:** the status of the infrastructure and the running applications is checked and recorded throughout their lifecycle
- **Autoscaling:** The platform automatically scales to meet application and infrastructure performance requirements

Today our Zero-Robot technology can recover large majority of issues, some manual interventions are still required. By End 2018 we aim to be 100% self-healing and Zero People will be required to manage the TF Grid.

This technology is available today and can be found on our [open-source repositories on github](#). Jumpscale is a framework we have been working on for more than 10 years.

Zero-Chain = Our Blockchain Framework

Our Zero-Chain is a set of blockchain technologies which are today used inside our TF Grid and invisible for the user at this point.

Purpose of The Zero-Chain:

- Secures the communication between users of the TF-Grid and the Zero-Robots.
- Not based on proof of work makes it green.
- Scalable new algorithms for distributed databases as well as smart contracts.
- Can work on record level which leads to faster transaction times & more clear structure which leads to more simplicity & security.
- Secure Execution Environments will allow developers to develop blockchain workloads which can be written in many programming languages.

All our work is open-source and can be found on [github](#).

Foundation Structure

The ThreeFold Foundation is a Non-Profit organization registered as a Dutch Antilles Stichting (Foundation) and run by a professional management team but without shareholders or beneficiaries. It acts as a bootstrap marketing organization for the ThreeFold Ecosystem (“TF Ecosystem” or “Ecosystem”) which is building a new neutral and sustainable Internet.

The Foundation is made up of ThreeFold Founders, ThreeFold Evangelists, ThreeFold Ambassadors (Promoters).

ThreeFold Foundation Objective

For the Foundation to reach a new neutral and sustainable Internet, the Foundation’s objectives are threefold:

- ❖ **Utility** - The ThreeFold Token (“TF Token” or “Token”) is designed to have specific commercial utility as the designated currency for buying and selling internet capacity on the TF Grid. The Foundation issues, manages and supports TF Tokens as the universal payment instrument. The Foundation’s objective is to make TF Tokens the preferred medium of exchange of the Internet IT infrastructure.
- ❖ **Green** - The Zero Operating System (“OS”) runs on a decentralized and distributed network of dedicated hyper-efficient TF-Node/Cluster infrastructure, which enables global scalability delivered at a low carbon footprint, down to one tenth of the current norm.
- ❖ **Neutral** - We aim to build a neutral and digitally responsible world by connecting humanity to a neutral and green Internet. All of our technology is open-source; the TF Foundation is a Non-Profit organization; and all users and TF Nodes are registered on a blockchain-based identity management platform to create a secure and private environment for trading.cy. The Foundation does not have any shareholders, issues no dividends, is not owned or controlled by any individual or company.

The Foundation’s long term objective is to migrate The ThreeFold Token firmly into the mainstream as a currency to be used to purchase IT and other services.

ThreeFold Make-Up

The Foundation is structured around four different Parties: The Founders, Ambassadors, Evangelists.

The Founders

The Founders are entrusted with day-to-day running of the Foundation. They are tasked to guide the marketing efforts and communication with the general public and prepare regular updates for the Ambassadors and Community at large.

Ambassadors

Ambassadors are the public figures of our global movement and have broad experience in many fields and industries. Ambassadors are passionate about the Foundation’s values and vision. Ambassadors serve as TF Foundation role models by promoting the Foundation to their vast influential network.

Evangelists

Evangelists are passionate individuals who share our values and promote the Foundation to the community at large. They serve an important role in spreading awareness of the ThreeFold Foundation to all corners of the globe.

Marketing Effort

- ❖ **Community engagement** - Since all of the software we use is open-source, feedback and contribution from the developer community plays a crucial role in subsequent development. Architects increase stability, trust and understanding of this technology by engaging the community.
- ❖ **Developer programs** - Stimulate proliferation of applications running on the TF Grid, e.g. developers worldwide would be able to apply for free capacity.
- ❖ **Strategic partnerships** - Partner up with educational institutions to propagate new conceptual thinking in the IT community.
- ❖ **Engineering meetups and roadshows** - spread knowledge about the TF Technology and its capabilities.
- ❖ **Development of more components** for the TF Software stack.
- ❖ **Quality assurance** (security, code quality, performance) of the software stack.

Who are we

See [our team](#) on our website.

Kristof De Spiegeleer



[LinkedIn](#)

Kristof is a humanist & motivated entrepreneur, passionate to help make the world a better place. He knows a thing or two about cloud computing and IT too!

([LinkedIn](#))

Owen Kemp



[LinkedIn](#)

In all walks of life, Owen looks for an equitable exchange of value and believes in doing everything in a socially responsible way.

Once described as an “optimist and anarchist” – he has humour and enjoys doing things in an unconventional way.

([LinkedIn](#))

Willem Hendrickx



[LinkedIn](#)

Willem has over 20 years of experience in roles at global ICT firms and a magician of sales and marketing.

([LinkedIn](#))

Baker Yanicelli



[LinkedIn](#)

Baker has worked with companies in the cybersecurity, fintech, telecoms and trade finance sectors including a Google-backed satellite access startup where he led a \$1 billion+ capital raise. Prior to ThreeFold Baker spent 15 years with major investment banks working on IPOs, financings and mergers and acquisitions.

([LinkedIn](#))

Andreas Hartl



[LinkedIn](#)

Andreas has been building new brands and successful teams for more than 15 years. Of course our German guru also supports the most successful German football team - Bayern Munich.

[\(LinkedIn\)](#)

Georges Georgiou



[LinkedIn](#)

Enjoys empowering people to succeed in work and in life.

Georges has over 20 years of experience in the area of Accounts and Finance and in multiple countries and business fields. Soccer Coach and soccer crazy.

[\(LinkedIn\)](#)

Adnan Fatayerji



[LinkedIn](#)

Adnan is a true believer of the power each of us hold within to make a difference in this world. He is a Vegan, health “nut” and Spartan Dubai legend.

[\(LinkedIn\)](#)

Sophie De Maesschalck



[LinkedIn](#)

Sophie has over 10 years of experience in technology incubation, international financing and mergers and acquisitions. She is currently the CFO of GIG Technology and GIG Holding.

[\(LinkedIn\)](#)

Geert Audenaert



[LinkedIn](#)

Geert is head of Engineering at ThreeFold Foundation and GIG Technology.

He is a programming and open-source enthusiast and leads our software development labs in Gent, Cairo and Dubai. [\(LinkedIn\)](#)

Jan De Landtsheer



[LinkedIn](#)

Jan is our CTO platforms at ThreeFold Foundation and GIG Technology. He was CTO at Incubaid as for the past decade.

Incubaid was a disruptor in the tech scene after having successfully exited a portfolio of 6 high-value exits. He hacks open-source software and Linux operating systems to simply make them different and better.

[\(LinkedIn\)](#)

Pierre Van Hoorebeke



[LinkedIn](#)

Pierre is group legal counsel at ThreeFold Foundation and GIG Technology.

Pierre has over 15 years of experience as a corporate and IT lawyer, assisting founders, investors and private companies on corporate, commercial and IP matters. He is specialized in venture capital and private equity transactions, mergers & acquisitions, corporate restructurings and license deals. [\(LinkedIn\)](#)

Nickolay Babenko



[LinkedIn](#)

Nickolay is an engineer, crypto-entrepreneur and investor and bhakti-yogi. Having 11 years of experience in the IT industry and 4 years specifically in blockchain industry, Nickolay is eager for new opportunities to make people happier in general and with the help of technology in particular. Previously to joining Threefold he co-founded one of the first bitcoin payment processors and multi-currency wallets.

[\(LinkedIn\)](#)

Virgil Illian



[LinkedIn](#)

Virgil is a researcher and innovator who is always looking to improve the world around him both on a macro and micro scale. For the past 11 years he has been working with new technologies, helping organizations integrate them into their existing services and create their new products.

He holds a PhD in autonomous robotics, artificial intelligence and reliability. Virgil also lectures at a technical university and an academy.

[\(LinkedIn\)](#)

Frank Vuijsters



[LinkedIn](#)

Frank loves to innovate and let people grow; he has over 30 years of experience in Strategy, Finance and Analysis within the telecom industry. Enjoys helping start-ups to improve and increase the growth and enjoyment of their work. He has an own company, Bfrank-Analytics, which incorporates the very same values of Threefold. His background is Econometrics.

[\(LinkedIn\)](#)

Weynand Kuijpers



[LinkedIn](#)

Weynand is a rocket scientist that loves slingshotting new technologies into orbit. He has been working with teams at the start of the internet in Europe and therefore spent the millennium celebration in a data center. First follower, team player and very passionate about bringing equal opportunities to young talent around the world.

[\(LinkedIn\)](#)

Elena Anfimova



[LinkedIn](#)

Elena has over 20 years of work experience in finance and business development. She is a co-founder and CEO of Crelia Capital, an alternative funding platform for Emerging Markets. Elena is an avid social dancer, her most recent favorite is Kizomba, an Angolan tango.

[\(LinkedIn\)](#)

Stela Suils Cuesta



[LinkedIn](#)

Stela is a firm believer that it's possible to do business from the heart. She is a passionate team builder and thrives in challenging situations. She has over a decade of organizational experience and hands on project execution.

She is a very active member of the community and organises TEDx events as well as Lean In Circles, and mentorships programs.

[\(LinkedIn\)](#)

Lucien Lecarme



[LinkedIn](#)

Lucien is a writer, tango dancer and passionate freedom adventurer. He left his life in Holland working as a fundraiser and arts-manager when he fell in love with Ibiza. Here he is on a mission to empower people through his retreats, coaching and love of hiking.

[\(LinkedIn\)](#)

Roel van Sabben



[LinkedIn](#)

Roel is an advertising art director turned marketer with a knack for knowing what makes people tick. From concept to the metric dashboards and anything in between is what he loves doing. He's a work hard, but mostly work smart type of guy taking from his passion Brazilian Jiu Jitsu the lesson on how to use energy in the most effective way.

([LinkedIn](#))

Sabrina Sadik



[LinkedIn](#)

Sabrina is the first one to crack a joke and keep everyone's spirit up, but she's also a bit of a control freak when it comes to work (she's the same at home but doesn't like admitting that). Keeping the administration on point and making people smile is what she's all about.

([LinkedIn](#))

Thank You

Thank you for reading our White Paper.

We hope that we were able to give you a sense of how we intend to realize our mission of a better, safer and greener world for all. Please join us in this opportunity to change the world. Together, we can make a huge difference for ourselves and billions of others and help save the planet in doing so. It is all about optimally enabling easy access to technology for all citizens of the world. We believe the time for change is now!!

Should you have any further questions, please kindly refer to our Frequently Asked Questions at <https://threefoldtoken.com/faq/> or feel free to contact us through chat on our website which is available at <https://ThreeFoldToken.com>