x42 Protocol

A Blockchain for Entrepreneurs, Programmers and Investors

Summary

Application publishing is something that has been somewhat streamlined over the years, but with a high cost, to the point that small developers frequently get cut out of the publishing process due to budget constraints and other similar limitations. One such problem is the processing power required for hosting applications, not even accounting for the network traffic cost involved with applications that download and upload large amounts of data.

x42 Protocol allows regular users to launch applications that would normally require big publishers to host them at a much higher cost; be those decentralized applications (DApps) for your cell phone, PC, Mac or even single-board computers like the Raspberry Pi. The x42 protocol allows anyone that is creative and driven enough to launch any type of project for near-zero cost, and without any transaction fees after that, if the developer chooses to go that route.

DApps like maps, search engines, smart grids and smart retail are just the beginning of what this platform can do; x42 can also run games, control other types of technology connected to the blockchain, coordinate large scale operations, and even possibly control blockchain-enabled smart vehicles.

Another interesting aspect of the x42 Protocol is that the core development team is focused on scalability, whether by running nodes on a mobile phone or even enterprise hardware for large applications, our blockchain allows for any and all users to choose what type of application and server selection is best suited for them, giving greater freedom when producing and coordinating secondary projects around the x42 Protocol blockchain. When your application becomes more popular and profitable, it is easy to incentivize more users of the network to host the software you've developed, so they will do the hard and costly work of hosting and allow you to focus on the development of your project at all times.

x42 Protocol allows for that and much more; not only will you be able to launch any type of software you choose, but you will also be able to make it completely decentralized by allowing it to be hosted on PCs, centralized servers and virtual machines all over the world via a reputation and rating system, any and all x42 users will be able to help you in the hosting of your software, independently of where they are located in the world.

Many businesses and security-minded users want or need privacy enabled platforms to keep their client data safe, and personal information out of the public eye. The x42 protocol blockchain allows for private transactions to be signed, executed and maintained secure by the network.

x42 Protocol will not limit the developer on the programming language, there are x42 recommendations, but they *are not constrained to any particular language*. A developer can write the app in C#, PHP, C++ or any other language the developer deems necessary or comfortable. This is a great improvement for DApps and blockchain in general, since it will allow for maximum innovation by removing all limitations linked to development languages and their interactions.

What is Blockchain?

Blockchain is a decentralized digital ledger technology in which all transactions between users are recorded in a chronological and public manner. This technology was first devised by a figure known as *Satoshi Nakamoto* (an alias for an unknown entity, person or

team) who was responsible for the idea that gave birth to the blockchain and subsequently to Bitcoin.

The blockchain is an unchangeable chronological digital ledger which allows for basically any kind of record to be kept, be that related to cryptocurrencies, assets, games, DApps or any kind of software developers can come up with.

This ledger is hosted by a network of nodes which will certify, sign and distribute each and every transaction made within that network. Each block is only generated when linked and certified to be part of the same network that created the previous block, that way an unbreakable chain is formed, wherein the older the block, the more signatures it has.

The longer the chain, the stronger it is, and the harder it is to take it down because it is decentralized by its very nature; to the point of near impossibility when it reaches a certain threshold of users. Taking the example of Bitcoin, the first functional decentralized cryptocurrency, the only alternative nowadays to take the Bitcoin blockchain down in a somewhat permanent manner would be to shut down the entirety of the internet, and even then, transactions would be possible via private keys and local networks to some extent.

Blockchain ledgers are a great option for a resilient form of data storage and transference; the technology allows for instant records to be made and updated in a very clear and defined timeline.

What is the x42 Protocol?

x42 is a decentralized proof of stake cryptocurrency with maximum supply. This platform allows anyone to host applications of a wide range, this goes anywhere from small indie developed digital card games to large entrepreneurial projects that span dozens of facilities all over the world.

The main idea behind x42 is to be a scalable solution for any developer that wants to launch applications with minimal initial investment, using the x42 Protocol coin with zero transaction fees within their main network applications.

The protocol works around a main blockchain which holds all the x42 individual coins, decentralized applications may transact information off this main blockchain, creating what is known as an off-chain solution.

The network layer (xServer or server layer) of x42 has three types of xServers and several wallet software options. All of the them transact

The main blockchain of the x42 protocol has a maximum total supply of forty-two million coins (42,000,000 x42) that will be fully minted into existence around the year 2042. Every transaction is final, timestamped and will be registered to the blockchain ledger. Like every other blockchain x42 allows for the use of explorers, those can be used to browse any and all transactions.

Any project will be able to publish their application on the live store as long as they follow the given integration guidelines.

The core development team also provides a test network for all users that wish to test their developed apps before launching them on the main network.

x42 - Key Features

a. Why x42?

x42 is undoubtedly a great option for both new and proven developers to publish anything they desire in a fast, cheap and secure manner without going through any unnecessary hindrances. You could feasibly launch any type of application without owning a single x42 coin, if you were willing to put the time in.

The x42 protocol can also be used as a near-instant, feeless, and easy to use option for those who need a viable alternative to fiat currency, whether that be in countries with declining economies and devaluation, maybe even hyperinflation of their national fiduciary currency, or in countries that are flourishing with a strong economy; x42 can be used in any and all environments as a means of exchange of value with or without the interference of a third party.

b. Zero Fees for Transactions

x42 Protocol is meant to be used by everyone, so the main blockchain is completely free of any transaction fees. All block rewards will use proof of stake as a block validation method to sign and allow for new transactions. This will allow for any project that requires from one (1) minute transactions to instant transactions by utilizing deposit/withdrawal within their app without having to worry about transaction cost bottlenecks and allowing the focus to be entirely on the creation of a great final product.

c. Proof of Stake and xServers

Any user with at least a thousand units (1,000) of x42 can host an xServer Tier I, which will seed the entire blockchain and help in the development of the network itself, while being paid in the form of newly generated x42 coins according to the percentage of coins they hold when compared to the rest of the network (network weight). Every user can stake their coins; there is no need to host a server to stake. The more coins you have, the more you will generate until the last one is minted. Before, during and after that xServer owners will also get a portion of the revenue generated by the hosted application product(s); the percentage of revenue shared will be chosen by the application developer, and the xServer owner will have to actively choose what applications to host to get this shared revenue.

d. Cold Staking

x42 has fully integrated two cold staking systems and the support needed to gain more coins passively just by hosting an xServer or delegating your balance, in a secure manner since the balance never actually leaves your wallet, to an active xCore multisignature wallet that is allowing other network users to use its services.

You can find a guide on how to setup this xCore service and how to delegate your funds here.

e. Infinitely Scalable Outwards

Developers will have the ability to choose their database needs, using the tools provided by x42 they can scale their data over multiple T1 servers making it decentralized and internal off-chain transactions to be processed in real time within the application and not affected by x42 mainnet network congestion. This basically creates a temporary ‘bridge’ of information between the client user and the xServer host, allowing for extremely fast data download and upload.

f. Transactions per Second (TPS)

Currently the x42 main blockchain supports around seventy (70) transactions per second, but the common bottleneck of TPS does not affect x42 as applications can be designed with x42 development tools to send and receive as many transactions as the developer deems necessary.

The x42 main blockchain already supports over ten times the number of transactions compared to what *Bitcoin* is capable of as at the writing of this document.

xServer will provide a level 2 solution for running DApps off chain, there are many benefits to this, including not relying on the blockchain for each transaction. This allows for real time applications to transact without relying on the blockchain, and more specifically on block times.

g. Initial Investment to publish DApps

x42 allows developers to publish with the app store, and choose to share none, all or a percentage of their fees with the hosting xServers. By paying these servers as the application gathers revenue, not needing to invest nearly as much as was traditionally required, this initial cost can feasibly be zero if the developer is talented enough.

h. Control over Publishing

xServer owners can choose to host projects. If you do not agree with a particular development team or project, you can choose not to host their product or even discontinue your hosting support in the event you were already doing so. The process is very simple and by giving the choice to xServer owners, great projects will flourish very quickly. Projects that share more of the generated revenue with xServer owners will also more likely be hosted quickly and maintained by the same and even new servers for much longer periods.

Architecture and Development

The platform itself allows for near infinite freedom when it comes to publishing, creating an environment where DApps can be published to the x42 application store easily, and hosted

by other node owners. If the developer chooses, they can create their own development tools, or use x42's, for decentralized processing of the various applications published.

The x42 protocol is a two layered architecture:

1. ***xCore*** - This is the default application for the end users. This interface allows for the management of the x42 wallet, and the initial use case for the x42 features such as the x42 application store, identity for reputation, easy publishing for developers to publish their apps and more.
2. ***xServer*** - Main component for hosting the public nodes for the x42 blockchain, hosting applications, also providing network-wide price lock and profile creation capabilities, as well as private transaction processing. This layer is the backbone of the x42 economic model and *long-term sustainability*.

Block Validation

x42 uses proof of stake as a coin generation method as well as validation for newly generated blocks. This is a very environmentally friendly way to maintain the blockchain, while also securing it against attacks. This is useful because any user or organization can take advantage of running an xCore and the nodes needed for their own blockchain without the need for extra hardware.

xServers owners will be able stake their coins and generate new ones proportionate to the amount they are currently staking (until the total supply is created), they will also receive a percentage of all DApps they are hosting, also fees generated by priority and private transactions according to the type of xServer they host.

- *Why Proof of Stake and Not Proof of Work?*

Proof of work (Bitcoin's mining and block validation method) is quickly proving to be wasteful both in electricity and specialized electronic equipment.

The x42 team believes in a greener world, so we decided to utilize the proof of stake method to generate new coins and validate blocks, by choosing that path, new coins can be generated by any device running a wallet and signing transactions; there is no need for expensive application-specific integrated circuits (ASICs) equipment or overpriced graphics processing units (GPUs).

x42 - Staking Reward Structure

Proof of Stake rewards paid twenty (20) x42 per block found until block four-hundred thousand (400,000). Those rewards were lowered to two (2) x42 per block, from block to four hundred thousand and one (400,001) until block twelve million one hundred fifty-five thousand two hundred thirty (12,155,230), after that users will only receive rewards from hosting any tier of xServer or DApps.

Staking rewards will no longer be available after the max supply has been achieved and that point will most likely be reached in the year 2042.

You don’t need an xServer to receive staking rewards as xCore software allows for any balance to be unlocked or delegated to make use of staking at any point in time. Staking will not commence automatically, however; only after the wallet is unlocked and has a positive balance on it the staking unlock option will appear.

The incentive to continue creating and processing blocks after the max supply has been distributed is for the xServers to process transactions for the applications they are hosting, and a public service to the chain. The extremely low cost of creating blocks makes this economically viable part as a small function along with gaining fees from various different avenues provided by x42.

Nodes

Simply put, the term *Node* is used for a *computer connected to a blockchain network and running a wallet software* that shares the consensus mechanism to maintain and validate various aspects of the x42 protocol.

Any device connected to the x42 network and seeding the main chain is considered to be a node.

All our node clients have an auto-updater system built in, so our users always have access to the most up-to-date technology and security patches.

xCore

A xCore node is any device that is running the xCore software, has the entire blockchain saved and is connected to the x42 main blockchain. The xCore node will seed the main chain to all users, allowing lite clients to run, and it also has all the functionalities of a client node. The xCore wallet can stake coins on the main blockchain, and also delegate cold staking balances to register xServer nodes. It can also run applications hosted on xServers all across the network after having it installed on the local machine.

The xCore client is also able to receive delegation requests from other xCore users using its cold multisignature wallet. This method of staking allows users to keep their wallets completely offline with the balance delegated to an online and staking xCore client off-site.

Standard Wallet

This hot wallet can be used to send and receive x42, utilize price locks and delegate funds to both types of cold wallets.

This type of staking keeps all funds connected to the internet and *this type of staking is not advisable*.

Delegated Wallet

This wallet allows for the delegation of a secure key (that gives no access to your funds) to an off-site staking *xCore* multisignature wallet. This allows any user to securely stake their funds while keeping their delegated balance offline.

The delegation of funds path is advisable to anyone who wants to stake their funds and does not want to host an xServer.

This is x42's preferred way of staking your funds if you don't intend to host an xServer, a guide on how to delegate your funds securely can be found here.

xServer

The x42 blockchain allows for the support of several types of servers. The xServer is a special type of wallet software that runs on dedicated hardware to allow for the decentralization of applications (DApps), processing, data storage and validation.

xServers run not only those types of processes; they will also support the network by signing transactions, propagating network information and allowing for the server owner to both get paid and pay for hosting applications of the most diverse types.

Collateral Cold Storage Server Wallet

The x42 collateral wallet is able to stake its balance in a much more secure manner, since the funds are kept offline, and it is also responsible for holding the collateral for the xServer, and all of the servers staking rewards will be paid out to this wallet.

This multisignature wallet will be used for signing and verifying important changes to the xServer and applications.

***Hot wallets shouldn't send funds to this wallet**, it only accepts delegation via the xCore interface to setup new xServer*.

What is xServer?

xServer is a piece of software designed to host decentralized applications and get secondary or even tertiary streams of coin generation due to DApp hosting. This special wallet allows the xServer owner to choose the desired application, and Tier.

Additionally, an xServer owner has the freedom to no longer host a project they do not desire to support.

How does hosting work?

A primary initial consideration will be what type of hardware is going to be used for hosting. For example, a raspberry pi has very limited hardware, and might not be able to host even the basic xServer properly, regardless of whether it can host a full node without any major issues. On the flipside, a very powerful latest generation rack-mounted server may have a lot of unused and available hardware processing power, which will allow for the hosting of many more applications when compared to the more limited raspberry pi.

Each and every application being hosted will have different resource requirements. Some will require almost no resources at all, while others will likely require considerably more resources. So, the more processing power the xServer owner has available, the easier it will be to increase the number of coins generated by DApps. Differences in resource requirements can range from bandwidth, RAM, CPU processing or even disk space for larger cloud-like applications like the aforementioned map applications or games.

A forward-thinking xServer owner with limited resources will choose very carefully what to host to maximize coin generation via the hosted applications.

What will be required of the xServer owner?

The owner will need to lock a set number of coins to register an xServer to the x42 server network:

- Tier I requires one thousand (1,000) x42
- Tier II requires twenty thousand (20,000) x42
- Tier III requires fifty thousand (50,000) x42

This collateral will stay in the owner's xCore wallet, but it will be locked in a multi signature transaction between their wallet and the xServer wallet, which can be unlocked at any time.

While the collateral is locked, this gives you the opportunity to host an xServer to the network. Deciding to host a server is a commitment to the network, and rewarded by receiving fees for services that your specific xServer provides to other network users.

Fees collected from an xServer will be paid to the "fees address" that can be specified during registration.

If the current collateral is lower than the required coins in the collateral cold wallet, the xServer will be unregistered from the network.

If the xServer is offline past the grace period, it will be removed from the network and will have to be registered again.

The server owner will also be required to provide a virtual private server (VPS) or personal computer with a recommended minimum four (4) GB of RAM with a *stable wired internet connection* and an updated Windows or Linux operating system.

This PC or VPS doesn't need to be dedicated only to the xServer, but you will be required to have full control over the machine's ports in the router and firewall settings. No hot transferable funds will be held in this machine.

Tier I – 'The Backbone'

This will be the most common type of xServer, as it is the easiest, and cheaper, one to acquire. Tier I servers require one thousand coins (1,000 x42) to be locked on the main blockchain.

Along with xCore, this is the backbone of the entire x42 protocol blockchain, it will be the most widespread type of server to be hosted, and likely the tier that puts out the largest amount of processing power.

Capabilities of the Tier I xServer:

- All the capabilities of xCore, including staking
- Hosting of DApps

Tier II – 'The Profiler'

The Tier II xServer will require twenty thousand coins to be locked (20,000 x42) on the main blockchain. This server will provide several useful types of services to the entire network.

Capabilities of the Tier II Server:

- All capabilities of the Tier I Server, including staking
- Identity system (x42 Profile)
- *Reputation system (to be implemented at a later date)*

Identity and Reputation System

Every user that chooses to do so can register a unique identity on the x42 network. A permanent alias is then linked to a wallet they own, and these aliases will be propagated and permanently recorded to the blockchain, by sending a registration request to every T2 xServer currently connected to the network. As new servers join in, they will also make a copy of this registration from the existing ledger databases.

That registered wallet will have a unique alias linked to it, and that handle can be used not only to make transactions, payments, name your xServer and to interact with DApps that use it, but also to grade other users and services (to be implemented at a later date).

This registration is going to cost five (5) United States Dollars (USD) in x42 coins at the moment of registration on the main network. This profile is permanent and it will not expire in any manner, although the user is responsible for the security and seed works linked to that particular wallet. Users will be able to blacklist profiles and xServers, essentially excluding them from your personal network.

The registration fee will be sent to the first Tier II xServer owner that processes the registration and authenticates it to the rest of the network, this fee is equal to five (5) USD in x42 minus one percent (1%), which is the T3 fee for the price lock.

Tier III – 'The Spy'

The Tier III xServer will require fifty thousand (50,000) x42 to be locked. This type of server will provide a unique and useful service to the network: anonymous priority transactions. This service will have a fee determined by the xServer owner, and will allow every type of wallet to make anonymous transactions by just checking the 'Private Transaction' option.

Capabilities of the Tier III xServers:

- All capabilities of the Tier I Server, including staking
  - Creation of Price Locks
  - *Private transactions (to be implemented at a later date)*

Price Locks

Any user of the x42 blockchain can request price locks to be created for payments, xServer registrations, Profile registrations and other services. This price lock temporarily freezes the perceived fiat price of x42 for a fifteen (15) to sixty (60) block period (which roughly translates to fifteen minutes to an hour). During that period a payment ID (PID) will be created and available to the entire network, and this PID it will not let the x42 or fiat value fluctuate until the price lock timer is expired.

This system can be fully implemented to any website, and this allows for payments to be made in x42 in real time. *This system is completely decentralized*.

That not only means that users will be able to send the equivalent of rounded values in any of the supported fiat currencies (thirty-seven are currently implemented, with more to come), but also not have to worry about mistakenly paying more or less than what was requested.

Any user who chooses to host a T3 xServer will be rewarded with one percent (1%) of every transaction that requires a price lock, the first T3 to pick up that request will receive the entirety of the fee.

Wallet Technology Details

The wallet technology is Hierarchical Deterministic (HD) that can use key words to create and restore all keys in your wallet, the x42 technology is also completely open source, our GitHub link can be found here.

There is an x42 consensus definition on blockcore that can be used for the on-chain transactions. Services can use this for any on-chain transaction for wallets.

Specifications and Scalability

The specifications of the x42 protocol's main blockchain are as follows:

- Approximately seventy (*70) transactions per second*;
- 1 megabyte block size maximum (averages out at a maximum of *2,500 transactions per block*);
- A new block is generated roughly every 60 seconds (*sixty seconds block time*);
- 42 million total minable coins by the proof of stake validation method over a twenty-four (24) year period (difficulty adjustments occurred at block 400,000, changing the reward for each block to 2, down from 20 x42 per block).

x42's main blockchain only maintains the coins and transactions.

Most exchanges of information and data will occur in the application layer (off-chain) of the xServer network.

Developers can choose to use the main chain or off-chain solutions for their requests, be those deposits or withdrawals of x42, although finalized coin transfers will always be saved to the main blockchain.

Using the off-chain solution is only really limited by the processing power of that particular application. A developer could feasibly have over one trillion transactions per second, if the developers had a product with the need and processing power from the hosted xServers.

x42's off-chain solution is very flexible in what can be achieved, especially when taking into account talented and driven programmers.

All applications running on an xServer will require some processing power from the host machine, which in part is used to secure all transactions going through that server and all applications.

The more applications you host, or resource heavy apps, more CPU, RAM, hard drive space and network bandwidth it will be required; internet stability is a necessity for any xServer, and we highly advise users to host their servers, be it a VPS or physical machine, in data centres or similar providers.

Conclusion

The x42 protocol is a great option for developers of any size, no matter if you are a single person team or an enterprise with a global presence, anyone can make use of this platform and get something productive out of it. It offers a great all-in-one protocol for developers of any kind that desire to learn and use a new system that allows for development, publishing and maintenance of the software without having to use several different platforms.

The main idea behind this platform is to give the tools to anyone that wants them. The x42 protocol core development team strived to make a solid, upgradable blockchain so that everyone can have access to the means that wouldn't necessarily be there if this platform did not exist.

The scalability of the x42 blockchain allows for near infinite application. Our team will develop initial DApps to prove out functionality and to serve as an example.

We hope to see several useful applications running on the network and allowing this blockchain protocol we are so passionate about to flourish in the way it deserves.

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