Xuma.network

Database Integration Whitepaper

February 2019

A few words

Hi everyone.
We are happy to present you this new paper. It has been a long journey with many obstacles but we have good news coming up for this year.

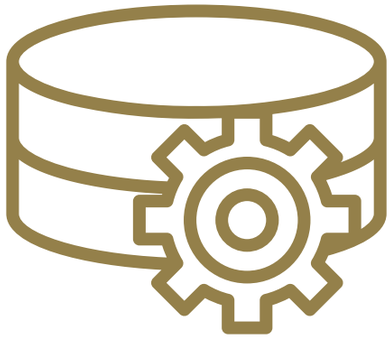
Today we would like to present to you our new **Database Integration Whitepaper**. It took some time to be able to gather the knowledge that we have now after testing and researching but we are now certain we have the good elements.

We have decided to pay the fee asked from Cryptobridge so that everyone who had funds there would be able to retrieve and trade them using this platform again.

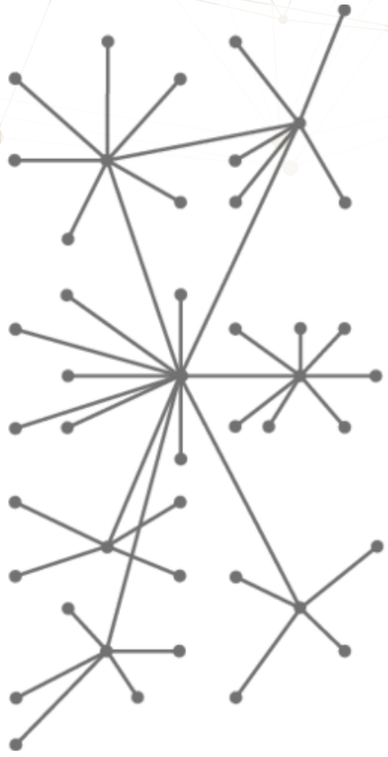
We are calling on the community to help us fund the 0.35 BTC left to achieve this goal, if you wish to participate please send your donations to the following adress:

33VShhvT75hiuZ7weFNmzKJYQr41bggF8G

Content



The Goal



Decentralization

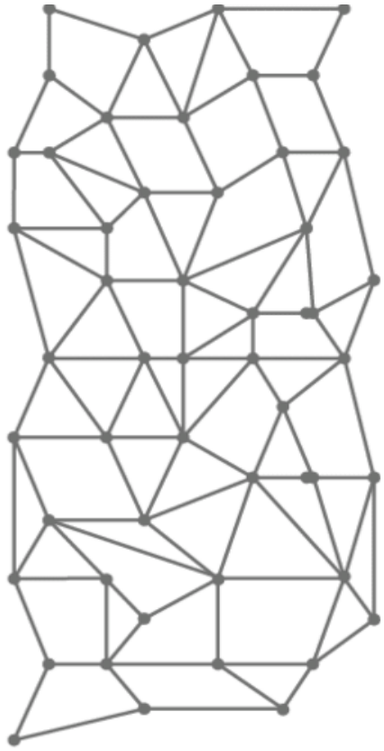
We want to create a global and decentralized Database Service with access to anyone through the XUMA-Blockchain.

This Database should have acceptable Performance and Compatibility-Level and should be used for different tasks i.e. for dApps, Websites and much more.

The possibilities such a tool could offer are endless and would achieve a next step towards efficient online storage, allowing everyone to get the benefits of true decentralized online services.

Together with the IPFS (InterPlanetary File System) you may be able to host a whole Website completely decentralized, imagine the possibilities!

The Challenge



Improve

Databases are legion out there, even decentralized. But no Project was found to take the best from both worlds, Crypto and Database.

Databases are accessible not only over localhost (127.0.01) like many mysql/mariadb instances. Opening access to other hosts or to everyone is a huge security issue if the authentication is done only via username and password combination.
Of course, there are many Authentication methods out there like SSL-Certificates, RADIUS, Kerberos or PAM but all will eventually overwhelm a dApp Developer, or are simply not applicable because of their difficulty to implement. We assume that a dApp Developer does often not have the resources or just can't setup the needed amount of Nodes necessary for a good working and failure-consistent workload.
This is not acceptable, there must be a easier and safer path.

Authentication via XUMA-Blockchain

Trust

To gain trusted access to the Database we will use the XUMA built-in sign and verify commands.

Assuming the private key has remained secret and personal to the legitimate user, digitally signing data / documents offers the following general benefits:

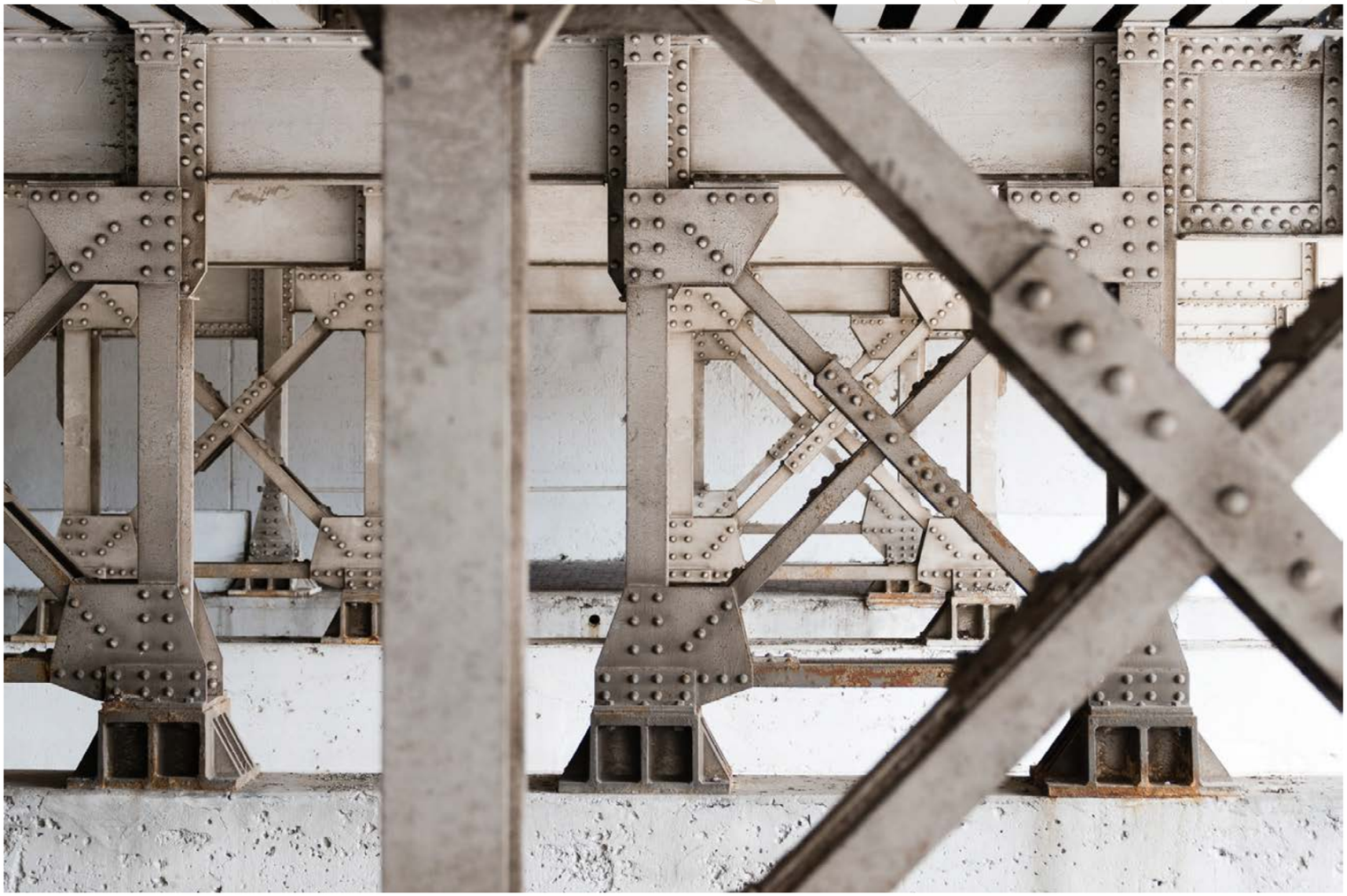
Authentication
Since the individual's unique private key was used to apply the signature, recipients can be confident that the individual was the one to actually apply the signature.

Non-repudiation
Since the individual is the only one with access to the private key used to apply the signature, he/she cannot later claim that it wasn't him/her who applied the signature

Integrity
When the signature is verified, it checks that the contents of the document or message match what was in there when the signature was applied. Even the slightest change to the original document / data would cause this check to fail.

For XUMA, we will use the **Authentication** criteria.

Using a decentralized Database



We will not reinvent the wheel but instead build with strong and efficient tools.

After a long and hopefully complete market analysis (thanks to our Team-Members) **we came to the conclusion that the best choice is to use the Open-Source variant from Cockroach LABS® Database.**

This Database is fully decentralized and can scale automatically. It is PostgreSQL-Compatible and the main big goal for us is, that it has a working json-API we can use to reach our goals.

The Open-Source variant has some fewer features than the Enterprise Edition but we plan to compensate with other open source tools like Docker, Kubernetes, Grafana and Ansible.

Bring both together

First of all we must implement the Authentication-Features so that you can access the Database with a Xuma-signature.

Once done, the next step is to add quota and different performance tiers:
If your Server meets certain criteria you will get the appropriate amount of XUMA-Coins for running the Database along with your XUMA-Masternode.

A big task will be to access the servers not only via IP's. **We plan to implement a own dns-like system to be failure tolerant if some of the nodes become unavailable.** We plan that the Database-Content is replicated at a minimum on 3 nodes so that 2 nodes can be offline and you will be able to have access anyway.

Conclusion

There is still a lot to do but we now have the commitment to the technical parts and can start to code. We are still searching for talented and committed Developers.

If you are interested to commit to this idea, contact us at **http://xumacoin.org** We are also reachable via the discord app or telegram (links on last page).

Thank you !

XUMA

www.xuma.network

https://t.me/xumacoin

https://discord.gg/PjafBAk

twitter.com/XumaOfficial