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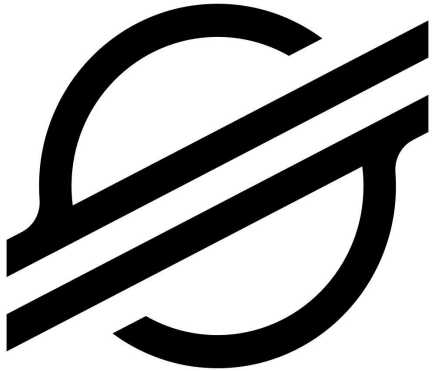
Stellar & Lumens

By Will Munson

What is Stellar?

- Stellar is a crypto-management company that, unlike Bitcoin and Etherium, does cryptocurrency in a way that makes it easier to transfer different fiat currencies (the US dollar, British pound, Euros, Yen, etc.)



What are Lumens/What do they do

- While the company has multiple currencies built on its platform, Stellar also has its own built-in currency, called Lumens (XLM).

What do Lumens do?

The Lumen serves as a stabilizer for currencies all around the world. Basically, Stellar created lumens with the intent of developing a cryptocurrency you could actually use in the real world.

Right now, the minimum balance is 1 lumen and the minimum per-transaction fee is 0.0001 lumen

What’s the purpose for the Lumen?

Lumens were created to serve as an arbitrary currency for Stellar, with the sole purpose of being a fast and efficient payment system. Unlike most cryptocurrencies, Lumens serve as a currency that acts as a balance between other world currencies.

Stable Coin

Stable Coins are digital currencies that are less unpredictable, similar to that of your standard fiat currency (such as the US Dollar). As the name implies, this type of currency offers price stability and security.

In fact, Stellar was built specifically for the purpose of developing Stablecoin cryptocurrencies for fiat currencies across the globe.

Consensus Algorithms

Consensus algorithms are used in order to prevent potential risks in transactions, and help come to a consensus on how to properly manage the transaction.

For example, in the event of a partition or misbehaving nodes, the progress of the node is halted in order to reach a conclusion on how to go forward with the transaction.

Misbehaving nodes are halted to ensure that the rest of the servers are running efficiently

Consensus Algorithms

Stellar’s Consensus Protocol (SCP) has four key properties:

- Decentralized control
- Low latency
- Flexible trust
- Asymptotic security

Consensus Algorithms

Standard Byzantine Agreement -

The Byzantine Agreement can be made in case one of the nodes suddenly decides to [illegally] change their vote.

In the usual Byzantine Agreement, say we have N nodes. Assume N = 3f+1 for some f>0. Here, we assume that at most f nodes are faulty. These protocols involve a voting system with a quorum size of 2f+1. So if there are N = 3f+1 nodes, then any two quorums of size 2f+1 must overlap in at least f+1 nodes, which leads us to one non-faulty node.

Consensus Algorithms

Federated Byzantine Agreement -

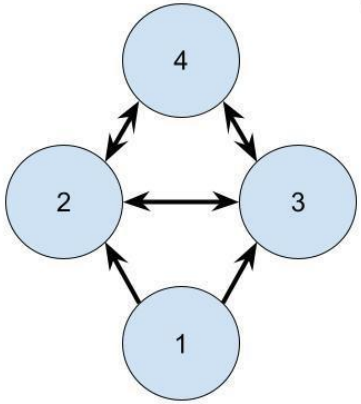
Federated Byzantine Agreement is used in a setting where you don't have universal agreement on who all the nodes are or how trustworthy they are.

We take a quorum slice and if the whole quorum slice agrees on something, then it must be true.

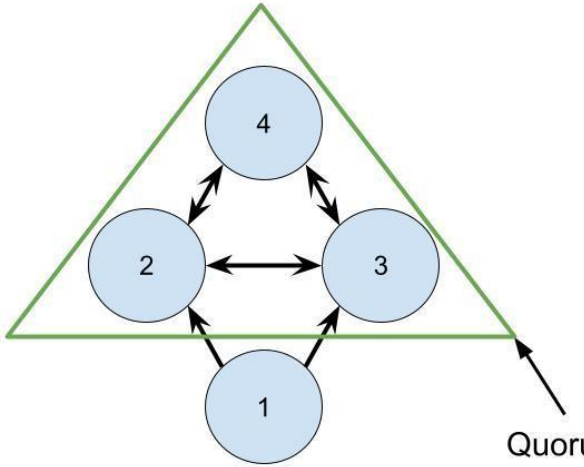
The Federated Byzantine Agreement System (FBAS) is of a set of nodes V and a quorum function Q, where Q(v) is the set of slices chosen by node v, and a quorum $U \subseteq V$ is a set of nodes that contains at least one slice of each of its members: $\forall v \in U, \exists q \in Q(v)$ such that $q \subseteq U$

Consensus Algorithms

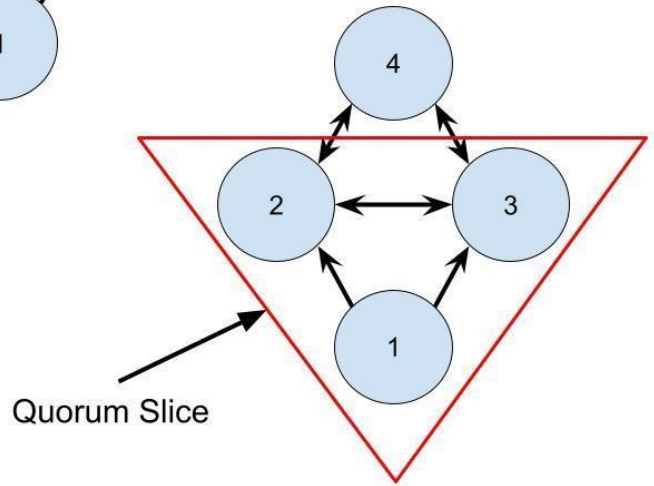
Q(1) = {1, 2, 3}
Q(2) = Q(3) = Q(4) = {2, 3, 4}



Here, the nodes in the green triangle can all agree with each other, therefore they are a quorum.



Here, the nodes in the red triangle do not all agree with one another. 1 agrees with 2 and 3, but neither 2 nor 3 agree with 1, so this is a quorum slice.



Stellar Blockchains

Stellar’s Blockchain system is different, in that it connects to real-world endpoints, allowing customers to turn their digital currency into something they can actually spend.

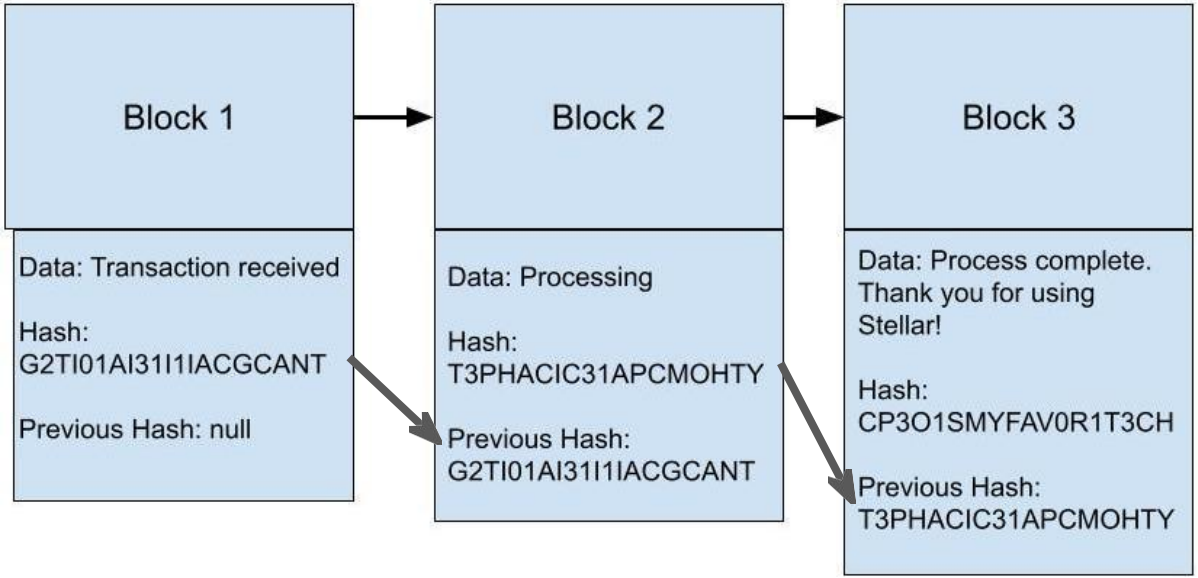
Basically, the blockchain system works like an arch, where the hashcode holding two blocks together in the chain represent the keystone. If the hash code in the blockchain is altered, the whole blockchain falls apart, as not only the first link in the hash will have to be altered, but so do the following hash links after that.

Stellar Blockchains

Let’s say this is our blockchain

The stone at the top is the hashcode holding this together.

How to code a blockchain



Stellar Partnerships

While there are a lot of cryptocurrencies built on Stellar (which we will talk about later), there are multiple companies who have partnered with Stellar in order to either invest in their product or help small and medium businesses connect to one another.

Some of these partnerships include:

Stellar Partnerships

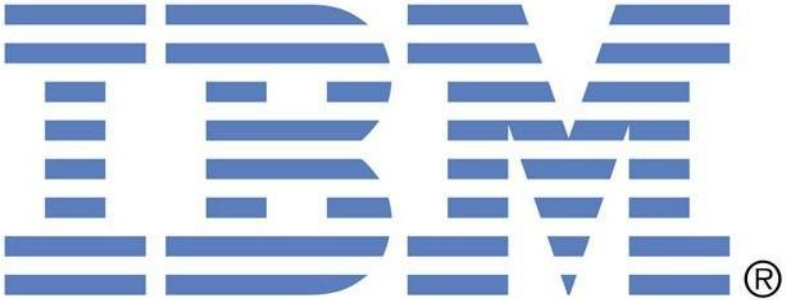
Revelry -

A development shop for business that utilizes Stellar-based systems. It uses the blockchain technology to help businesses.

Stellar Partnerships

IBM World Wire -

IBM worked on a pilot program with Stellar to connect financial institutions with Stellar via a public network in order to perform faster, more efficient ways to distribute money with other institutions.



Stellar Partnerships

Anchorage Digital -

A financial custodian that supports cryptocurrencies like Lumens.

Stellar Partnerships

SIMBA -

A blockchain network for cryptocurrencies, including Stellar. This platform is used for issuing Stellar-based assets.

Stellar Partnerships

Kapilendo -

An investment bank based in Germany that helps small and mid-sized banks issue security token offerings.

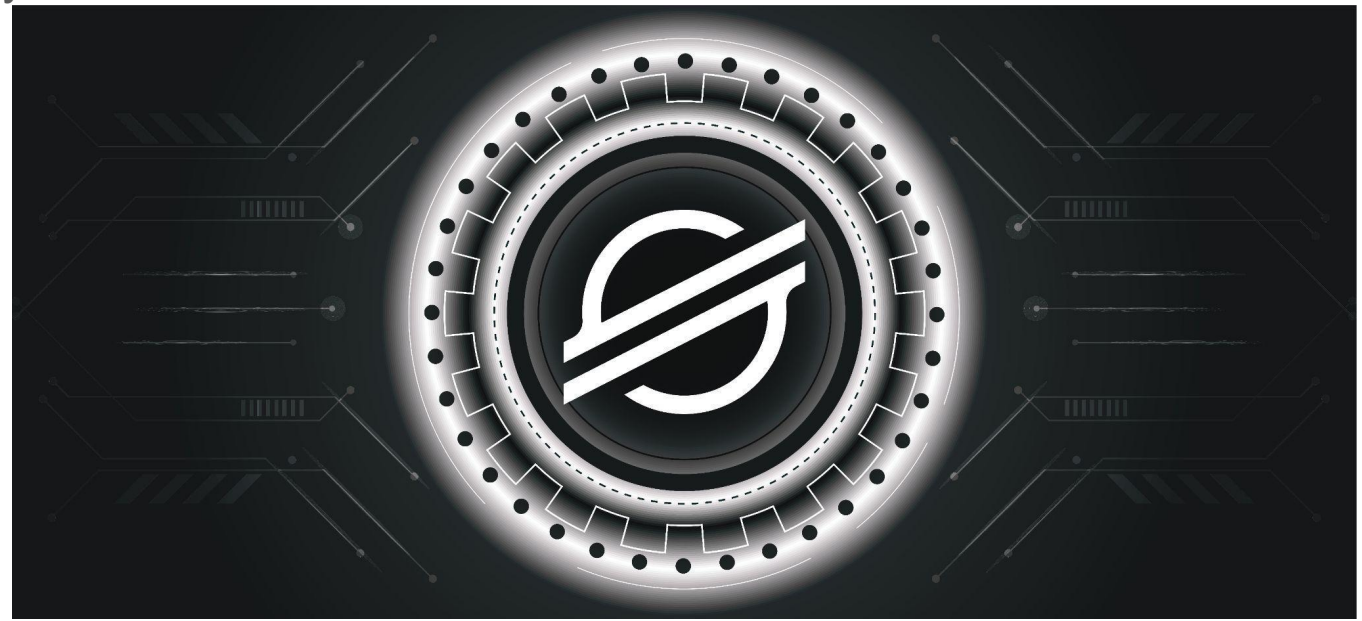
Stellar Partnerships

Bitbond -

White-label tokenization provider based in Germany that provides bank grade blockchain technology for financial institutions.

Stellar Use Cases

The primary use case of Lumens (XLM) is a bridge between different currencies. This helps make things easier for people to use their money across the country.



Stellar Use Cases

Saldo -

Saldo allows migrant workers to support their family back home by making it easier to pay bills across borders.

Stellar Use Cases

SatoshiPay -

Online publishers can use SatoshiPay
with an integrated Stellar wallet widget
so customers can make micropayments
for online content.

Stellar Use Cases

Litemint - NFT

Apparently, some group with too much time on their hands even managed to make a cryptocurrency wallet with built-in GAMES. The idea is that you could pay for items (mostly cards) using Lumens, and upgrade your arsenal when playing against other opponents.

Transactions per second

- As of December 23rd, 2020, Stellar was capable of running 1000-5000 transactions per second.
- Meanwhile, Bitcoin's transaction rate was around 4.6 transactions per second.
- Ethereum's transaction rate was 10-15 transactions per second

Cryptocurrencies built on Stellar

While the Lumen may be Stellar's basic cryptocurrency, there are other cryptocurrencies that have been built for the purpose of creating one-to-one currencies (cryptocurrencies that are the exact same value as a single fiat currency)

Some of these currencies include:







Cryptocurrencies built on Stellar

Tempo -

Issuer of a EUR stablecoin.

Cryptocurrencies built on Stellar

Cowrie -

Nigerian based fiat to the naira and crypto gateway

Cryptocurrencies built on Stellar

StableX -

Argentina-based issuer of
ARS stablecoin.

Cryptocurrencies built on Stellar

Saldo.mx -

Mexican stablecoin issuer created with the intent of helping migrant families pay their bills across borders (as mentioned before).

Cryptocurrencies built on Stellar

AnchorUSD -

As the name implies,
AnchorUSD issues a stablecoin backed one-to-one to the US Dollar

Cryptocurrencies built on Stellar

Flutterwave -

Payment platform that offers stablecoin
for multiple African countries.

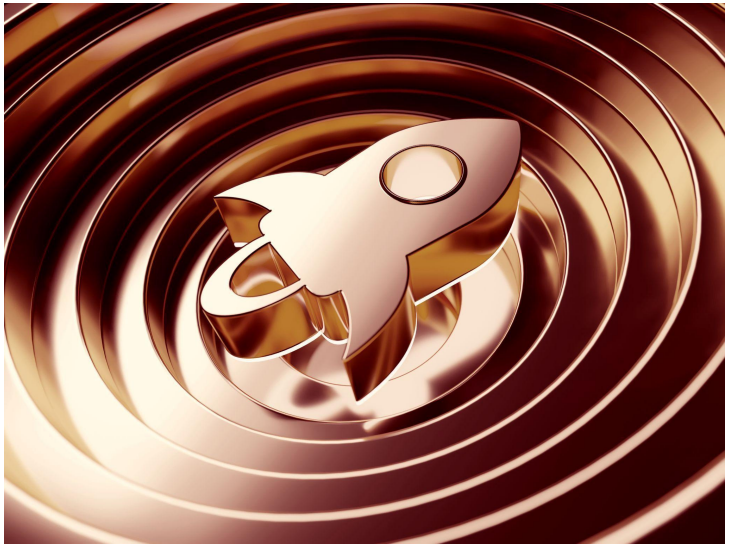
Cryptocurrencies built on Stellar

nTokens -

Stablecoin backed one-to-one
to the Brazilian real

Lumen Supply

- As of now, the maximum supply of Lumens is at 50 billion, and there will be no more lumens created in the future.
- Currently, 20 billion lumens are out in the open market, while the remaining 30 billion lumens are retained by Stellar



What is an ANCHOR?!

Anchors are trusted entities that hold a users deposits and issue credits for those deposits requested to the anchor.

Basically, an anchor provides a bridge between major currencies and the Stellar network.

How to become an ANCHOR

Anchors on Stellar are required to have two of the following these two rules when issuing assets:

- All customers should be held one-to-one in reserve in insured accounts dedicated to stablecoin redemption
- Issuers should use a third party to determine whether the stablecoins are backed one-to-one with fiat currencies and whether the funds are held in dedicated accounts

How to become an ANCHOR

Creating an on/off ramp:

- Deposits and withdrawals should be processed via **local domestic payment rails**, not wire transfer
- Deposits and withdrawals should follow Stellar’s standards in order for them to be **seamlessly interoperable between wallets and anchors**
- Anchors must **maintain customer support** in order to ensure problems are solved in time
- Anchors should maintain a **comprehensive AML policy and program**, including the ability to perform KYC checks for new customers

How to become an ANCHOR

For all locations where their services are available, anchors must comply with:

- Regulatory, registration, and licensing obligations to perform the anchor’s financial transmission services
- Financial crimes, anti-money laundering, and counter-terrorism obligations
- Data privacy rules and regulations
- Industry standard cybersecurity practices

Anchors also need to comply with US sanctions.

Summary

- Stellar lumens are a gateway currency between other fiat currencies around the world
- What separates Stellar from other cryptocurrencies is that lumens are less volatile, and more stable than other cryptocurrencies such as Bitcoin
- Stellar's transaction rate is much higher than Bitcoin and Ethereum, which shows how Stellar focuses on faster, more efficient transactions
- Other cryptocurrencies are built on Stellar, each of which are one-to-one currencies with fiat currencies.

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