Report on : Ripple-XRP

Submitted to :

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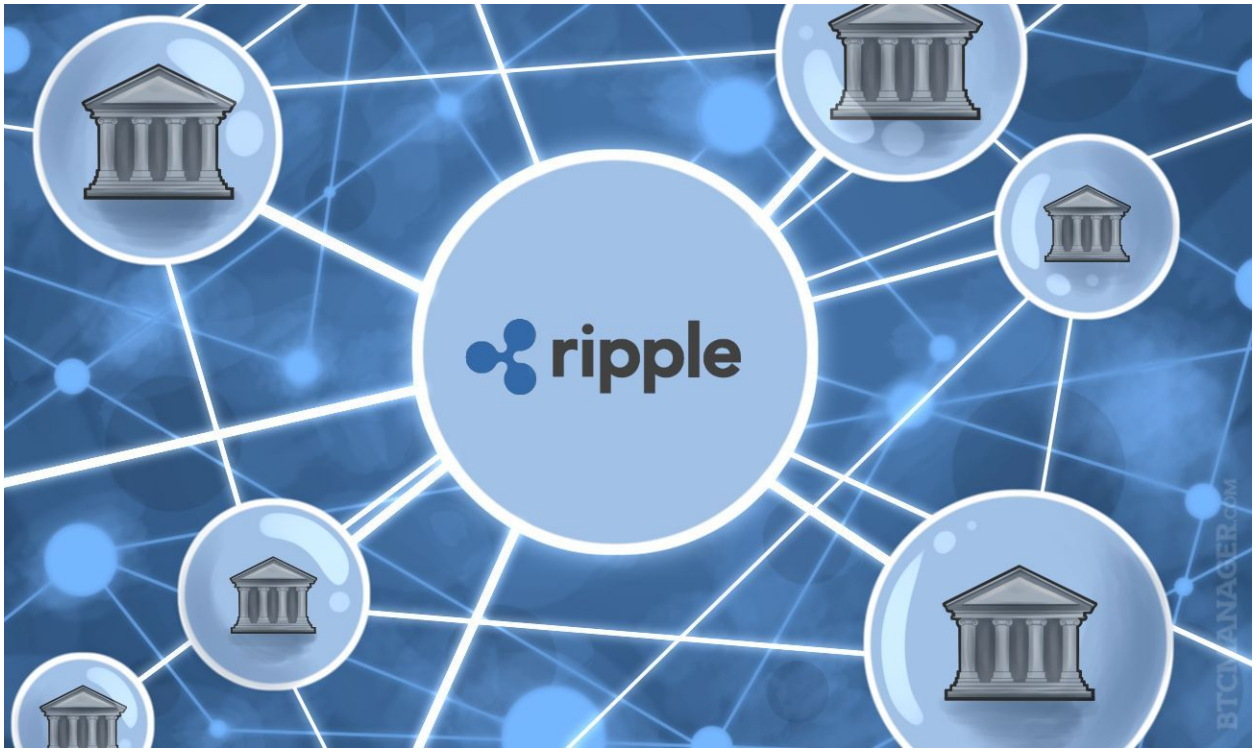
Overview -

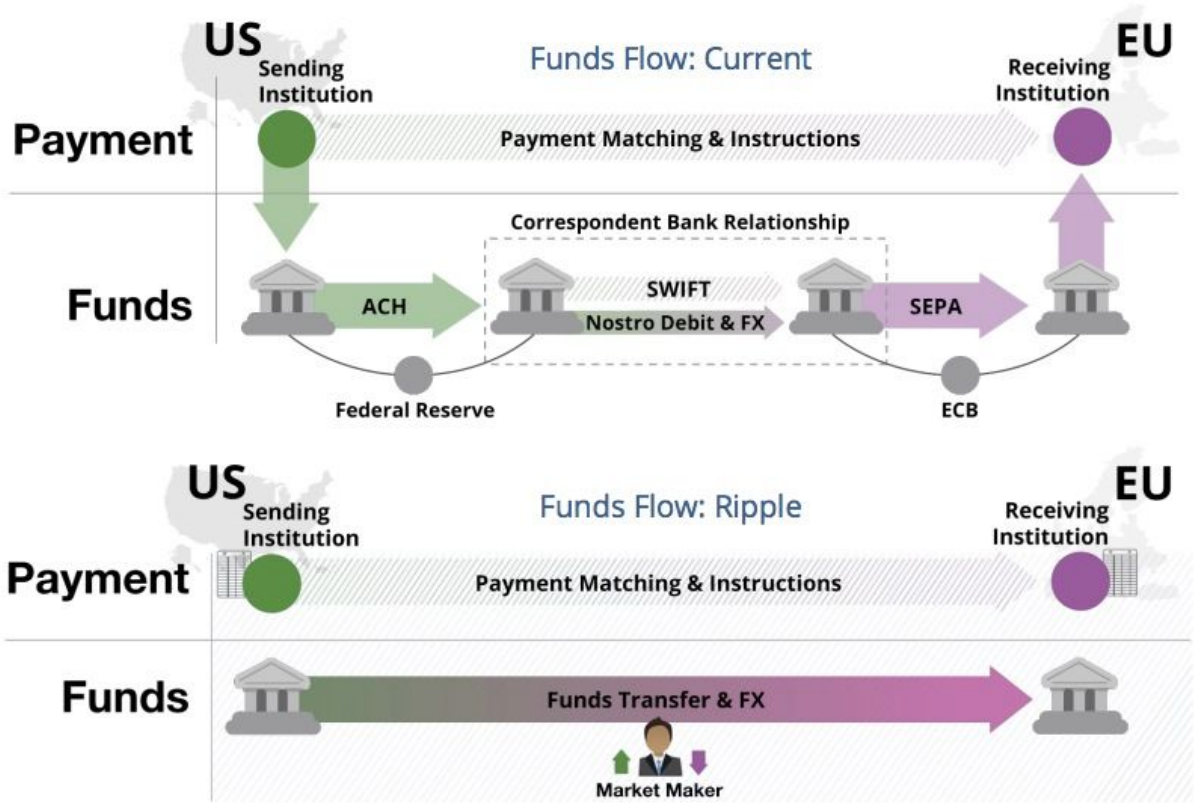
- History
- Features
- Consensus
- XRP vs IOUs



- All Ripple tokens have been issued when the network started and none of them will be issued anymore.
- Ripple is not a blockchain.
- We don’t have have blocks with transactions in Ripple. Instead we have a ledger which lists all accounts and it’s latest balances.
- The validator node are the most trusted nodes of the network and they are chosen by other nodes voluntarily. They make proposals about valid transactions. If 80% of validators reach consensus about valid transactions these transactions are written into the new version of ledger. This process repeats every few seconds.
- While you don't make any money directly from running a validator, you do get a say in how the Ripple network evolves. Changes to the protocol are voted on by validators.
- Instant international transfers at very low cost.

- If you are a business and want to use ripple network you can register as a gateway. Then you can create your own issuances.
- The main use of XRP is to pay transaction fees. And when you pay the fee these XRP are burnt and destroyed. So the total number of XRP's existing becomes smaller every day.

History



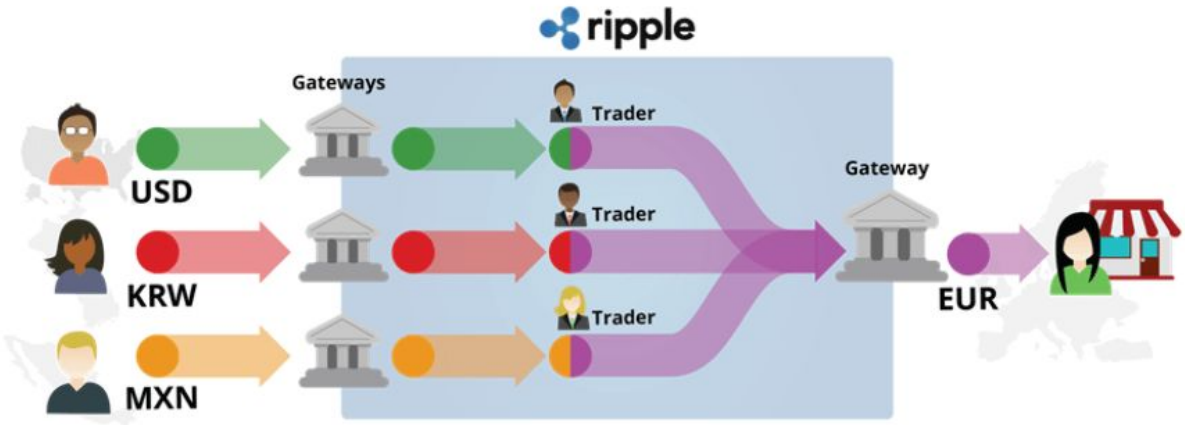
- While the internet exploded thanks to the HTTP protocol, global payment networks sprung up as walled gardens.
- Along Came Bitcoin
- A Question emerged "How to allow low-cost, scalable, fast value transfer on the Web between banks?"
- Ripple was designed to eliminate Bitcoin's reliance on centralized exchanges, use less electricity than Bitcoin, and perform transactions much more quickly than Bitcoin.

- The protocol supports payment with fiat currency, crypto currency, goods or any other units like passenger bonus miles or mobile minutes.
- As the transactions in this system are confirmed by the consensus of network participants instead of mining like in the Bitcoin network, it causes more trust of banks and payment networks.
- Ripple is used by the Earthport service payment system, which is working in 65 countries, including the Bank of America and the HSBC bank.

- Today, XRP is amongst the largest crypto currencies in the capitalization.
- The core idea behind the protocol was a peer-to-peer trust network of financial relations that would replace banks.
- When Ripple was founded, it created 100 billion XRP tokens of which 80 billion tokens were allocated to the company and 20 billion were given to the three founders.
- “Today, globally, banks are connected through proprietary networks. There’s no open standard for communication. Ripple enables any bank to access any bank on the network
- XRP costs about .004 and takes 3-5 second to send, whereas BTC costs over 25 and takes an hour.

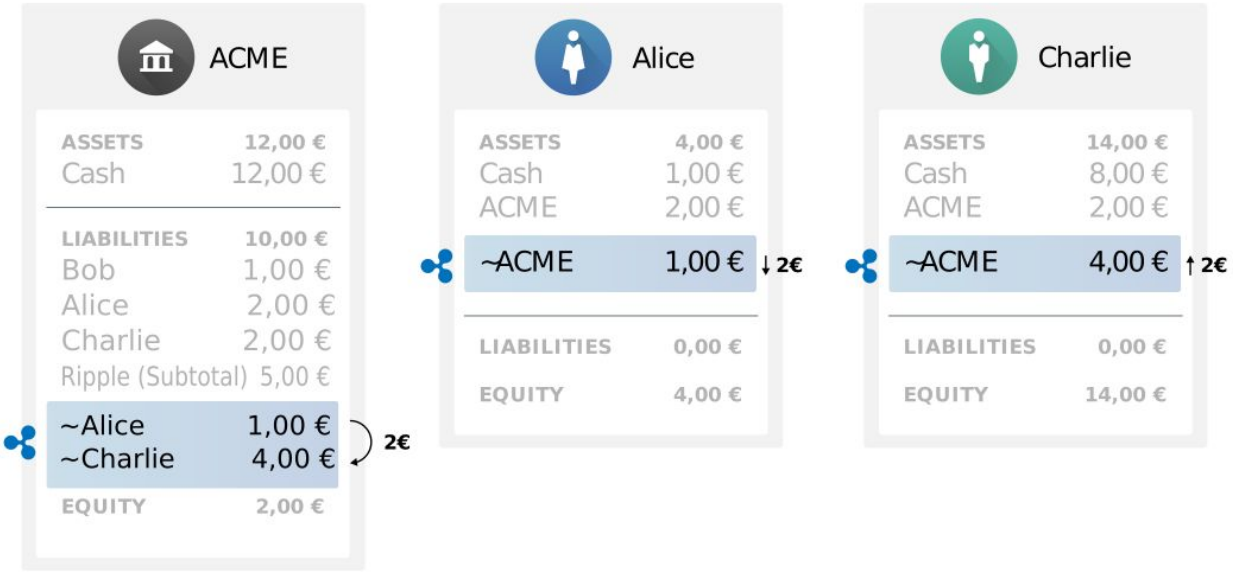
Features (Gateways, freezing balances, market makers)

Gateways



- Gateways are businesses that provide a way for money and other forms of value to move in and out of the XRP Ledger.
- The way Ripple's public ledger system works is that you propose a payment by specifying the source and destination accounts and currencies and then the system gives you a quote based

on public offers. You can then specify a maximum amount you are willing to pay to complete the payment and submit it. If the payment is possible for the amount you offered or less, the payment succeeds. Otherwise it fails and you can try again.
- The digital currency, XRP, acts as a bridge currency to other currencies. It does not discriminate between one fiat/crypto currency and another, and thus, makes it easy for any currency to be exchanged for another. Each currency on the ecosystem has its own gateway e.g. CADBluzelle, BTCbitstamp, and USDsnapswap.
- If David wanted bitcoins as payment for the services rendered to Lawrence, Lawrence does not necessarily have to have bitcoins. He can send the payment to his gateway in Canadian dollars (CAD), and David can receive bitcoins from his gateway. One gateway is not needed to initiate a complete a transaction, multiple gateways can be used, forming a chain of trust rippling across the users.



- 3 major models that gateways can follow, with different purposes and modes of operation.
- An Issuing Gateway receives money outside of the XRP Ledger, and creates issuances in the XRP Ledger. This provides a direct way for customers to get money in and out of the XRP Ledger.

- A Private Exchange holds XRP and lets its customers buy and sell that XRP in its own system.
- Merchants accept payment within the XRP Ledger in exchange for goods and services in the outside world.

Freezing Balances

Ripple has been the talk of the town lately thanks to its rocketing value and growing market capitalization that's making eyes at bitcoin. $1,000 of XRP bought a year ago would be worth half a million dollars today. But away from the price action, there's an issue bugging ripple that just won't go away. It's been alleged for years that Ripple Labs has the power to freeze the balances of account holders. If true, it would be a major cause for concern, especially for proponents of decentralized currency.

Also read: *Rising Ripple Threatens to Usurp Bitcoin and Usher In "The Rippening"*

The Big Freeze

- The XRP Ledger gives addresses the ability to freeze non-XRP balances, which can be useful to meet regulatory requirements, or while investigating suspicious activity.
- There are three settings related to freezes:
- Individual Freeze - Freeze one counterparty.
- Global Freeze - Freeze all counterparties.
- No Freeze - Permanently give up the ability to freeze individual counterparties, as well as the ability to end a global freeze.
- Because no party has a privileged place in the XRP Ledger, the freeze feature cannot prevent a counterparty from conducting transactions in XRP or funds issued by other counterparties.
- No one can freeze XRP.

Market Makers

Section 6

The Role of Market Makers

Any user can post bids and offers to trade currencies on Ripple's distributed exchange. Market makers post both buy and sell orders, providing liquidity to the market in order to earn bid/ask spread.

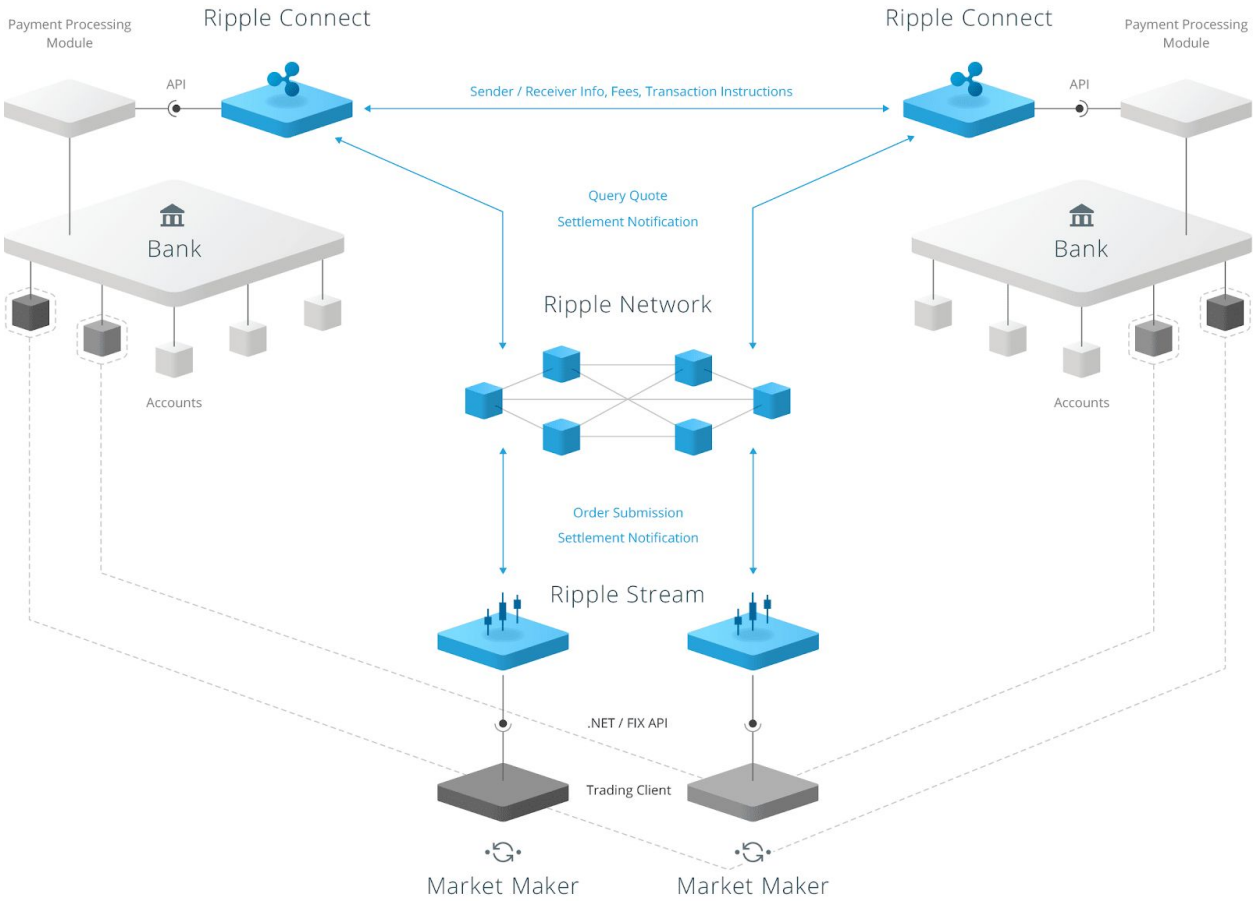
Market makers play the critical role of facilitating payments between users where no shared trust exists. The market maker below is advertising a price to exchange USD balances from GatewayABC and EUR balances at GatewayXYZ.

Market Maker in EUR/USD

The market maker must have trust lines in place and hold balances with both gateways in order to fulfill this function.

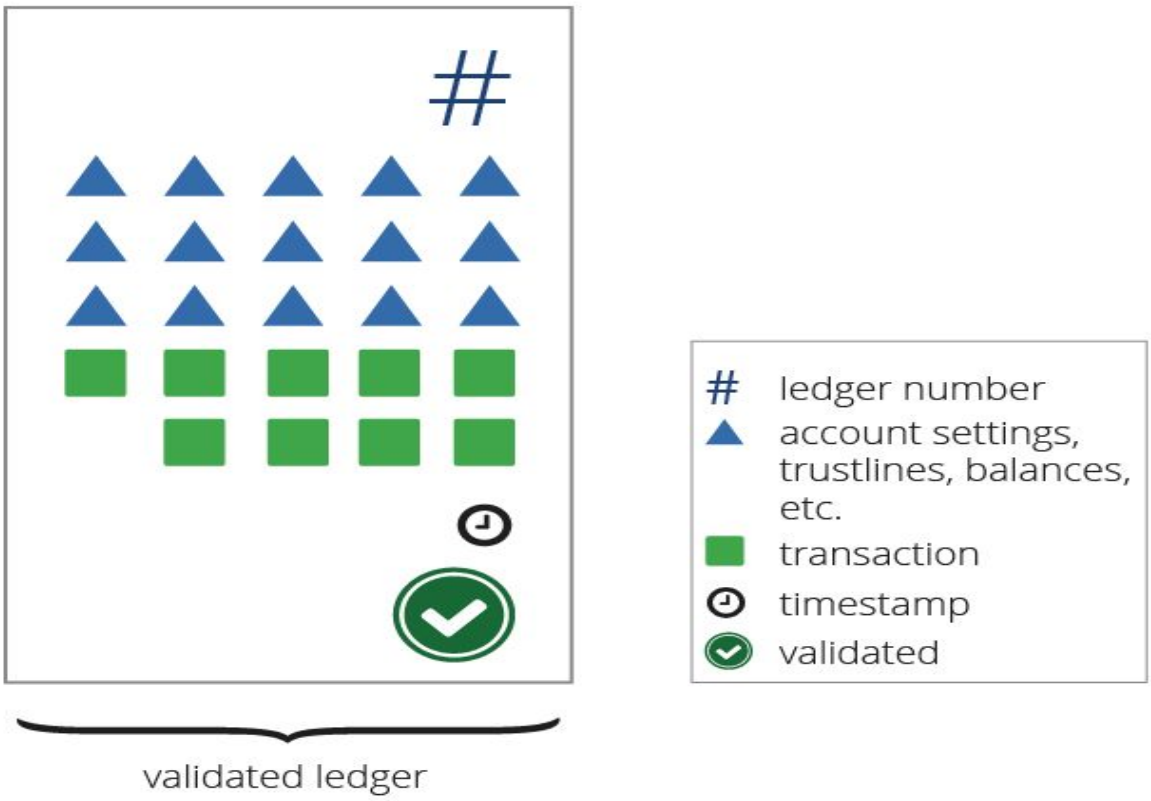
When boiled down to its most fundamental nature, market making is about “buying cheaply and selling dearly.”

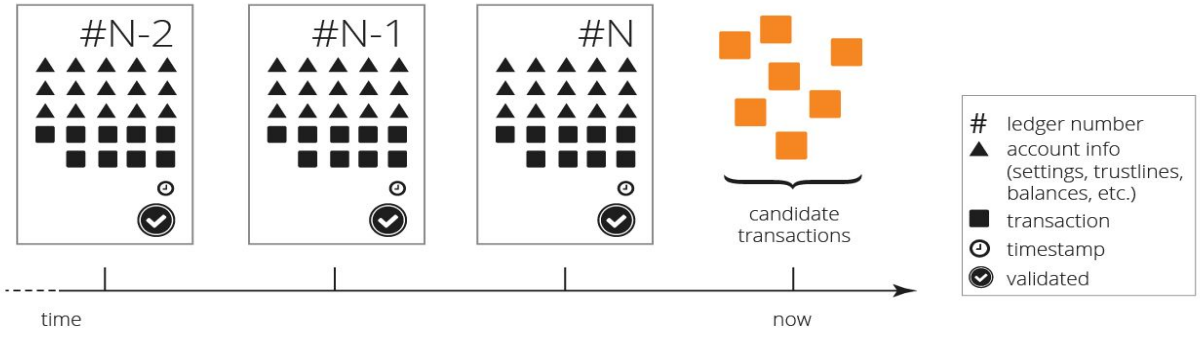
Consensus

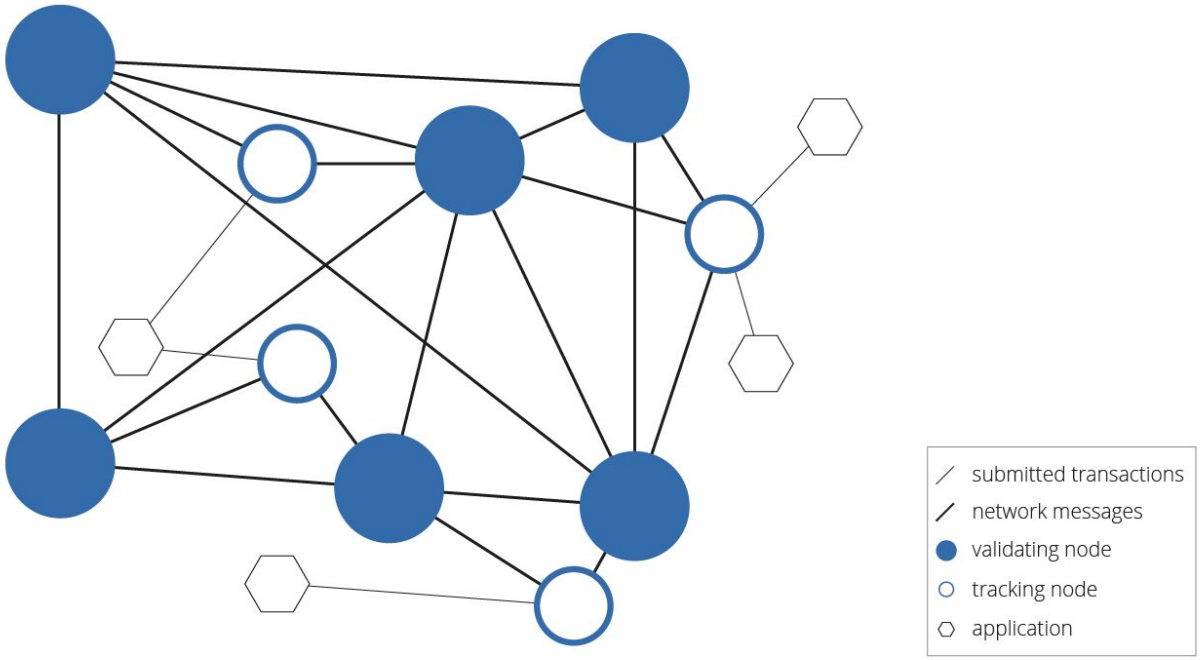


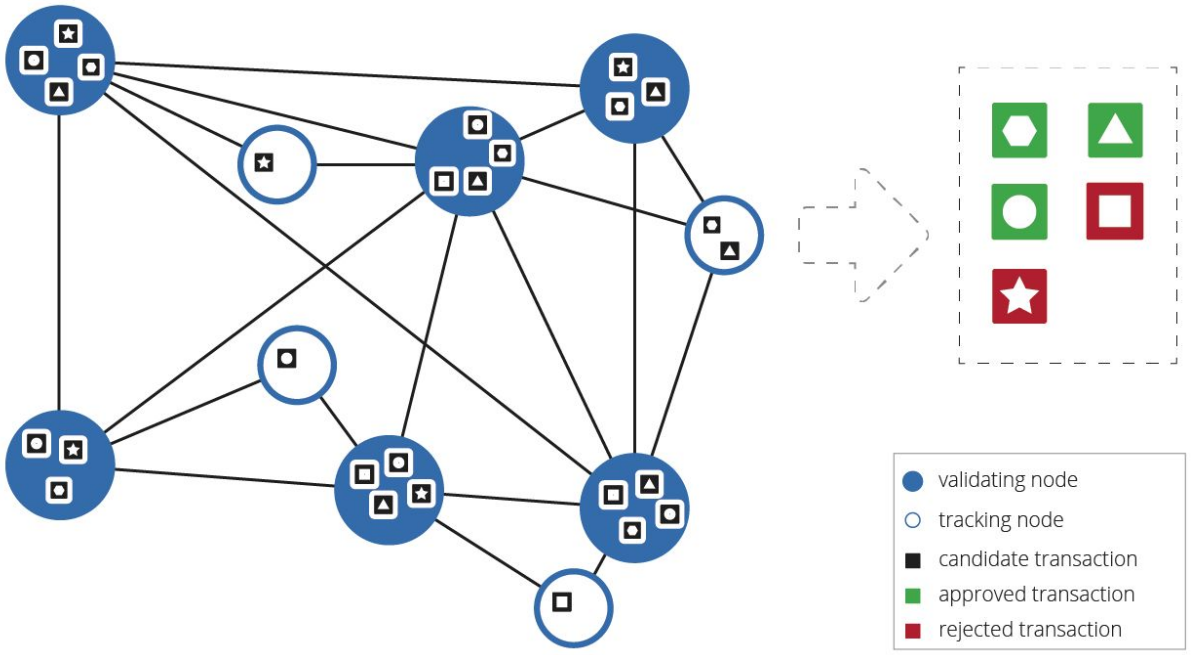
- Ripple runs of a network of servers.
- At the heart of the network is the ledger.
- It is a distributed database, a database shared with all the server in the Ripple network.
- It stores information about all Ripple accounts.
- A new ledger is created every few seconds.
- The most recent ledger is referred to as the ‘last closed ledger’.
- At any time, the last closed ledger is a perfect record of all Ripple accounts.
- A transaction is any proposed change to the ledger.
- Any server can introduce a transaction to the network.
- These transactions go out to all active Ripple servers.
- The servers automatically come to consensus about a set of transactions to apply to the ledger creating a new last closed ledger.

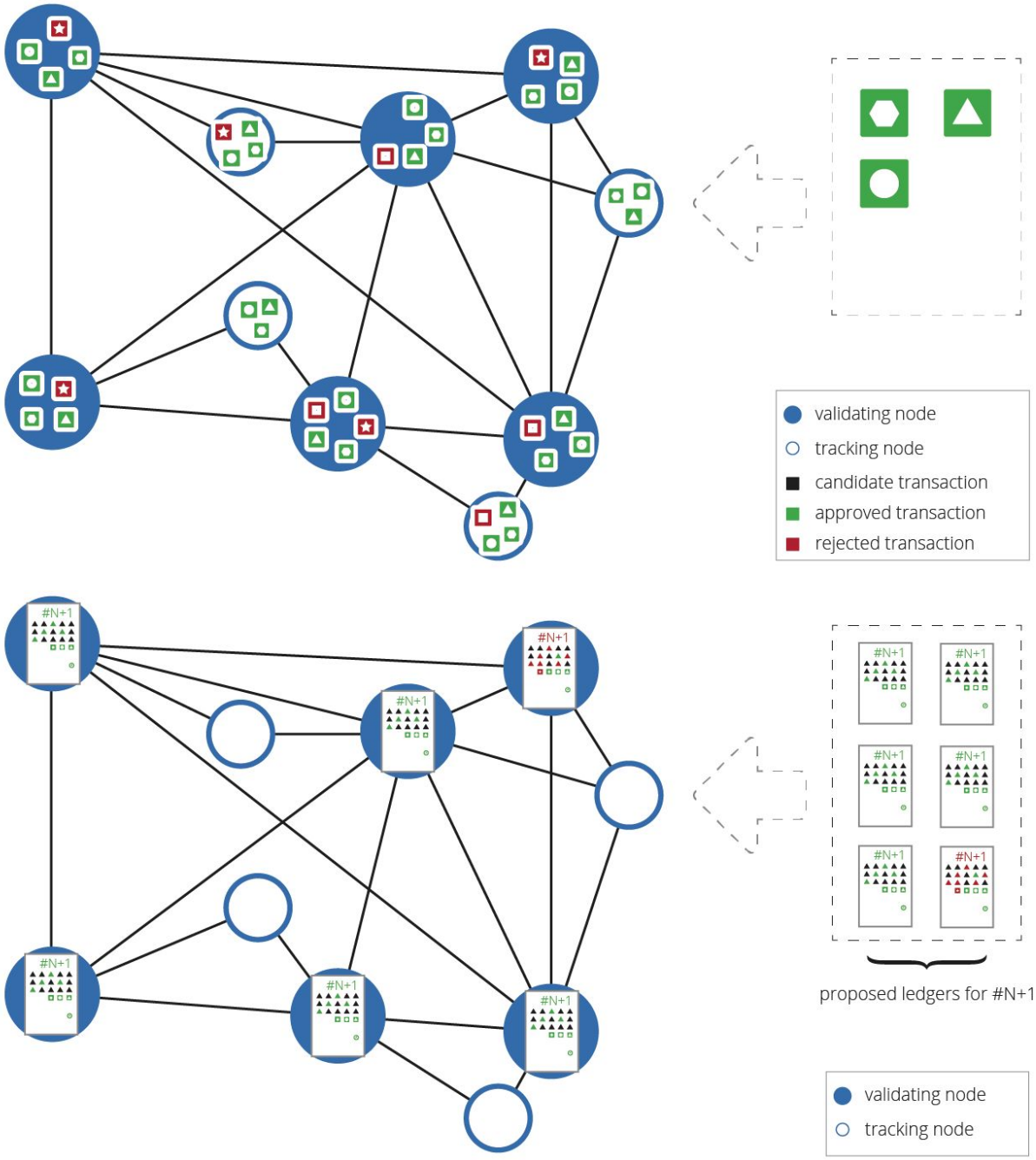
- The goal of consensus is for each server to apply the same set of transactions to the current ledger.






submitted transactions
network messages
validating node
tracking node
application


validating node
tracking node
candidate transaction
approved transaction
rejected transaction



- These transactions form a candidate set, a poll of transactions waiting to be added to the ledger.
- At the same time, the server receives proposals from other servers on the network.
- A proposal is a set of transactions to consider applying to the ledger. The server routes incoming proposals based on something called the ‘unique node list’ or UNL.
- Each server has a UNL, a list of external servers.
- Proposals from servers not on the UNL are ignored.
- The server only pays attention to incoming proposals from the server set or on its UNL.

- The transactions in the incoming proposals are compared against its candidate set.
- When a transaction and an incoming proposal matches a transaction in the candidate set, that transaction receives one vote.
- The server continues to check the incoming proposals against the candidate set until the timer expires.
- At this point, the server takes transactions that have received at least a fifty per cent approval rating and packages them into a new proposal.

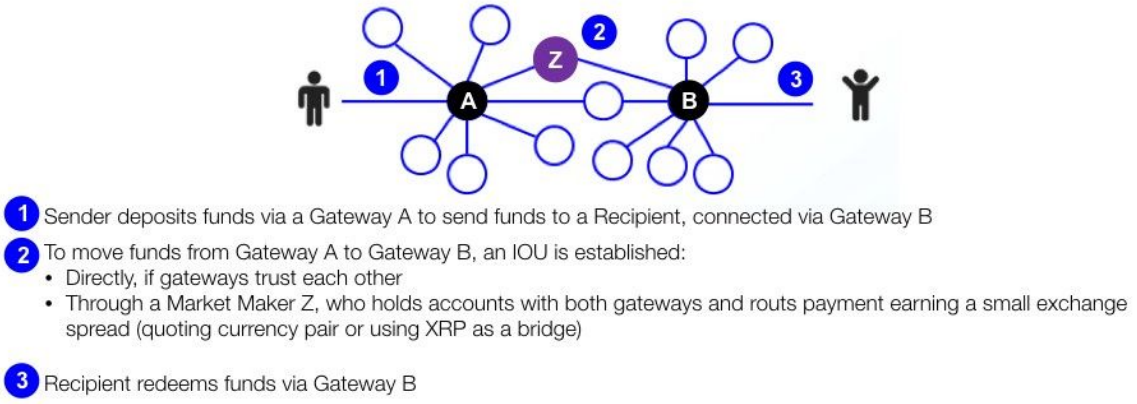
- This proposal goes out to other servers across the network.
- The process now repeats but the approval rating requirement increases to sixty per cent.
- Now transactions with a sixty per cent approval rating are packaged into a new proposal and sent out across the network. When the timer expires, the approval rating rises to seventy per cent.

- With each iteration, the proposals will have a greater similarity to each other and the votes will increasingly agree.
- The inevitable outcome of this process is that disputed transactions are discarded from proposals while widely accepted transactions are included. - The dissimilarity between the proposals quickly more towards zero.

Payment Methods XRP and IOU

- There are two different methods for making international payments via the Ripple platform: XRP and IOUs.
- Each payment method happens on the same ledger, takes around 4 seconds to settle, and offer significant cost savings over legacy systems.

XRP



- XRP is the native currency on the Ripple platform.
- To issue an international payment to someone via XRP, an organisation would either need to hold XRP or buy it from a local liquidity provider at the point in time that they need to make a transaction.
- They would then send that XRP to the recipient much like any other cryptocurrency transaction.
- The only fiat transactions in this process would be between a bank and a domestic liquidity provider.
- The Ripple network takes care of cross-border transactions, utilising XRP as the vehicle for value transfer.

- IOUs are tokens issued on the platform that are redeemable for a fungible asset such as USD, gold or crude oil.
- Anyone can issue IOUs, however in order for someone to accept payment in IOUs they must trust that the person or organisation who issued them will be able to redeem the IOU for the underlying asset.
- No Volatility