**Monitoring**

Every quorum has 2 slots with N and N-1 peer nodes along with the ghost node participate in the consensus process.

**EX**: **Quorum 32**

1 2 3 4 5 6 7 8 **SLOT1**

1 2 3 4 5 6 7 \* **SLOT2**

Ghost Nodes, has many vital roles to play in the consensus process, helping in Recruiting new peer nodes into the quorum slots and also for an easy updates which need to be made from the foundation end.

After the formation of Quorum all the nodes are under the surveillance of the Ghost Node for their behavioral of **SLOT nodes** during the Block generation

…………………………………………………………………………

**Trust Chain Structure**

**TCS is a communication protocol which primary function is to establish a trust pattern between the different quorums and also to reduce the number of internal messaging between the Quorum members using schnorr signature and digital signature aggregation.**

A single node can trust 2 nodes in its quorum i.e., 1 node from its slot & other 1 from other slot i.e., is by forming 50-50% trust chain with non-repudiation and those 2 nodes which trust each other are enable to collaborate each other to obtain the desired output rather than to compete. With this kind of trust pattern when applied on the node the protocol itself make sure there is more off a reliable way in which the peer to peer communication can be built with a limited number of message flow per single across the network

With this kind of loosely bonded 50% trust architecture for a single node would be very efficient because even if 1 node failover to keep up the consensus still it does not matters as there was only 50% loss of trust making the communication to continue with no breakdowns as mentioned in the above statement.

Example:

Even if 9th node Ditches, the lower order nodes don’t get affected as it follows (previous trust chain). But the 8th node loose out 50% of trust, as It is a chain of trust cycle & also the sub inheritance problem of 8th nod it is very important to pass on the trust series from the higher nodes as i.e., trust increases as time line increases.

* If those two slots peer in the quorum starts to communication with each other then there would be a huge bulk of p2p messages passing across the quorums & the network itself.
* Well in order to eliminate the process of bulk messaging & also creating a pure notion of trust between the two slot peers i.e., without the help of a centralized Ghost Node.
* Through a communication bridging protocols called as “Trails/ TCS”.
* Well the slot peers of a quorum which needs to communicate with each other in building up a common viewpoint of agreement about the validity of the transaction made on the network.
* Well the communication between the slot peers would be in a prefixed pattern communicating to well trusted peers of their choice.
* When a peer needs to present its viewpoint it needs to communicates with the other peers.
* But in case of Evoca the viewpoint convincing peer needs to communicate with only two peers.
* The quorum members use schnorr signature to present their viewpoint about a transaction in the form of a initial transaction within a Quorum as they are compact and small in size.
* Take all the signatures of the quorum members and aggregate them to form a single signature.

…………………………………………………………………………

**Liquidated Voting through consensus democracy**

Evoca choose to have a Decentralized Treasury Model which would provide fixed liquidation to its network peers with a fixed inflation rate of n (n<=5) and n decreases up to 1%.

Every active node on a network needs to cast its vote for any considerable or inconsiderable situations during which the decision has to be made, well the choice of vote on various attributes are presented to the nodes in the form of a Menu like Ballot layout.

Ex: Option 1, 3, 5, 2, 4, 6

Well every node on the network gets to choose their priorities among the option by ranking the entire list sorting them with a priority of top to bottom which is presented by the ghost node the option with majority voting win,

Out of which the higher prioritized option would be chosen as its prime option of a single node. If the, 3rd option gets the higher majority among the other nodes and an entire Quorum in later stages.

…………………………………………………………………………

**Slot Peers inside a Quorum during a Consensus**

For a transaction to get valid entire Quorum needs to have a single view-point as it is majority, by considering the internal slot voting percentage pattern.

SLOT1 -> 1 2 3 4 5 6 7 8

SLOT2-> 1 2 3 4 5 6 7 \* -> Ghostnodes

Probable Cases for a slot series pattern of 15 peer nodes, by considering Quroum31 as example:

1. 5 peer nodes in SLOT1 presenting their viewpoint stating Yes to a transaction & Ghostnodes always yes as it is maintained by the foundation itself.

This Results in confirming the transaction as valid in SLOT1 with 6(5+1) nodes positively responding.

1. 4 peer nodes in SLOT2 presenting their viewpoint stating Yes to a transaction & Ghostnodes always yes as it is maintained by the foundation itself.

This Results in confirming the transaction as valid in SLOT1 with 5(4+1) nodes positively responding.

1. 3 peer nodes in SLOT1 presenting their viewpoint stating Yes to a transaction & Ghostnodes always yes as it is maintained by the foundation itself.

This Results in confirming the transaction as invalid in SLOT1 as there was no majority 4 in the consensus.

1. If peer nodes less than 4 in any SLOT present their viewpoint as Yes to a transaction, the transaction would become invalid even though, Ghostnodes vote as yes this Results in confirming the transaction as invalid by the Quoum31 as there is no majority of consensus between the nodes.

**Phase 0**

Let’s say assume that out of 100 Quorum’s, there are only 99 Quorum’s are active and 1 Quorum is inactive (Pre Published) even before the block generation. Now, Out of those active full synchronized 99 Quorum, A single Quorum is chosen randomly to present its viewpoint about the transaction to the other Quorums.

Let’s say Quorum31 is selected from the above proceedings.

Result of Quorum31’s with its view point about the transaction is gossiped across the network with the help of Q31’s associated Ghost node to the other active 98 Quorums. But those nodes who failed to agree with the viewpoint of the other quorums with a Byzantine failure i.e., 98-17=81.

If Quorum31’s view point about the transaction is accepted with a super majority by the other Quorums of different ordinate, then Quorum31 gets a Right to push the Block on to the global state chain and those 18 nodes (17+1) who, failed to agree upon the new state change during (Pre or Post published) will simply store the globally accepted Block.

Those, Failure Nodes (Byzantine + Pre Published (inactive nodes)) are under serious observation by the community.

…………………………………………………………………………

**String Swap through VisionDAO** **& Hot Delegation**

The popular tool for micro financing in the Middle East Asia is through a secure protocol called as chit fund in which lending and borrowing money is made between peer to peer people who are interested in it to participate to meet there financial needs through a well trusted 3rd party called as foreman who manages the fund as a collective pool.

Well the string swap protocol main purpose is to achieve a peer to peer money swap through a chit mechanism by eliminating 3rd party institute or a foreman through a VisionDAO

String Swap is a modified chit strategies which is designed to holds up the same core functionalities of the pure chit protocol as it is tough to achieve traditional chit as per the current limitations of technical advancement in the space itself.

Mechanism:

The chit mechanism would need few prerequisites to meet so that the entire protocol works as per it is intended to work that is general consensus about the,

1. Number of people involved in the chit protocol,
2. Individual contributions per single turns,
3. Duration of the chit protocol,
4. Regular updates.

Summary:

User with two accounts

1. Main Account

The primary account of the user through which he pays up his contribution each time.

1. Collateral Account

The secondary account of the user through which he shows up his loyalty towards a secure chit cycle.

Terms: Total Kitty, Chit cycle, foreman, Group Trust score, Individual Trust score, turns.

VisionDAO: A substitute for the 3rd party institute or a foreman in a decentralised Evoca platform.

Notice:

1. ”M = total no of peers involved in a chit protocol.”
2. “n =no of participated peers in a specific chit cycle ,were always n>0 ”
3. Duration of the chit cycle ~ no of people.

Auction Model:

1. English Model:

Price Moves with an uptrend, under a competitive n/M peer model.

1. Dutch Model:

Price Moves with a downtrend, under a conservative 1/M peer model.

Differences between Chit and Collateral contracts.

|  |  |
| --- | --- |
| Chit Contract | Collateral Contract |
| Main account for the active protocol. | Acts as collateral in case of a needy withdraw. |
| If the peer wins up a slot in his current turn then his pot is [**toTo minus DAO’s fixed % cut**]. | Gas is produced based on the toTo in a collateral account. |
| Now, peer has his choice to withdraw the funds or not too. | Locked vault gets triggered only, if the peer fails to keep up his consistency. |
| If the peer chooses to withdraw the funds. | Collateral contract gets triggered. |
| After withdrawal the main account gets dividends regularly from the other peer’s turns in the form Evoca. | And regularly pays up its remaining share, till the end of the protocol. |
|  | Additional Evoca which are staked in as collateral to an active chit protocol in a Collateralised contract can be referred in a form of Hot Delegation. |

The dividends received during this chit cycle are of two types:

1. Ethems by hot delegation in collateralised contract.
2. Evoca by chit protocol as hot dividends in Chit Contract.

…………………………………………………………………………

1. **“Ethem Economics & Ethem Payout structure”**

**Ethem Economics**

**“Summary”**

1. Deflationary Model
2. Cashback
3. Staking
   1. Inflation of new tokens

…………………………………………………………………………

**Ethem Payout structure for a block generation**

**The generation of a block with a global consensus would create new resource tokens, Ethem which would be fairly divided and distributed as 70% of cashback to the initiators of the transactions present in a current block & 30% is paid out as dividends for the existing staked Evoca holders from a 100% share of Ethem.**

**Cashback**

Ethems are given out as cashback to a transaction’s which were included in current valid block well the cashback are not given out in terms of standard percentages like 15, 10% etc because the cash back’s in terms of percentages lead to variable block rewards. The distribution pattern of 30 Ethems as cashback is split between the Transactions which are present in that block based on the payees accounts Trust Scores.

CuCy Expander has a constant effect on Cyfu staking. CuCy & CyCf are interlinked that if Cyfu increases then staking can be increased.

In simple,

When an account with a higher Trust Score does a Transaction gets a bit of higher cashback in Ethems, than an account with a lesser Trust Score doing a Transaction.

“Proportional-Cake- Cutting Problem, Divide Consensus”

Notice: CuCy 🡪 Cuisine Cylinder Expander

CyCf 🡪 Cuisine Cylinder Function

**Gas Decay:**

**Every time a block is generated with a successful global consensus it would create new Ethem out of which 30% is paid out as dividends for the existing Evoca holders who staked their Evoca tokens. “**Envy-Cake- Cutting Problem”

Gas Decay, being a Deflationary Model, For 1 Token to reach 1 gas is @ the rate of (\*) to reach ~100%

\*-15 days @ 6.6

-30 days @ 3.3

-45 days @ 2.2

-60 days @ 1.65

-75days @1.33

…………………………………………………………………………

1. Trust Scores

Trust Scores for an account is accounted from a various standard ranking parameters such as,

“In terms of prioritized percentages between various parameters” :

Coin age function in POSV 🡪[Duration of Asset Staking, 50%]

Eigen++ in NEM 🡪 behavioural patterns of the account, 25%]

Cuisine Cylinder Function 🡪“CuCy Expander can only effect 10% of Cyfu “

Notice: Total Tokens🡪 “toTo function”

…………………………………………………………………………

1. Cuisine Cylinder Function & CuCy Expander

The Quorums stake all their newly created tokens in a special contract called as “CuCy Expander “for a period of 72 hrs. In order to avoid a sudden effect on an individual CuCy function due to the inflation of new tokens which are born out of a fresh consensus.

“CuCy Expander “helps in avoiding Self Looping Transaction for 72 hrs.

Cuisine Cylinder Function:

Cuisine Cylinder Function is a hypothetical measuring the meter which is pegged to an account which primary functions is to define the quality of a transaction and also to set a wealth variable a max capped address to hold up the wealth.

**Concepts like \***

**Refill-->** the total filling of Ethem in cylinder leads to the triggering action of the leak function

**Unlock-->** the process of updating a cylinder, in order to increases its maximum holding capacity.

**Leak -->** If an address accumulates more the number of Ethem than a max which it can hold, based on trust scores which it gained in order to increase its Reputation. It simply starts to Leak.

**Meter scale-->**

**Partial (Unconfirmed) -->** If the Ethem produced during the cashback process is less than a cylinder max holdings. It needs a minimum withdraw able balance to unlock.

**Full (Instant) -->** if the Ethem produced during the cashback process is more than cylinder max holdings, a user can only withdraw a max cap of a cylinder and the left out balance is restored inside the cylinder to get filled again.

…………………………………………………………………………

**Skull Address:**

Skull address are the special type of address which are generated in Evoca Blockchain which is actually wealth variable capped so that one individual potential investor cannot hold up number tokens. Well that variable cap is actually analyzed with the help of a special metering parameter called as cylinders.

Address 🡪 1XcbVnJ49aKrEsAF987

Notice: Account Holdings 🡪 Evoca + Ethem holdings

……………………………………………………………………………………………………………………………………………………………………………

The cylinder function for any individual account is based on the various parameters. [Wealth Variable]

{Birth 🡪20000} + {Inflation 🡪72 hrs} [“Cylinder Expander”] + {Trust Scores🡪 variable}

Trust Scores🡪 Velocity of the stake

Eigen++ 🡪 Trust Pattern

Envy Cutting Cake Problem 🡪Ethem Ownership

………………………………………………………………………….

1. **Fee Model**

Fee Structure = constant ø+ payable ß. “Both the ø, ß are paid out in Ethems”

constant ø 🡪Payable is minimal for simpler Transaction which involves no complex calculations except a simple transfer functions.

payable ß🡪But for a transaction which involves a complex patterns of calculations in the form of contracts the fee will be based on the instructional opcodes of the Ethem shell which are included in it to execute.

…………………………………………………………………………

1. **Quorum Economics and Dynamics**

Dynamic nature of the Quorums is directly based on the circulating supply of tokens which would exist in the market. Due to which the number of peer nodes eligible in a Quorum is strictly limited based on the circulating supply of token which would exist in the market and the number of slot peers to be included in the Quorum might also vary due to inflation.

Quorum contains 2 slots with a majority of the pool’s agreeing upon the Slot1 & Slot2 series i.e., 4-5,6-7,8-9,10-11,12-13,14-15.., of Slot1 and Slot2 respectively can have these pattern set of nodes in them.

Ex: Let say out of 200 consensus Quorums of either 0dd or Even Producers we chose Quorum31 from 0dd Producers

Slot1 might contain 7 individual nodes

Slot2 might contain 6 individual nodes

With a fixed Initial lock up of 10000 Evoca Token’s for Delegation a peer meets up the initial eligibility criteria out of many.

In terms of economics

Example: Q31 which contains total 13 individual nodes which leads up to 130000 (13\*10000) per single quorum.

Then for 200 quorums from both ordinates (0dd & Even Producers) which makes up about ~26 million (130000\*200) Evoca in creating a single valid block.

With an each Quorum getting a chance of ~ 8 times to produce a block for a period of 24hrs, If a consensus time of creating a new block is ~ 1 minute for both Support and Delegation consensus. i.e., 1 minute of global consensus yields about 60 blocks per hour than with a rate of 1440 (24h\*60min) blocks per day i.e., 720blocks for each 0dd & Even Producers as the block production in a standard chain format is simultaneous between the 0dd & Even Producers.

Conclusion, the summation of 9 Slot1 nodes and 8 Slot2 would lead to different economic delegation pattern as it is directly proportional to the slot series.

……………………………………………………………………………………….

**Consensus pattern:**

Global Consensus = Support Consensus + Delegation Consensus

Support Consensus ->validation of TX (Evoca), Computation of contracts (beta), Resource Allocation (RA) i.e., in terms of Storage, Bandwidth etc.

And cast of message for consensus

1. Inward Consensus through Support

2. Outward Consensus through Delegation

Delegation Consensus -> Audit for TX for Ethem Payments and Delegation of stake

For New Node’s to join the network they need to look for a settled block with a global Consensus on ledger by ignoring the current block under (Support Consensus or Delegation Consensus)