

GENERAL ASSEMBLY

July 13-14, 2022

New York, NY



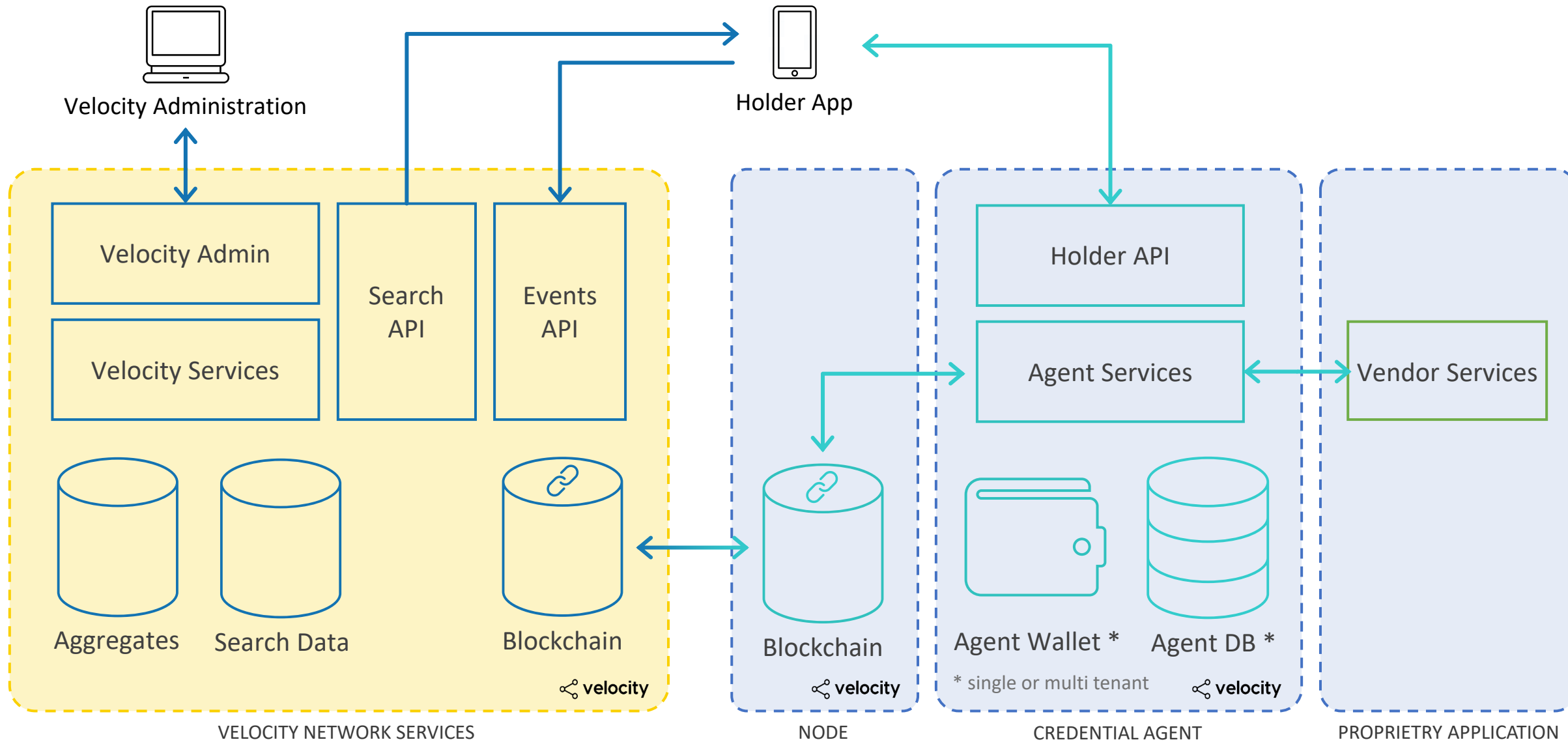
Becoming a Node Operator

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Network architecture – a refresher

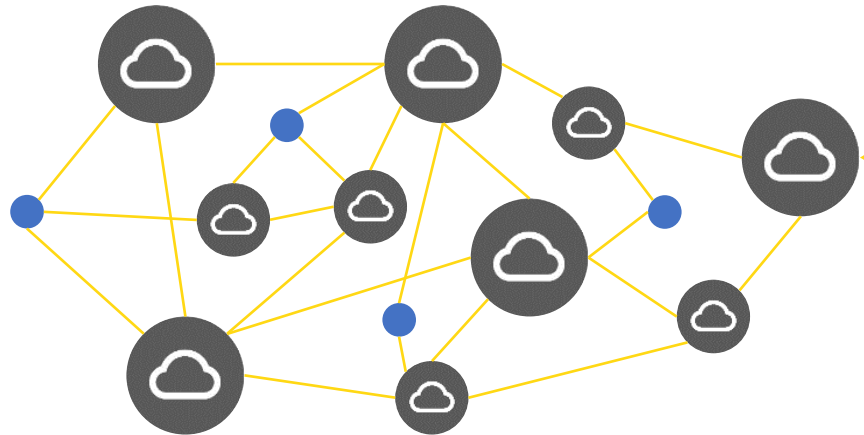
FOUNDATION CLOUD

VENDOR CLOUD



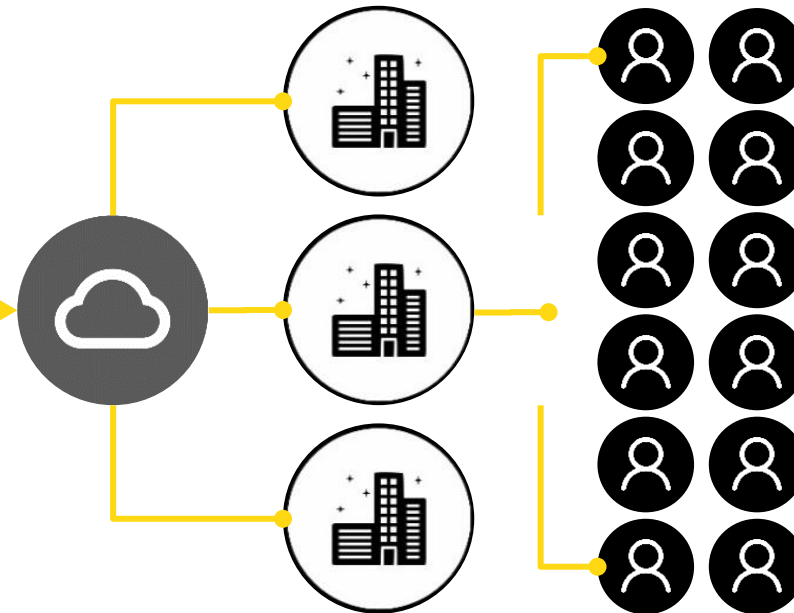
What is a node operator?

Node Operators form the connected fabric of the network. A select group of foundation members that run the distributed ledger node on their data centers and participate in the consensus protocol that maintains the ledger integrity.

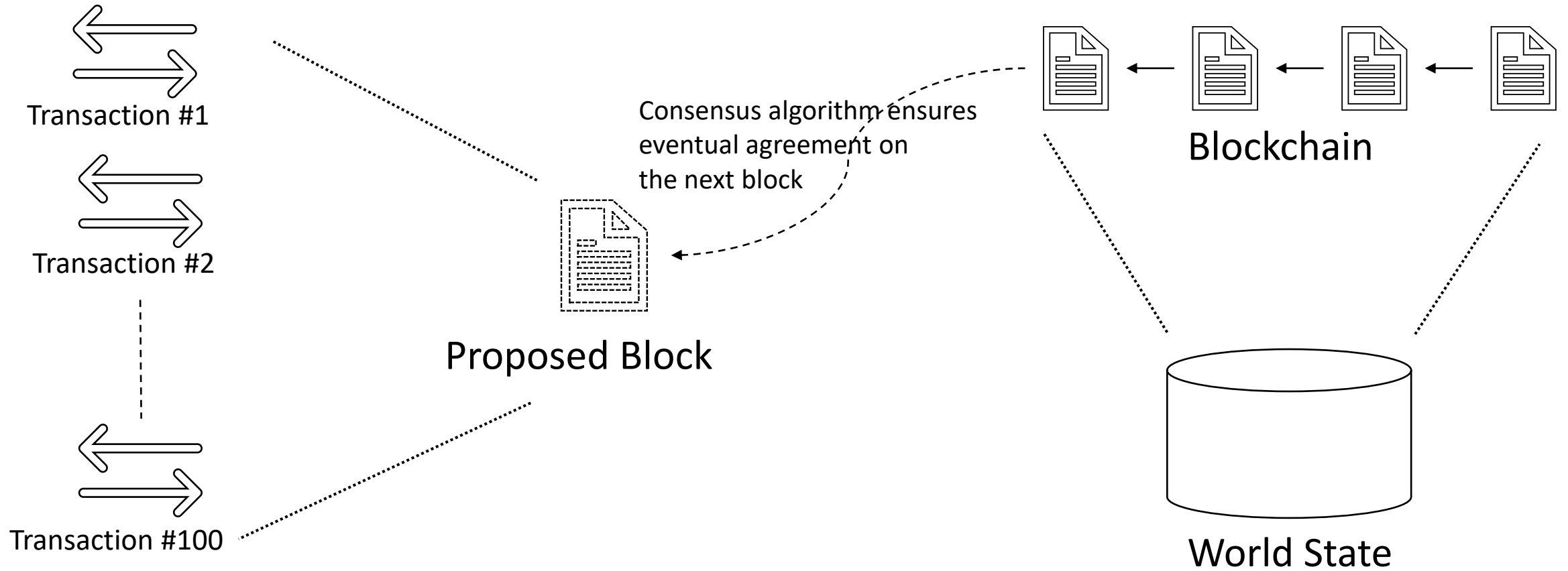


Most organizations won't run a node.

Application providers can run only the Credential Agent and connect to their nearest available node operator to transact with the blockchain.



How does it work?



What do nodes do?

STORE FULL COPY OF THE DATA | A blockchain is made up of multiple pages of transaction ledgers called blocks bound together using cryptography based on Merkle trees. These blocks are stored on "nodes" - servers running the blockchain software. The combination of many nodes and cryptography make it impossible for a malicious actors to corrupt.

VALIDATE TRANSACTIONS | For example, verify validity of reference DIDs, ensure balances available etc.

EXCHANGE THE LATEST BLOCKCHAIN DATA | Nodes form the infrastructure of a blockchain. All nodes on a blockchain are connected to each other and they constantly exchange the latest blockchain data with each other, so all nodes stay up to date.

AGREE ON WORLD STATE | Nodes use a consensus algorithm to make sure all nodes are synchronized with each other and agree on which transactions are legitimate and are added to the blockchain

What data is stored on the ledger?

CREDENTIAL METADATA | Each credential issued on the network has a key and type that is stored on chain compressed and encrypted

REVOCATION LEDGERS | Each credential has a place assigned in a Interoperable W3C Status List

PERMISSIONS | What an account is permitted to do. Can they receive copies of the ledger, participate in consensus, submit transactions to the ledger.

VOUCHER BALANCES | Vouchers are NFTs. Balances of vouchers are stored on chain using the ERC-1155 standard.

What it takes to serve as a node operator?

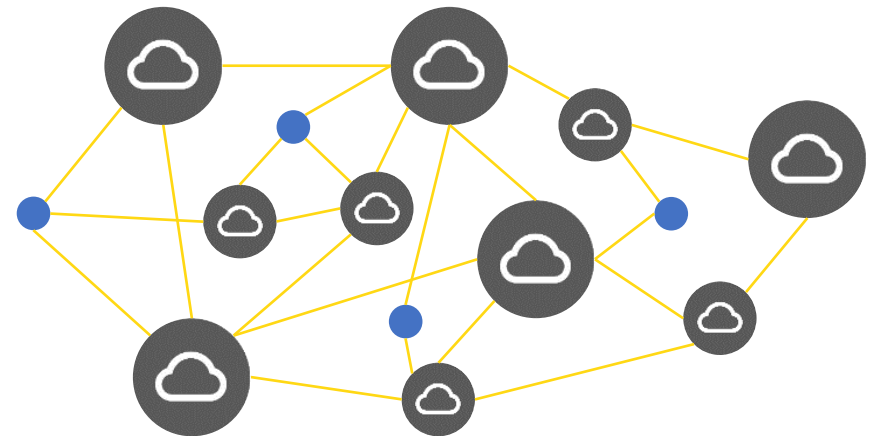
HYPERLEDGER BESU | Run an Ethereum client that enables permissioning

UP TO 15 OPERATORS | Optimal number of nodes with the current blockchain is 15. Network will be extended in the future with new tech that will be implemented.

TIER 4 DATA CENTER EQUIVALENT | To assure performance, security, and reliability, operators will be required to deploy the node appliance in a tier 4 data center or equivalent and guarantee 99.9% uptime.

COST IS FAIRLY MARGINAL | AWS monthly cost for similar computational power is \$3000 pa.

GETTING CERTIFIED | Operators will be onboarded and guided by VCL. Going live with a node will require performance tests and clearance from our tech team.



Substantial monetary reward for node operator

SUBSTANTIAL MONETARY REWARD | Node operators are rewarded for the computational power they contribute and for validating transactions while maintaining complete integrity.

EARLY PARTICIPANT INCENTIVES | Under the rewards schedule adopted by the board, the reward for year 1 would be 2.5% of all tokens in circulation per annum dropping linearly to 1% by end of year 6 (**2.5 Billion tokens in year 1 to 1 Billion in year 7.**)

LESS MEANS MORE | The number of node operators will always be limited due to not all being able to meet the legal and operational thresholds

Velocity uses a high performance Byzantine Fault Tolerant consensus mechanism called IBFT2.

Node operators will be required to stake their token against their participation. Those tokens will be seized by the protocol as penalties in case of fraudulent behavior of the node operator.

Node operator reward tokens would be divided between node operators, pro-rata to the number of tokens they are staking.

Additional benefits of being a node operator

IMPACT ON GOVERNANCE | The more tokens members hold, the more influence they have on governance (board elections and referendums). Tokens reward is not only translated to monetary gain but also to voting powers.

MARKET LEADER POSITIONING | Vendors operating a node will be part of an elite forum that constitutes the consensus network of Velocity.



STEWARD



STEWARD

Capabilities required for running a node

DEVOPS CAPABILITY

- Provision Infrastructure with redundancy and capability
- Monitor the node of downtime
- Restore system in case of failures
- 3 days to deploy critical updates to hypervisor, OS, or node
- 7 days to deploy a non-critical upgrade for a node
- 30 days to deploy non-critical patches to hypervisor or OS

Capabilities required for running a node

SECURITY CAPABILITY

- Standards aligned Infosec Policies that are reviewed annually
- Data Centre security and access control
- Data security and access control
- Personnel management, training and background checks
- Actionable CVE & patch monitoring

OPERATIONAL CAPABILITY

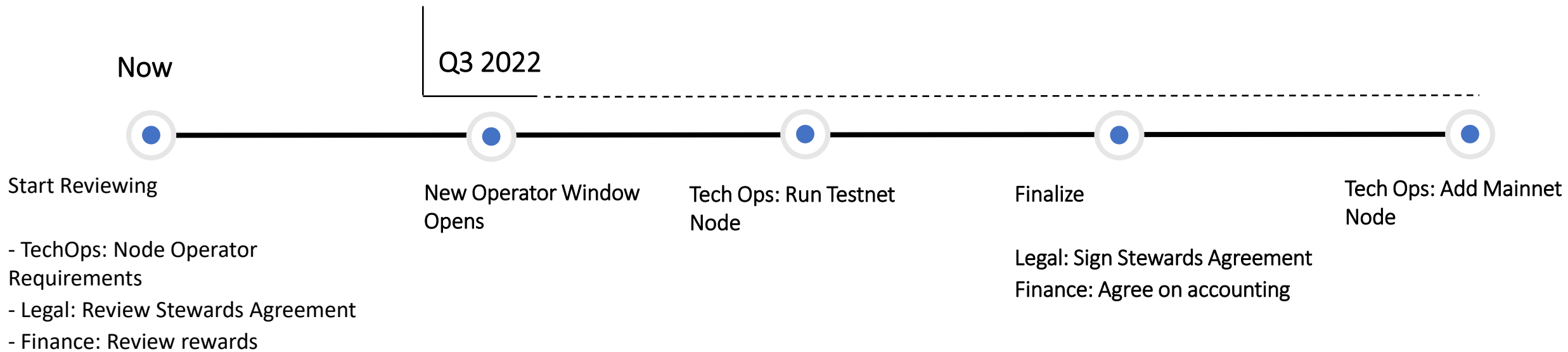
- Ability to create and adapt effective processes in advance and to adjust them upon regular reviews
- Admins are alertable and can respond with 2 hours
- Changes to admins, configuration or environments

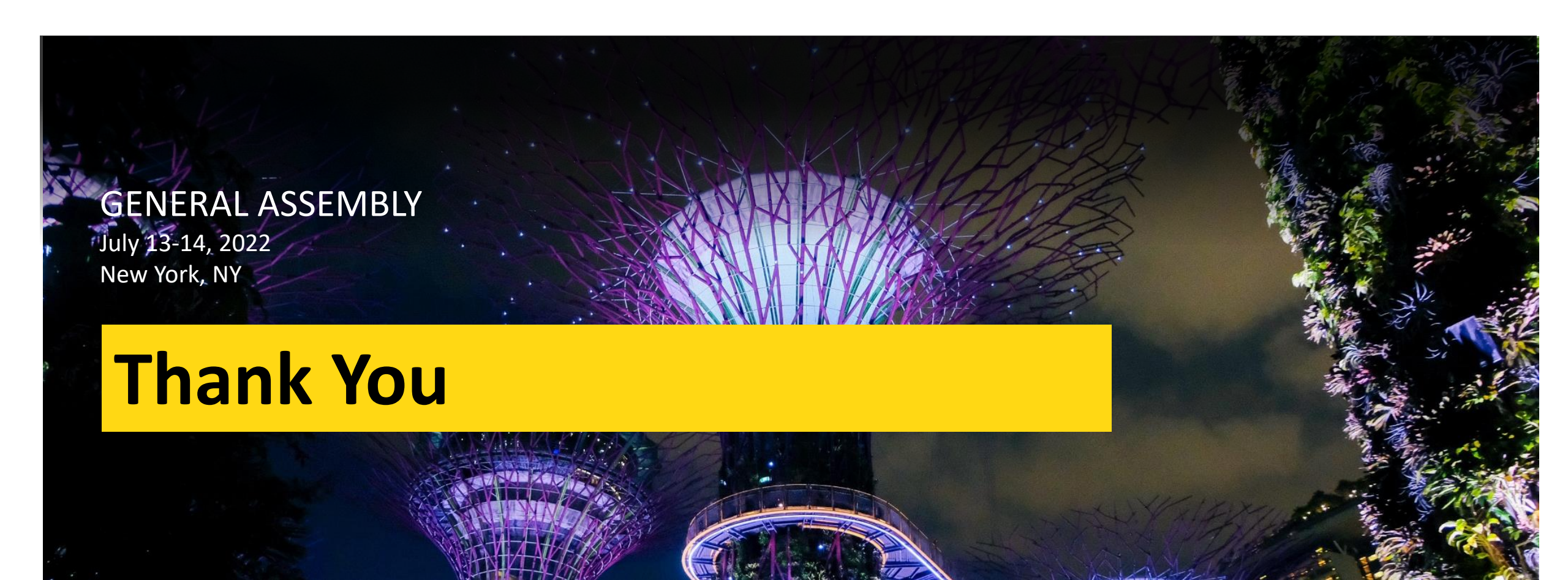
VNF Process for adding a node

STEPS

1. Verify legal agreement signed
2. Startup “Member” Node
3. Technical Ops Signs Up getting a user and organization DID
4. Add Node Operator Service to your organization DID
5. Submit Public Key and IP Address to NOGC Staff. Node gets whitelisted
6. NOGC organizes a vote to add your node as a “Validator”

Node Operator Timeline





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Thank You

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