

# Algorand Network

Topology and software powering Algorand

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# Public Networks

- Mainnet
  - The main Algorand network where production applications live
- Testnet
  - A network for specifically made for testing
  - Running same software version as MainNet
- Betanet
  - Running future software versions



# Configurable Modes

- Participation
  - Used to participate in consensus to secure network
  - Contains last ~1000 blocks
- Archival
  - Contains the entire blockchain
  - Required for indexer, which is used to query blockchain
- Relay
  - Routes data between participation nodes
  - Do not affect consensus



# Decentralization

- Participation nodes
  - ~200 unique accounts participating
  - ~1.5B ALGO online
  - Permissionless
- Relay nodes
  - ~120 nodes
  - Default relays chosen by Foundation
  - Anyone can run relay, but nodes must point to it



# Consensus - Pure Proof of Stake

- Three Steps
  - i. Block proposal: Accounts propose new blocks to the network
  - ii. Soft Vote: Committee votes on proposals and filters down to one
  - iii. Certify Vote: Separate committee votes to certify the block
- Selection
  - Each account generates random numbers via VRF
  - The amount of random numbers generated (thus chance of participating) is proportional to ALGO in account
  - New participants are selected for each step



# Participating

- Requirements
  - Must be running participation node
  - Must register as online with participation key
    - Seperate from signing keys
  - Must have 0.1 ALGO
- Information
  - No explicit staking
  - No rewards
  - No slashing



# Governance

- ALGO-based voting on proposals
- Currently ran by Foundation
- Roadmap towards decentralization
  - xGovs to propagate proposals



# Node Requirements

- Minimum requirements
  - 4 vCPU
  - 8GB RAM
  - 100 GB SSD (NVMe SSD recommended)
  - 100 Mbit broadband
- Recommended for participation
  - 8 vCPU
  - 16GB RAM
  - 500GB NVMe SSD
  - 1Gbps broadband symmetrical with low latency connection to the network





# Relay Requirements

- 16 vCPU
- 32 GB RAM
- 3 TB NVMe SSD or equivalent
- 30 TB/month egress
- 1 Gbps connection with very low latency



# Software

- algod - Algorand Daemon
  - The node software that connects with the rest of the network
  - HTTP endpoints for submitting transactions and reading state
- kmd - Key Management Daemon
  - Manages account keys
  - HTTP endpoints for managing and querying local accounts
- indexer
  - Software that can run alongside an archival node
  - Saves blockchain state in SQL database
  - Provides HTTP endpoints specifically for querying on-chain data



# Interacting With Nodes

- goal
  - Command-line utility for interacting with algod and kmd
- SDKs
  - Leverage HTTP endpoints to interact with algod and kmd
- Public API services
  - Services that expose HTTP endpoints for their node(s) publicly



# Installation

- [sandbox](#)
  - Leverages docker to quickly deploy a node
  - Often used for local networks for development and testing
- Manual installation
  - Compile from [source](#)
  - [Update script](#) for automated install
  - [Package manger](#) on debian-based or RedHat-based operating systems

