

## How Mining Works on Telkes Network

### 1. What Is Mining?

Mining bundles new transactions into blocks and secures the network by solving a computational puzzle. Miners earn newly issued TKL tokens as rewards.

### 2. CPU-Friendly Proof-of-Work (RandomX)

- Algorithm: Telkes uses RandomX, optimized for general-purpose CPUs (e.g., laptops, home servers).

- Why CPU-Friendly? Keeps mining decentralized by making ASICs inefficient.

### 3. Setting Up a Miner

1. Install the Telkes node software on your machine.

2. Sync the blockchain history.

3. Enable mining mode in config: set CPU threads and your wallet address for rewards.

### 4. Solving the Puzzle

- Block header data: includes previous hash, transactions, timestamp, difficulty target, and nonce.

- Hashing loop: tweak the nonce and hash until the result is below the difficulty target.

- RandomX workload: memory-hard design leverages CPU cache for fair competition.

### 5. Submitting a Valid Block

1. Proof-of-Work check:  $\text{hash} < \text{target}$  signifies a valid block.

2. Broadcast: node sends new block to peers.

3. Validation: peers verify PoW and transactions.

4. Chain extension: valid blocks are added, and mining continues.

### 6. Reward Distribution

- Block Reward: starts at 50 TKL, halves at multi-stage intervals.

- Transaction Fees: miner collects fees from included transactions (minus burn).

- Payout: protocol credits the miner's wallet with reward + net fees.

### 7. Difficulty Adjustment

Every 1,024 blocks (~34 hours), difficulty adjusts to target a 2-minute block time. More miners → higher difficulty; fewer miners → lower difficulty.

### 8. Joining a Mining Pool (Optional)

- Why Pool? Steady payouts by pooling hash power.

- How: point miner to pool endpoint, contribute work, and earn proportional rewards.

### Key Takeaways:

- Accessible: mines on standard CPUs.

- Fair Rewards: earn both new tokens and fees.

- Predictable Inflation: halvings and difficulty adjustments maintain long-term stability.