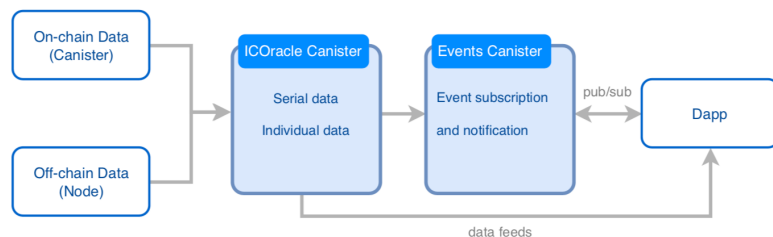


# ICOracle

Decentralized oracle protocol on IC blockchain.

ICOracle is a decentralised oracle protocol on the IC blockchain that provides secure and reliable data for Dapps, integrating access to on-chain data, real-world data and off-chain computation while maintaining the inherent decentralised nature of blockchain technology.

## How it works



ICOracle receives on-chain data by cross-canister calls, or receives off-chain data by https outcalls (or node pushes) and consensus to form deterministic data. The datasets can be queried by Dapps via interface calls. There is an Events Canister for receiving event subscriptions and sending notifications. Dapps can subscribe to data events and receive notifications when the data meets the conditions. ICOracle nodes need to run programs to complete off-chain calculations and submit result data (when there are computation tasks), and monitor the Events Canister for correct processing of event notifications.

The data stored by ICOracle includes serial data, which is recorded according to the time dimension, e.g. market quote data, and individual data, which is an individual event data, e.g. election results. ICOracle receives data in three ways: (1) On-chain data from cross-canister calls; (2) Off-chain data from https outcalls; (3) Off-chain data from ICOracle nodes.

If ICOracle uses an off-chain data source, it requires multiple data sources to form a consensus in ICOracle Canister, and the average of them is the consensus data if the number of data sources within the valid deviation meets the minimum requirement.

On-chain Dapp (Canister) uses ICOracle data feeds by paying \$OT as a fee. Off-chain Dapp can use ICOracle data feeds with an anonymous account, which is free.

The Dapp subscribes to events that meet certain conditions by paying \$OT as a fee to Events Canister, which notifies the Dapp when a subscribed event occurs.

## ICOracle Nodes

Applicants are required to stake OTs to the DAO governance contract, and the first 21 applicants with the largest staked (and no less than 20,000,000 OTs) qualify as nodes. Community users can stake OTs to their trusted node applicants, sharing the mining gains and losses from penalties.

ICOracle Canister will count the valid workload of nodes and the DAO governance contract will share the mining reward pool equally for each period based on the valid workload. If a node involves intentional/unintentional cheating, the staked OTs will be partially deducted.

Node's work:

- Creates a Node Canister to provide data to the ICOracle Canister using https outcalls. The node can also choose to provide data directly by calling the ICOracle Canister interface.
- Runs the off-chain computation program (if there is a computation task) and submits the results to ICOracle Canister.
- Runs the Keeper program, and listens to Events Canister for event notifications and makes off-chain notifications in case of exceptions.

## Features

### Secure and reliable network

Connect highly accurate and available data to any canister using decentralised, on-chain providers (with off-chain nodes as an aid), quality data and multi-data source consensus.

### Seamless connection to any data

Build on a flexible framework that can retrieve data from any data sources (canisters, https outcalls, off-chain nodes), and integrate with any on-chain or off-chain data.

### Maturing solutions

Many time-tested oracle solutions already exist in the Web3 space, and more will emerge on the IC network to help developers build market-leading decentralised applications.

### Highly automation

ICOracle can be implemented almost 100% on-chain with the IC network, mitigating risk of manual interventions and centralized servers. Only in rare cases is it necessary for off-chain nodes to be involved in the work.

### Community

**Twitter:** [https://twitter.com/icoracle\\_io](https://twitter.com/icoracle_io)

**Discord:** <https://discord.com/invite/6YXN7dxFQP>

**Github:** <https://github.com/eleven-cat/ICOracle>

