http://rawbot.org

Rawbot team

Table of Contents

Preface

Rawbot is a framework, more precisely a collection of configurations/scripts/hacks with an underlying currency named RAW with the purpose of facilitating the implementation of payment gateways to activate digital services on a variety of IoT enabled devices such as Raspberry Pi, Arduino, Beagleboard, particle, drones, electric cars and more.

Rawbot utilizes RAW coin, an Ethereum token backed by US Dollars that can be exchanged to ETH through a smart contract.

We have acquired experience in use cases from different Industries to address technical issues that may arise during the process on both client and merchant level, this experience will be invested in supporting users to achieve a seamless implementation.

Giving Life to a sharing economy

The possibilities for application resulting from the intersection of blockchain technology and the internet of things may be disruptive and endless. Additionally to that, rawbot enables the possibility for device to device payments without human interaction.

Architecture

- Raw coin is a USD backed Ethereum smart contract that implements the ERC223 Token Protocol.
- To Establish and maintain transparency, the code is published on github and the contract code is verified enabling it to be visible on Etherscan.

Rawbot has 3 main components:

- Smart contract that enables the user to create action, add devices, create business logic and subcontracts using payments.
- The open source CMS: A tool for merchants to track sales, manage payments, add services and perform accounting operations encapsulated in an easily scalable Docker container.
- RAW Platorm: Web Interface providing DIY and advanced tutorials that aid users to integrate Rawbot with different IoT devices and build endless use cases.

  Contracts:

  - Rawbot: responsible for the token creation, distribution and manipulation.

  - DeviceSpawner: creates and manages device contracts

  - Device: allow merchant to add actions that users can perform and execute

  - IPFS (File System): allows devices to interact with it to perform actions and retrieve their data by grabbing their hashes.

  About IFPS contracts

  - Once the IPFS contract is deployed, any device owner can add any amount of ipfs actions, and these ipfs actions will be available for execution on that device contract address.

  - Each device has a set of actions, an owner and a manager.

- The owner is the device creator, and the manager should be the device where the actions are being executed from, in other words, each device (hardware) such as Arduino/Raspberry PI 3 should have a defined private key to access its wallet, and by accessing its wallet, the device can be used to perform automated tasks as such adding IPFS result to the IPFS contract.

- Device owner -> adds device (creates a new contract) -> adds IPFS action to IPFS contract by specifying the device contract address, action name and price -> the device (hardware) listens to the events emitted by the IPFS contract and filters the device contract address -> user executes the IPFS action -> the device executes the action

-> the device adds the result to the IPFS contract using addIPFSResult

Refund System

RAWBOT features two refund schemes:

Normal refunds can be issued by merchants to refund a customer, by customers to reclaim unused credit (e.g.: a person who buys 2 hours of electricity but uses only 1 can automatically claim and receive the funds for the remaining hour) and also schedule timely payments.

Auto-refund refers to refunds issued automatically by the device in case of action failure.

Characteristics

The total supply is set to eighteen million with a decimal precision of eighteen. The platform follows the ERC223 token standard as ERC223 tokens are backwards compatible with ERC20 tokens while also offering more advantages. Each RAW Coin is equivalent and fixed to 0.5USD, once the total supply reaches the margin of 1 million coins, the contract will adjust and generate a supply double the size of the previous one. ERC223 tokens are sent by calling transfer functions on a token contract whether the receiver was a contract or a wallet address. If the receiver is a wallet, ERC223 token transfers will be the same as ERC20 transfers, and if the receiver is a contract – ERC223 token contract will try to call tokenFallback function on the receiver contract. If there is no tokenFallback function on the receiver contract, the transaction will fail. tokenFallback function is an analog of fallback functions for Ether transactions. It can be used to handle incoming transactions.

There is a way to attach bytes _data to token transactions similar to _data attached to Ether transactions. It will pass through token contracts and will be handled by the tokenFallback function on the receiver contract. There is also a way to call transfer functions on ERC223 token contracts with no data argument or using ERC20 API with no data on transfer function. In this case _data will be an empty bytes array.

ERC223 Advantages:

Some of the reasons why RAW Coin follows ERC223 rather than ERC20:

1. ERC223 eliminates the risk of lost tokens which may occur during the transfer of ERC20 tokens to a contract (when people mistakenly use the instructions for sending tokens to a wallet). ERC223 allows users to send their tokens to either wallet or contract with the same function transfer, thereby eliminating the potential for confusion and lost tokens.

2. Allows developers to handle incoming token transactions, and reject non-supported tokens (not possible with ERC20)
3. Energy savings. The transfer of ERC223 tokens to a contract is a one step process rather than a 2 step process (for ERC20) which translates into two times less gas and no extra block chain bloating.

Target & Pricing

Popular digital assets such as Bitcoin (BTC) and Ether (ETH) are too volatile to be used as everyday currency. The value of a bitcoin often experiences large fluctuations, rising or falling by as much as 25% in a single day and occasionally rising over 300% in a month. Raw is an ethereum crypto currency backed by US. We believe that stable digital assets like Raw are essential to realizing the full potential of blockchain-IoT technology advancement. Raw coins can be used in the same manner as any other crypto-currency: it can be freely exchanged, used to pay for goods and services, or held as a long term saving. Exchange will cost the estimated gas price of the transaction. 20 million RAW coins will be created.

Once the total supply reaches the margin of 1 million coins, the contract will amend and generate a supply equal to the double of the previous one. Initial supply: 20 million circulating coins. Once it reaches 1 million coins (contract address), it will generate 40 million circulating coins.

Use cases & Examples

Open source scripts (snippets) will be available to help the community implement the RAW payment gateway with IoT devices such as Robotics, open source hardware (Raspberry PI, Arduino, Beaglebone), IFTTT and services such as M2X.

- Payment for delivery drone: it can be utilized to transport material to a specific destination
- House rental: integrated payment gateway using smart locks keyless and human less approach
- Electrical scooters rental which are totally automated where user can rent a scooter from station to station and pay by mileage.
- Payment for RC cars rental, park meters and elevators.
- Robotic cleaning service that charges a fee to clean their surroundings
- Coffee/snack machines
- Amusement parks
- Smart bridges
- Gas stations

More examples:

Example 1 (RC car rental)

- A customer wants to rent a RC car.
- The customer has to pay X amount of RAW coins (visible on the IoT device).
- Once the customer pays the X amount, the car mechanics will be enabled.
- When time is over, the car will stop automatically until the customer renews the rental duration.

Example 2 (House rental + smart lock)

A customer wants to rent a house.

- The customer has to pay the customer has to pay X amount of Raw coins (visible on the IoT device) (smart lock at the entrance).
- Once the customer pays the X amount, the smart lock will be enabled for Y period of time.

When time is over, the smart lock will disable the house services and lock the doors

Automatically until the customer renews the rental duration.

Payment Management Platform (base code)

Rawbot offers interoperability with the bitcoin lightning network. Customers can purchase products and services using bitcoin through the lightning network, and the merchant will receive the payment in raw coin.

Anyone can easily deploy the backend code which will be encapsulated in a Docker container. It serves as a

Payment management platform for accounting, tracking payments and services. It is easy to extend and add features and functionalities.

Rawbot presents significant cost savings compared to current server and payment infrastructure. Transaction time may be reduced from days to seconds, and fees from ~3% to .01%

Chargeback & Identity Theft

RAW ends chargeback fraud and identity theft.

Email Invoicing

The smart contract will bill clients electronically and quickly receive payment. No delay, no paper involved.

Two-Factor Authentication

Secure your RAW account with two-factor authentication capability from Google Authenticator.

Wallet Compatibility

Our invoices work with ERC-223 protocol compatible Ethereum wallets.

Mobile Optimization

Access your RAW account dashboard tools easily and effectively on mobile web browsers.

Email, Mobile, and Server Payment Notifications

Stay up-to-date with your transactions via email, text, and server IPNs.

Refund policy

If the script failed to launch or work, the user will get a refund automatically.

Security

Right next to enabling machine-to-machine interactions and data monetization, Blockchain Technology can provide a secure and reliable infrastructure for the interconnection of IoT devices.

Other than eliminating the ample of security threats and tampering attempts facing cloud server systems currently used in IoT Communications, the cryptographic nature of Blockchain technology may help preserve the privacy of IoT device communication used today in industrial and consumer settings. In other words, Blockchain technology has incidentally surfaced as a potential solution for one of the major issues that have long challenged IoT Technology since conception, privacy and security.

As Internet of Things applications are by definition distributed, it's only normal that the distributed ledger technology, which blockchain is, will play a role in how devices will communicate directly between each other (keeping a ledger and thus trail of not just devices but also how they interact and, potentially, in which state they are and how they are 'handled' in the case of tagged goods).

Conclusion

"The code is open source and can be verified by any skilled person – Satoshi"

"With e-currency based on cryptographic proof, without the need to trust a third party middleman, money can be secure and transactions effortless – Satoshi "

In a difficult-to-disrupt environment, we at RAWBOT believe that only by adoption will the FUD and volatility dissipate. Ethereum is the biggest network, Ethereum is an account based system. In Ethereum, balance management resembles a bank account in the real world.

Blockchain and IoT are a perfect pair. Blockchain technology is capable of stabilizing the performance of complex IoT systems ensuring its information safety and authenticity while cloud server down time and unavailability of services susceptibility to manipulation downsized the automation of our world today.

To interact with IOTA as an example, the implementer shall run or gain access to an IRI node which usually has its API exposed. Since IOTA is still in a heavy development phase, an embedded Linux device such as Raspberry Pi doesn't have the resources to run an IRI. This is where RAWBot comes into play to provide a plug and play DIY solution to make payments accessible to the majority of hardware, embedded systems or sensors.

Blockchain Is a Technology, Not a Philosophy. The Advancement of technology will solve the oracle problem. Smart contracts will be the future of mankind, Raw is the experiment.

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