

QTUM

CSC595-D: Blockchain
Presentation by Chidera O. Nwosu

Qtum Blockchain I

Qtum was developed by the Qtum Blockchain Foundation (a non-profit organization). The foundation was established during November 2016 by Patrick Dai, Patrick Dai, and Jordan Earls. Patrick, a Draper University graduate, had previously worked in Alibaba.

Qtum open-source, decentralized Blockchain platform and Value Transfer Protocol. It can execute smart contracts on multiple virtual machines and run environments with Proof-of-Stake consensus.

Qtum Blockchain II

Improvement of the consensus for PoS and adopted MPoS avoids damage to the network environment by malicious nodes. At the same time, Qtum designs the AAL (account abstraction layer) so that the UTXO-based blockchain is able to support smart contracts.

Based on the UTXO model used by Bitcoin, Qtum adopts the consensus mechanism of PoS and is the first public blockchain in the world to make this innovation.

Technical Features I

Transaction model: UTXO (Unspent Transaction Output) from bitcoin

Smart contract architecture: EVM (Ethereum Virtual Machine), adding the x86 virtual machine in 2019

Block size: 2 million bytes, scalable using on-chain DGP (Decentralized Governance Protocol) up to 32 million bytes

Technical Features II

Average block spacing: 144 seconds

Smart contract token protocol: QRC20, based on Ethereum ERC20; QRC721 non-fungible tokens in development

Consensus algorithm: Proof of Stake, version 3.0, upgraded from Blackcoin

Maximum supply: 107.8 million in 30 years, current annual inflation 0.87%

Technical Features III

Theoretical maximum TPS (Transactions Per Second): 70 to 100. Much faster using Lightning Network and other Layer 2 technologies

Block reward: 4.0 QTUM through February 2022 (halved every 4 years), plus a share of transaction fees and gas

Genesis blocks initial creation: 100 million

Technical Features III

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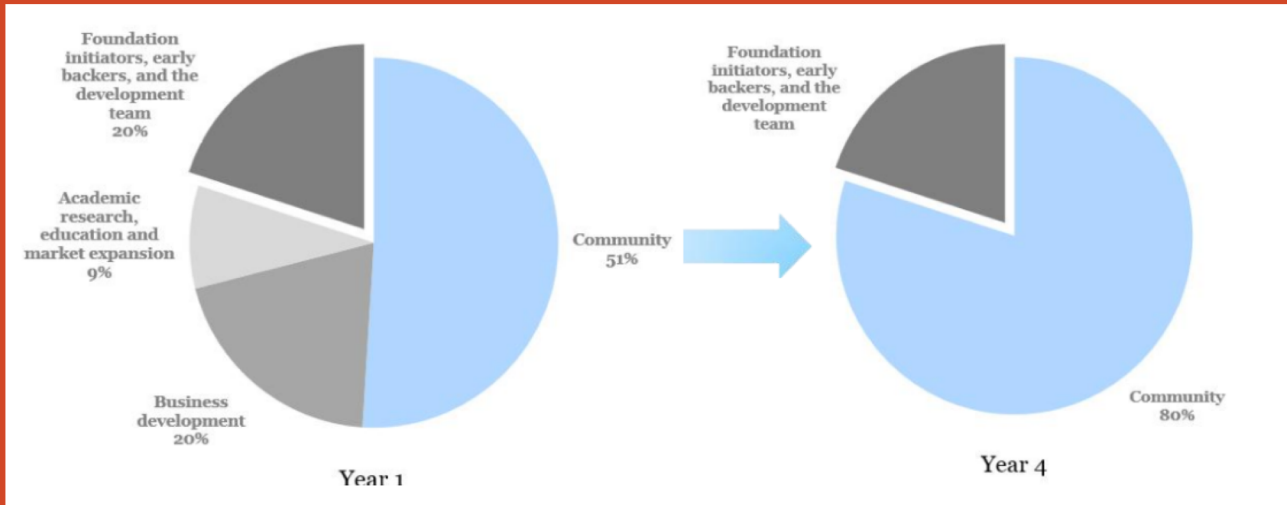
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Genesis blocks initial creation: 100 million

Development of Qtum

During its Initial Coin Offering in March 2017 which was aimed to last 30 days, Qtum raised \$15.6 million within a little less than 5 days in exchange for 51 million QTUM tokens, effectively making it the fourth largest Initial Coin Offering of all time.

ICO



Buy and Store Qtum

QTUM token is currently available to trade on more than 25 exchanges globally such as Allcoin, BCEX, Huobi, Bithumb, OKEx, Liqui, and many others. Majority of exchanges pair QTUM with BTC, ETH, and USDT.

Qtum offers its own wallet called “Qtum Core” to store QTUM tokens. Users can take advantage of officially supported QTUM Wallet which is available on multiple platforms such as Web, Desktop PCs (iOS and Windows), Mobile (Android and Iphone).

Buy and Store Qtum II

The screenshot displays the Qtum Core - Wallet application window. The title bar reads "Qtum Core - Wallet". In the top right corner, the balance is shown as "0.00000000 QTUM". The interface features a sidebar on the left with navigation options: Overview, Send, Receive, Smart Contract, Transactions, and QRC Token. The main area is divided into two sections. The left section contains a large empty box for a QR code, with "Send", "Receive", and "Add Token" buttons below it. The right section is titled "Contract Address" and contains the following fields: "Contract Address" (6b8bf98ff497c064e8f0bde13e0c4f5ed5bf8ce7), "Token Name" (Bodhi Token), "Token Symbol" (BOT), "Decimals" (8), and "Token Address" (an empty dropdown menu). Below these fields are "Confirm" and "Clear" buttons. A note states: "(This is your wallet address which will be tied to the token for send/receive operations)". At the bottom, there is a search bar with "All" dropdowns and "Enter address to search" and "Min amount" input fields. Below the search bar is a table with columns: Date, Type, Label, Name, and Amount. The table is currently empty. The bottom status bar shows "QRC Token (send, receive or add Token in list)" on the left and "QTUM HD" with icons on the right.

Qtum Core - Wallet

0.00000000 QTUM

Overview

Send

Receive

Smart Contract

Transactions

QRC Token

Send

Receive

Add Token

Contract Address

6b8bf98ff497c064e8f0bde13e0c4f5ed5bf8ce7

Token Name

Bodhi Token

Token Symbol

BOT

Decimals

8

Token Address

(This is your wallet address which will be tied to the token for send/receive operations)

Confirm

Clear

All All Enter address to search All Min amount

Date	Type	Label	Name	Amount
------	------	-------	------	--------

QRC Token (send, receive or add Token in list)

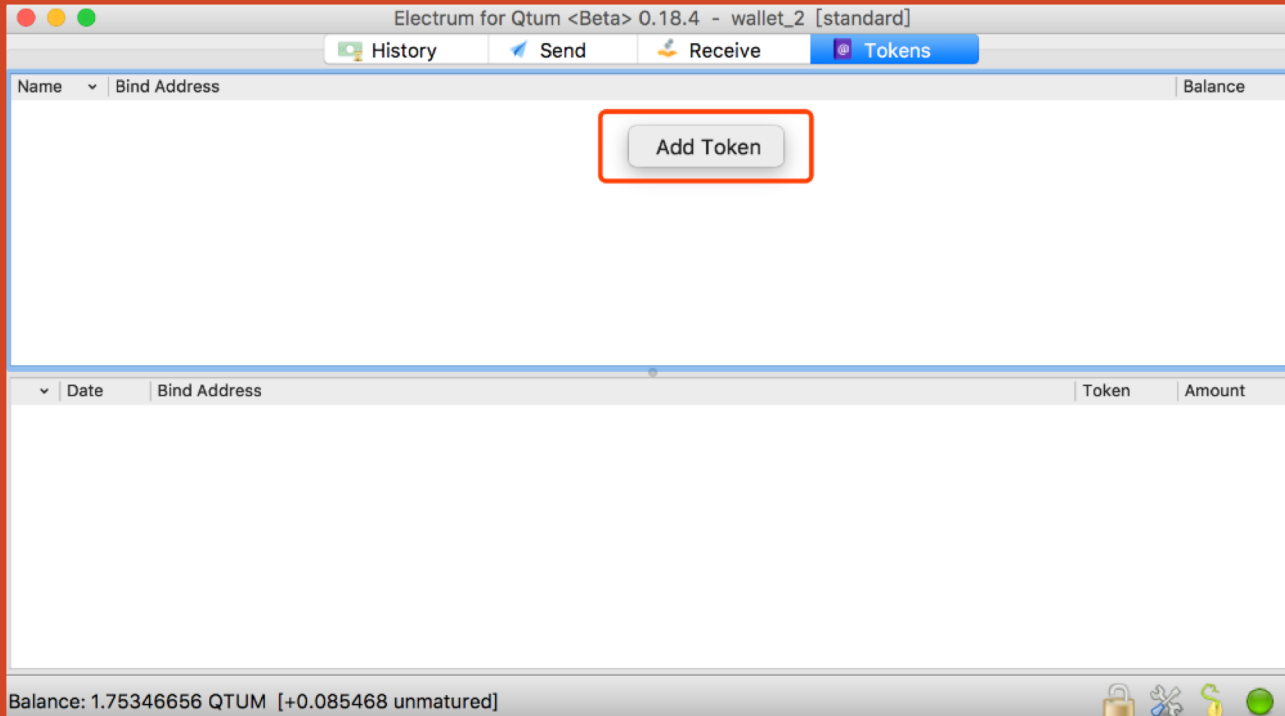
QTUM HD

Wallets

Wallets from the Qtum developers are shown below. These wallets support Qtum QRC20 tokens and smart contract transactions, which is not always the case for 3rd party QTUM wallets.

- qtumd, server Core wallet with command line interface, for more advanced users, supports staking. Can be used on a local computer or on a cloud virtual private server. [Staking tutorial](#)
- Web wallet, a good wallet for beginners, can restore from a variety of other wallets, can use the Ledger hardware wallet. [User's manual](#)

Add Token

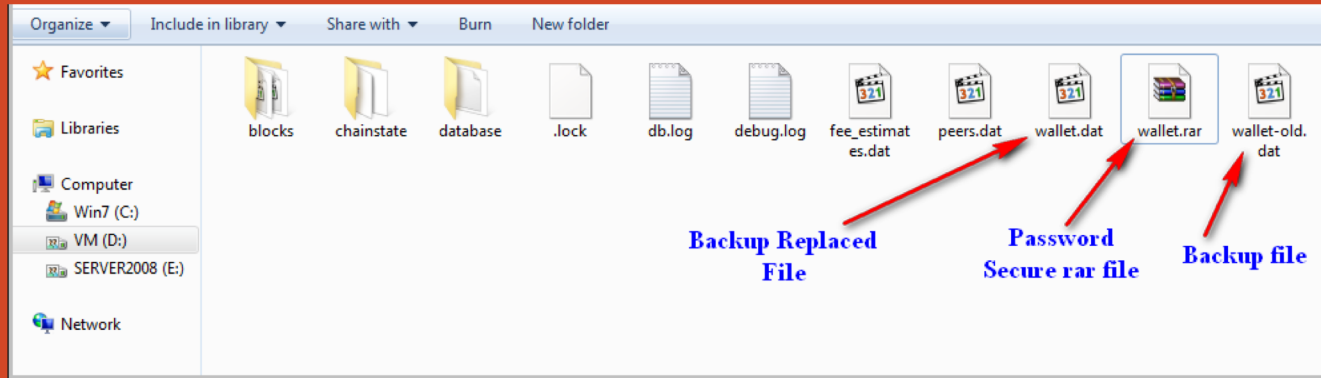


Secure Wallet

Make a good backup of the wallet.dat file (Core wallet), key file (Web wallet) or Save Copy (Electrum). Write down and store offline your wallet passphrase, password or seed words. Never share your private keys or seed words. Avoid handling private keys directly.

Encrypt your Core wallet using these best practices.

Secure Wallet



Stake

You can stake with as little as 1.0 QTUM. Block rewards are awarded in a random lottery process. The odds of winning depend on the number of coins in your wallet vs. the total number of coins being staked on the network.

The more coins a wallet is staking, the more often it will win a block reward of 4 QTUM. Staking will give block rewards of 5 to 6 percent return per year. *To see the expected time to a block reward use the stake calculator.*

Stake Calculator

<https://qtum.info/misc/stake-calculator>

Network Weight

13,357,471.23489656

Enter Your Address (optional)

Your Weight (coins to stake)

Expected Time

12.20 years

Average Blocks Per Year

0.08

Yearly ROI

6.56%

Benefits of Qtum

A hybrid platform adds additional layers to Bitcoin blockchain to make it compatible with Ethereum Virtual Machine.

Qtum is committed to bring blockchain technology to real world like finance, DNS, Internet of Things, gaming etc. by creating a global open-source community with the cooperation of other blockchain communities.

Qtum facilitates dApps development by developing diversified module for different systems and users,

Developer Community

The Qtum team comes from both the Bitcoin and Ethereum communities as well traditional companies like Baidu, Alibaba, Tencent, NASDAQ and more.



Tencent



Backers

The Qtum project is backed by traditional Venture Capitalists, and executives from some of China's largest technology companies.

Qtum Node

```
[ec2-user@ip-172-31-36-82 bin]$ pwd
/home/ec2-user/qtum-0.16.1/bin
[ec2-user@ip-172-31-36-82 bin]$ ls
qtum-cli  qtumd  qtum-qt  qtum-tx  test_qtum
```

Setting up the QTUM Node

1. Download the newest release of the QTUM node
 1. <https://github.com/qtumproject/qtum/releases>
2. Unpack the downloaded package
3. Executables in the QTUM node
 1. qtumd is a headless daemon. It also bundles a testing tool for the same daemon.
 2. qtum-cli is a command line interface to interact with qtumd. we can use qtum-cli and make local RPC calls.
 3. qtum-qt is graphical interface. It is not interesting for us. The QTUM protocol for remote procedure call (RPC) is strongly inspired by Bitcoin.

Staking on Mobile Wallets

Only the Qtum Core wallet (desktop or server versions) can be used for staking

Future of Qtum I

As of June 2018, QTUM holds the 20th position globally based on market capitalisation, with a value of of \$704 million. The circulating supply is 88,664,516 QTUM out of the total supply of 100,664,516 QTUM.

QTUM started trading with the initial value of \$6.42 and reached its highest of \$106.88 during January 2018. As of June 2018 its price has declined to as low as \$8.95.

<https://coinswitch.co/coins/qtum>

Future of Qtum II

Qtum Price Chart

USD KRW EUR JPY INR AUD

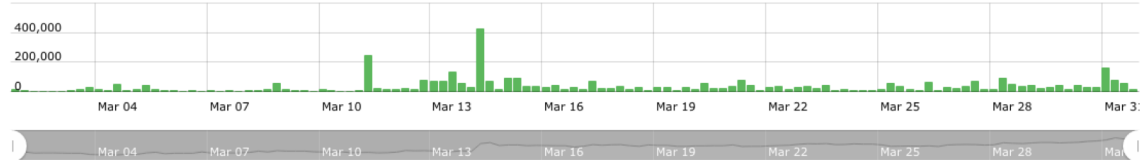
powered by  Crypto Compare

1D 1W 1M 3M 1Y ALL

Value  \$ 3.02



Volume  \$ 13,383.93



Updates to Qtum

<https://blog.qtum.org/tagged/updates>

<https://qtum.org/en/news>

<https://twitter.com/qtumofficial>

<https://www.reddit.com/r/Qtum/new>

Review

https://youtu.be/n16_gF6bAll



Review II

Please select the correct answer choice to the following question: What is the consensus algorithm for Qtum?

- A. Proof-of-Work (POW)
- B. Proof-of-Stake (POS)
- C. Proof-of-Burn (POB)