

eBTC: A Tokenized version of Bitcoin on Ethereum with
Smart Contracts, Lower Transaction Fees and Higher Transaction Speed

eBTC's Community Foundation

Abstract

eBTC, eBitcoin or Ethereum's Bitcoin is an ERC20 tokenized version of Bitcoin on the Ethereum Blockchain. It proposes to solve the transaction cost, speed, scalability and smart-contract-inefficacy concerns of the original Bitcoin blockchain by using Ethereum's more efficient, scalable and interoperable blockchain layer. Supported by a diverse, dynamic and committed global community, eBTC intends to become a more affordable, faster and more flexible peer-to-peer electronic cash and payment system. It intends to do so by retaining the core ideals of Bitcoin and integrating them with Ethereum's ecosystem. The year 2017 witnessed the emergence of multiple Bitcoin forks all trying to solve one or more of its existing concerns: low transaction speed, high transaction costs and centralized mining. Yet, none of the forks currently has the capacity to effectively solve all these issues. In contrast, eBTC's apparent and strangely simple design allows it to efficiently address these challenges while also adding smart-contract capabilities to Bitcoin's core ideals. With increasing awareness and acceptance, eBTC plans to become a truly global, fast, cost-effective and fully decentralized payment processing mechanism while continuing to integrate all the future developments in Ethereum's abstract foundational layer. In doing so, eBTC would represent Bitcoin's original core values, as a sustainable means of electronic payment and store of value, while bringing the needed modernization to Bitcoin using the Ethereum's diverse ecosystem and enabling the implementation of all the available use-cases of a globally-accepted payment system into eBTC.

Keywords: eBTC, Bitcoin, Ethereum, eBitcoin, ERC20, abstract foundational layer, blockchain, digital currency, electronic cash

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Background: An Introduction into the Evolution of Blockchains and the Creation of eBTC

Bitcoin pioneered the trust-less and decentralized peer-to-peer electronic cash system when the world witnessed the surfacing of a paper titled *Bitcoin: A Peer-to-Peer Electronic Cash System* (Nakamoto, 2008). This ingenious and double-spending-resistant invention brought two things to the world: a digital currency and a distributed consensus mechanism. The world of crypto-currencies has moved far since and new technologies have appeared in the blockchain ecosystem. The core mention is the Ethereum's scalable, standardized and interoperable abstract foundational layer: Ethereum's Blockchain.

Bitcoin's distributed consensus evolved and delivered the world a more efficient and flexible technology when Ethereum was first proposed by Buterin in his paper titled *A Next Generation Smart Contract & Decentralized Application Platform* (2013). With increased efficiency, speed and flexibility, it became possible to create innovative decentralized solutions for diverse and wide-ranging use-cases. Ethereum's abstract foundational layer and Solidity, its coding language, enabled the creation of smart contracts, decentralized applications (DApps) and decentralized autonomous organizations (DAOs). The dynamic strengths of Ethereum lie in its core elements: "scalability, standardization, feature-completeness, ease of development and interoperability" (Buterin, 2013, p. 13). Smart contracts enjoy all these quality attributes of the Ethereum ecosystem.

eBTC ushered in as a direct consequence of the gradual evolution of both these blockchains. In essence, it surfaced into existence as an ERC20 version of Bitcoin possessing the vast capabilities of the Ethereum platform.

Existing Concerns and Problems

One of the most critical aspects of Bitcoin's implementation was to remove the need for third-party trust and thus the unavoidable transaction costs associated with such intermediary arrangements. Nakamoto documented that such transaction costs limited the minimum practical transaction size and the possibility for small casual payments (2008). While elaborating Bitcoin's implementation on *P2P Foundation* for the very first time, Nakamoto observed that such intermediaries made micropayments impossible (2009). Ironically, the same phenomenon currently limits the minimum practical transaction size on Bitcoin and inhibits users to transact small transactions due to its ever-increasing and highly volatile market value.

The growing transaction costs of Bitcoin have started to resemble those very arrangements it was initially supposed to counter. At present, an average Bitcoin transaction costs around \$2 to 5\$ or upwards of around 30,000 satoshis. The Bitcoin transaction speed presents another challenge. The average Bitcoin block time is around 10 minutes and it currently takes 6 confirmations or around 60 minutes to achieve transaction finality. Both these factors limit the adoption of Bitcoin as a sustainable medium of digital exchange undermining the ingenious soul of the originally-proposed Bitcoin ecosystem. It is becoming more challenging to use Bitcoin as an efficient electronic cash system for everyday use. Imagine virtually transacting goods or services under \$2 or when transaction times are of critical relevance.

It appears that Bitcoin’s original philosophy—which presented the world with a revolutionary alternative against the traditional banking and fiat systems—is diluting with its ever-growing transaction costs, slow block times and never-ending forking debates. Multiple Bitcoin forks have recently emerged all trying to resolve one or more of its prevailing concerns: scalability, block size, and the increasingly undemocratic mining. But neither of them currently has the capacity to efficiently solve all the underlying problems engulfing the Bitcoin ecosystem. A more fundamental Bitcoin *modernization* is thus needed to realize its original vision.

At present, there exist two documented forks of Bitcoin, namely *Bitcoin Cash* and *Bitcoin Gold* while a third, *SegWit 2X*, has also been proposed. The issue of slow block times has yet to be addressed by each of these forks. In overall, the current Bitcoin ecosystem can best be described as a true genesis of the crypto-universe and a highly volatile digital store-of-value mechanism. The table documents the slow block-time concerns of Bitcoin, and its more-recent and upcoming forks.

Comparison BTC/BTG/BCH/B2X	BITCOIN BTC	BITCOIN CASH BCH	BITCOIN GOLD BTG	SEGWIT 2X B2X
Supply	21 Million	21 Million	21 Million	21 Million
Block Time	10 Minutes	10 Minutes	10 Minutes	10 Minutes
Block Size	1M (2-4M)	8M (8M)	1M (2-4M)	2M (4-8M)

Figure 1: Block Interval Comparison between Bitcoin, and Its Recent and Upcoming Forks (Bitcoin Gold, 2017)

Proposed Solution

The evolution of Bitcoin's blockchain into a more efficient and flexible Ethereum infrastructure allowed developers to create innovative and decentralized applications on top of its abstract foundation layer. The foundational layer enabled the possibility of creating truly decentralized and trust-less crypto-currencies. This capability allowed us to create a peer-to-peer electronic cash and payment system in the form of eBTC. eBTC, as a tokenized version of Bitcoin's core ideals, solves the aforementioned concerns by offering faster transaction speeds, lower transaction costs and the ability to work with smart contracts to the global community of crypto-enthusiasts and beyond.

As an electronic cash and payment system, eBTC aspires to sustainably represent the core attributes of Bitcoin on the Ethereum blockchain without experiencing the hassles of slow block times, higher transaction costs, centralized mining and continuous forks while also providing the support for smart contracts. With Ethereum's smart contract capabilities, eBTC strives to implement all the available use-cases such contracts offer in furthering eBTC's adoption as a truly global and everyday-usable digital currency and payment mechanism.

As eBTC exists over the Ethereum's foundational layer, its ecosystem's characteristics—transaction costs, transaction speed and smart contract capability—mirror the systematic attributes of Ethereum. An eBTC transaction roughly costs around \$0.15 to \$0.5 and its block time is at least 10 times faster than Bitcoin and all its recent and upcoming forks. The table below wholesomely encapsulates the fast and efficient transaction mechanism and various other features of eBTC as compared to Bitcoin and all its recent and upcoming forks.

“Bitcoins”	BTC (Bitcoin)	BCH (Bitcoin Cash)	BTG (Bitcoin Gold)	B2X (SegWit2X)	eBTC (eBitcoin)
Total Supply	21 Million	21 Million	21 Million	21 Million	21 Million
Platform	Original Bitcoin “1MB”	Bitcoin Fork “8 MB”	Bitcoin Fork “Equihash”	Bitcoin Fork “2MB”	ERC20 Token on Ethereum
Mining	Yes (ASIC & Cent.)	Yes (ASIC)	Yes (GPU)	Yes (ASIC)	No (T. in Circulation)
Launch	2009-Jan.	2017-Aug.	2017-Oct.	2017-Nov.	2017-Oct.
Block Time	~ 10 Minutes	~ 10 Minutes	~ 10 Minutes	~ 10 Minutes	~ 15 Seconds
Finality	6 Confirmations (~ 60 min.)	6 Confirmations (~ 60 min.)	NA	NA	12 Confirmations (~ 3 min.)
Avg. Tx. Cost Range	~ (\$2 – \$5)	~ (\$0.06 – \$0.3)	NA	NA	~ (\$0.15 – \$0.5)
Consensus	PoW	PoW	PoW	PoW	PoW (soon PoS)
Scaling	Lightening Network (not launched)	Larger Block Size No layer on top	Lightening Network (not launched)	Lightening Network (not launched)	Lightening + Sharding + Plasma
Privacy	Dandelion (not live)	NA	NA	NA	zkSNARKs (on testnet)
Smart Contracts	No	No	No	No	Yes
Capabilities	Payments (Rootstock soon)	Payments	Payments	Payments	Payments + Smart contracts
Payment Acceptance	High	Medium	Minimal (In Progress)	NA	Minimal (In Progress)
GitHub Stars	18,707	239	296	326	97
Market Cap.	~ \$120 Billion	~ \$10 Billion	~ \$3 Billion	NA	~ \$2 Million

Figure 2: Comparison between Bitcoin, its Forks and eBTC (as adopted from Larsson, 2017)

eBTC proposes to effectively solve the concerns and issues that continue to cause the ever-growing forks in the Bitcoin ecosystem. With Ethereum's sustainable and futuristic developments, eBTC would continue to enjoy and leverage the best of Ethereum's capabilities while offering the global community the core ideals of Bitcoin on a more diverse, scalable and innovative platform. eBTC, with adoption, would also boost Ethereum's recognition in the crypto universe as an Ethereum-enabled digital currency and store of value mechanism, and may prove to be a strategic asset for Ethereum's overall ecosystem.

eBTC: The Token's Solidity Error and the Swap

The original implementation of eBTC contained a critical error in its ERC20 solidity code, which could enable the creator of the contract to wrongfully create more tokens than the maximum supply of 21 Million. While the flaw was never exploited, and seemingly unintentional, it naturally caused the confidence in the project to plummet. After diligently taking over the rights to eBTC project from the original creator, eBTC Foundation decided to execute a contract swap on a *hold and receive basis* where all the existing tokens' private-key-holders were to receive the new error-free tokens in a 1:1 ratio after a pre-specified Ethereum block. After duly announcing the prerequisites for the swap beforehand, eBTC Foundation accordingly implemented the new ERC20 smart contract architecture where all the existing tokens' private-key-holders received new and bug-free tokens in a 1:1 ratio as per the acutely-scrutinized and thoroughly-audited new contract. The current contract is published as an open source on GitHub, free for anyone to review.

Despite eBTC's due reminders to move and hold the tokens into wallets enabling private-key-ownership, a portion of the circulating supply of the tokens was unfortunately held in Ethereum-based decentralized exchanges during the implementation of the swap. Because smart contracts power such exchanges and there is no human control over it, around 2.1 million of the new eBTC tokens are permanently held by such exchanges and would never be a part of the new circulating supply. The new total and circulating supply of eBTC is around 18.9 million and 21 million respectively.

eBTC: Fundamentals Backed by Simplicity and a Diverse and Dynamic Global Community

eBTC is a community-driven and blockchain-enabled crypto-currency working as an ERC20 token by leveraging the best attributes of both Bitcoin and Ethereum. It is a tokenized version of Bitcoin on the Ethereum blockchain and therefore uniquely complements both. It aims to represent and sustain Bitcoin's core attributes, as an electronic medium of exchange and sustainable store of value, on the Ethereum Blockchain, but with a smarter and faster outlook.

The creation of an ERC20 representative of Bitcoin on the Ethereum blockchain may appear "too simple", but discovering the possibility of implementing Bitcoin's ideals on an existing and more-evolved blockchain technology which is fast, flexible and more scalable is nothing short of being an innovative and disruptive thought-process. eBTC is this thought-process that seeks to implement Bitcoin's idealistic vision on the Ethereum blockchain allowing faster transaction speeds, lower transaction costs and smart contract capabilities without experiencing the contesting issues of forks and centralized mining.

eBTC strongly believes that a robust and dynamic global community of crypto-enthusiasts is critical for a sustainable evolution of the whole ecosystem. eBTC Foundation is composed of a diverse and vibrant global body of inspiring individuals who are all staunchly committed to furthering the simple but disruptive cause of eBTC. In addition, the role of eBTC's greater community is pivotal in spreading the word about the power of distributed ledgers and how eBTC may change the very fabric of how we evolve the conduct of online financial transactions.

eBTC: Technical Features

eBTC vs. Ether

eBTC is an Ethereum-enabled cash and electronic payment system and ether, “the crypto-fuel for the Ethereum network” (“What is Ether”, 2017), serves to validate eBTC transactions over the Ethereum blockchain. As a fuel, Ether supports the overall Ethereum ecosystem.

To clarify, ether was never meant to be a currency on the Ethereum. Instead, its purpose is to serve as a fuel for operating the distributed application platform on Ethereum (“What is Ether”, 2017). “It is a form of payment made by the clients of the platform to the machines executing the requested operations” (“What is Ether”, 2017). On the other hand, eBTC, in its purest sense, is just an everyday-usable digital currency and optimized payment system i.e. a medium of faster and cheaper exchange and store of value.

Total Supply, Distribution and Mining

Total and maximum supply of eBTC would ever be 21 million and it will be divisible by 8 decimal places. At genesis, all eBTC tokens were transparently airdropped in an ICO-less fashion to the diverse and committed global community of crypto-enthusiasts. From the beginning, eBTC is a mining-resistant and circulation-oriented digital currency as its total supply was wholly distributed to the community and the eBTC foundation at a percentage ratio of 97.92: 2.08 respectively.

Deflationary eBTC and Inflationary Ether

As eBTC's total supply is limited to 21 million, it reflects the deflationary attributes of Bitcoin on a more flexible and smart Ethereum blockchain. Meaning, with sustainable increase in eBTC's value, its purchasing power would also appreciate making it the only Bitcoin representative on the Ethereum blockchain having deflationary characteristics. Deflationary nature of eBTC further means it could serve as a sustainable and appropriate store-of-value mechanism on the Ethereum ecosystem.

Ironically, ether's total supply is currently uncapped. This signifies an interesting phenomenon: eBTC, a deflationary digital currency, would function on the decentralized blockchain with the optimized assistance of an inflationary crypto-fuel i.e. ether. Considering the inflationary quality of ether and its relatively stable prices, eBTC would continue to sustainably experience the lower transaction costs of the Ethereum network.

eBTC's Smart Contract Capability and Ethereum's Futuristic Developments

Being an ERC20 tokenized version of Bitcoin on the Ethereum platform affords eBTC an innovative advantage of working with a diverse variety of Ethereum-enabled smart contracts, DApps and DAOs. eBTC strategically plans to coordinate with and integrate such innovative use-cases which would help in making it a truly global and highly-accessible electronic cash and payment system. With adoption and gradual evolution, eBTC may also become a strategic asset for the Ethereum ecosystem.

Conclusion

We have discussed the fundamental design, concept and implementation features of eBTC as a tokenized version of Bitcoin on the Ethereum blockchain serving as an efficient, robust and more flexible peer-to-peer electronic cash and payment system. We started with the evolution of trust-less consensus mechanisms and laid down the progress of Bitcoin's distributed consensus into Ethereum's more flexible, diverse and interoperable abstract foundational layer. We then discussed how eBTC came into existence as a direct consequence of Bitcoin's evolution into what later became to be known as Ethereum's blockchain. We highlighted the prevailing concerns of slow block times, higher transaction costs, centralized mining, and ever-growing forks of Bitcoin's ecosystem – which currently lack smart contract support, and how eBTC may solve all these issues while functioning as an ERC20 version of Bitcoin's core ideals on Ethereum's vastly capable and continuously-optimizing ecosystem. We also documented eBTC's fundamentals, its technical aspects, and how the committed and diverse global community is critical for eBTC's general awareness and mainstream adoption. We believe, with adoption and awareness, eBTC may allow such global communities to experience Bitcoin once again on a more flexible and efficient blockchain without having to go through the ideological and politically-charged debates about the ever-growing Bitcoin forks.

References

- Bitcoin Gold. (2017). *Bitcoin Gold and other forks of Bitcoin*. Retrieved from <https://btcgpu.org/wp-content/uploads/2017/10/BitcoinGold-Roadmap.pdf>
- Buterin, V. (2013). A next generation smart contract & decentralized application platform. *The-blockchain.com*. Retrieved from http://www.the-blockchain.com/docs/Ethereum_white_paper-a_next_generation_smart_contract_and_decentralized_application_platform-vitalik-buterin.pdf
- Larsson, A. (2017). State of bitcoins. *allcoinwiki.com*. Retrieved from <https://allcoinwiki.com/bitcoin/>
- Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system. *Bitcoin.org*. Retrieved from <https://bitcoin.org/bitcoin.pdf>
- Nakamoto, S. (2009). Bitcoin open source implementation of p2p currency. *P2P Foundation*. Retrieved from <http://p2pfoundation.ning.com/forum/topics/bitcoin-open-source>
- What is Ether. (2017). In *Ethereum.org*. Retrieved from <https://ethereum.org/ether>

