digitalbits

Whitepaper

DigitalBits Foundation

1. Introduction

This paper provides various updates to the DigitalBits version 2.3 whitepaper published on June 14, 2019 which is incorporated herein by reference[1]. This paper is structured as follows: Section 2 summarizes the existing blockchain system, Section 3 additional features and functionality being added to the DigitalBits system, Section 4 summarizes modifications to total token supply and token allocation, and finally Section 5 conclusion.

The 2019 whitepaper introduced the DigitalBits blockchain and primarily focused on enabling easy asset tokenization using a transaction and trading layer, the goals and requirements of such a system, and the overall architecture of DigitalBits.

This paper introduces new features and functionality being added to the DigitalBits blockchain. Specifically automated market maker technology (AMM) to coexist alongside the protocol level DigitalBits decentralized exchange that has operated since network launch, and its potential to attract increased network level liquidity.

In 2022 Q1, the cryptocurrency industry once again witnessed the associated risks with centralized platforms with the downfall of certain centralized crypto lending platforms[2][3]. Protocol-level AMM technology as discussed in this paper enables users to contribute liquidity to a decentralized system without the risk of third-party taking custody of their stake in a liquidity pool. Furthermore, with this functionality existing at the protocol level, all applications, platforms, and third-party exchanges connected to the network are able to access the liquidity pools. As a result of the low cost, speed, and ease of use, this presents an opportunity for any token created on the DigitalBits blockchain to first consider launching a liquidity pool on-chain and leveraging the AMM technology, prior to pursuing the deployment of their token onto a centralized exchange. As the aggregate transactional activity increases on-chain from the array of uses, as would the overall utility for digitalbits.

2. DigitalBits Existing System Design

The DigitalBits network consists of entities that perform different but complementary roles in order to maintain the health of the network. The key role is played by the nodes that run the DigitalBits blockchain-based software and connect to one another. These nodes are well supported by nodes that provide services such as mapping and RESTful APIs. Additionally, APIs, SDKs, and wallets provided by DigitalBits facilitate businesses and third-party developers to easily develop and deploy their custom apps and platforms. Below, Section 2.1 presents the high-level network overview that consists of the various entities that play a vital role.

2.1 DigitalBits Network Overview

Fig. 1: High-Level DigitalBits Architecture Overview

Figure 1 illustrates an overview of the DigitalBits architecture. The DigitalBits architecture consists of the key components described below.

2.1.1 Network Backbone: DigitalBits Core

Fig. 2: Quorums, i.e., circles of trust formed among DigitalBits core instances (represented as DB core) of various partner institutes and individuals.

The DigitalBits core instances can choose to belong to one or more quorums and utilize them in a hierarchical manner or based on the type of transaction that needs to be verified. The nodes belonging to a quorum need not be located close to one another as can be observed in the blue quorum set.

The DigitalBits core is the backbone of the DigitalBits network. The DigitalBits Core software interacts with a chosen subset of other instances of cores in order to validate and agree on the status of every transaction through the DigitalBits Consensus Protocol (DCP). DCP relies on a Federated Byzantine Agreement (FBA). Unlike the Byzantine Algorithm, the FBA does not have a single list of trusted validators, i.e., a centralized list of trusted validators. Instead, an FBA allows for different quorums or sets of validators to co-exist. The nodes can determine the composition of the quorum in a decentralized manner. As shown in Figure 2, DigitalBits core instances of different institutions can choose to participate in one or more quorums subject to the existing quo-rum members agreeing to grant it access. The quorums facilitate the compliance process based on legal requirements. Organizations may choose one or more quo-rums that satisfy their requirements. Nodes or organizations could also choose to have a hierarchy of trust with the parameters that denote the level of trust that a node accepts for each transaction. In other words, quorum composition and aspects such as simple majority vs. 2/3 majority are defined for different classes of transactions, similar to parliamentary systems in many parts of the world.

The benefit of hosting an own instance of DigitalBits core as compared to just running an App or client is manyfold. Transactions can be submitted without having to rely on a third-party and the DigitalBits core can select its own instance of who to trust, i.e., the quorum. The more organizations and partners contribute instances of DigitalBits core to the network, the more reliable and robust the network becomes. Each organization can choose to run one or more DigitalBits core nodes, which also participate as validators.

2.1.2 The DigitalBits Network

The DigitalBits network itself is a collection of connected DigitalBits cores run by various individuals and entities around the world. Instances of DigitalBits core add credibility to the overall network. Additionally, they may choose to have a Frontier server for communication in order to access the DigitalBits Network. The distributed nature of the network makes it reliable and safe. All these DigitalBits cores within the network eventually agree on sets of transactions. Each transaction on the network costs a small fee and this fee helps to prevent bad actors from spamming the network.

2.2 The Existing Decentralized Exchange

The DigitalBits blockchain contains a wide array of protocol-level features and functionality to empower existing and new platforms in the emerging categories of Metaverse, NFTs among others across the cryptocurrency industry.

Technology that lacks the ability to enable functionality that empowers access and growth liquidity often presents challenges for emerging platforms. Besides the ability for DigitalBits to easily enable the tokenization and transfer of digital assets, it also enables seamless transfer or trade of those assets on chain with other entities interested in receiving those assets. This helps to solve many of the existing issues of non-tokenized assets that often suffer from missing market liquidity. In some cases, it is possible to seamlessly trade these assets even if no direct market exists between two assets.

2.2.1 Matchmaking

Users interested in trading digital assets can create an offer to buy or sell an asset. In order to make an offer, the account must hold the asset it wants to sell. Moreover, the user is required to trust the issuer of the asset it is trying to purchase. When an account creates an offer, the offer is checked against the existing order book for that asset pair. If the offer crosses an existing offer, it is filled at the price of the existing offer. If not, the offer is saved in the order book until it is either taken by another offer, taken by a payment, canceled by the account that created the offer, or invalidated because the account making the offer no longer has the asset for sale.

2.2.2 Cross-Asset Multi-Hop Payments

Let us assume that Jane owns token A and wants to buy an item or a service from a merchant that only accepts token B. In this scenario, Jane can create a payment in DigitalBits that automatically converts her token A into token B by querying the order book and converting among the tokens at the best available rate. In case the order book does not contain any offers for such a conversion, it is also possible to first convert it into another asset, e.g., token C, and afterward convert those tokens to the target asset class. The number of intermediate steps before the final conversion is limited to a maximum of 6 hops and atomic[4].

Since cross-asset payments and conversions are simple and seamless, users are not required to hold any unwanted assets just for payment purposes. Instead, they keep their preferred tokens, only converting them if necessary.

3. Introducing AMM and Liquidity Pools

Since the launch of the network, the above-mentioned built-in decentralized exchange (DEX) has existed at the protocol level. To complement the DEX and provide an alternative source of liquidity, the version 3 upgrade will introduce automated market maker functionality (AMM) and liquidity pool features.

With an AMM, new orders trade against a liquidity pool. This differs from the original DEX wherein new orders would trade against existing orders sitting in an order book that others previously submitted. An AMM will also shift relative prices based on an underlying formula used to value two assets that co-exist within the pool and adjust programmatically as trades are executed against the pool.

Anyone can provide liquidity into a liquidity pool. A small fee is applied as trades occur and the pool distributes the fee to liquidity providers.

1. It will either succeed or fail and the payment sender will never be left holding an unwanted asset.

This technology provides the opportunity for AMMs to enhance network liquidity, attract capital and enable increased trading volumes. For example, Uniswap facilitates billions in trading volume with over $7 billion in value locked in liquidity pools across its platform.

4. Adjustments to Token Allocation

As stated in the 2019 Whitepaper, a community of various partners, contributors and users are crucial for the further development of the DigitalBits ecosystem. At the launch of the network in 2018, the total supply of digitalbits was established with 100 billion tokens. The initial token allocation as illustrated in the 2019 whitepaper is set out in Figure 3 below, which introduced plans for scholarships, grants, and other activities to facilitate community engagement.

This amount of total supply was first forecasted in 2018 to take over 20 years to be exhausted. However, as time evolved and taking into consideration both macro factors across the industry as well as micro factors following the network launch through to early 2021, it was determined that total supply could be reduced while maintaining a similar time horizon forecast. As part of this process, it was also determined that the algorithmic pool could be eliminated.

Therefore, as part of the version 2 upgrade completed in February 2021, the total supply was reduced by eighty percent (80%). Following the reduction in total supply in 2021, the token allocation was adjusted as illustrated in Figure 4.

Total supply is continuously evaluated and ongoing reductions will be taken into consideration. It is anticipated that this process will be determined in the future by a governance structure involving community votes.

Allocation	%	Description
40.00 B	40.00%	Algorithmic pool
8.00 B	8.00%	Partnership development, ecosystem growth and other marketing incl. airdrops and bounties;
5.00 B	5.00%	R&D grants
15.00 B	15.00%	Team, contractors, and advisors ("Team")
32.00 B	32.00%	Token sale and reserve to be held for future use

Fig. 3: Token distribution at the launch of the DigitalBits network.

Allocation	%	Description
4.55 B	22.75%	Partnership development, ecosystem growth and other marketing incl. airdrops and bounties;
2.45 B	12.25%	R&D grants
3.0 B	15.00%	Team, contractors, and advisors ("Team")
10.00 B	50.00%	Token sale and reserve to be held for future use

Fig. 4: Token distribution following 2021 v2 upgrade and reduction of total supply by 80%.

As referenced in the 2019 Whitepaper, the R&D Grant Program and Ecosystem Development Program are focused on encouraging prospective partners to develop and operate products, services, or solutions that are important to the DigitalBits network and its growth.

5. Conclusion

This paper summarizes some of the existing features and functionality of the DigitalBits network, including enabling easy asset tokenization using a transaction and trading layer empowered by the protocol level decentralized exchange. This paper also introduces new features and functionality being added to the DigitalBits blockchain. Specifically automated market maker technology (AMM) to coexist alongside the protocol-level DigitalBits decentralized exchange that has operated since network launch, and its potential to attract increased network-level liquidity.

Protocol-level AMM technology as discussed in this paper enables users to contribute liquidity to a decentralized system without the risk of third-party taking custody of their stake in a liquidity pool. Such associated risks of centralized platforms holding custody of users' tokens were once again witnessed in 2022 Q1 with the downfall of certain centralized crypto lending platforms. Furthermore, with the AMM functionality existing at the protocol level, all applications, platforms, and third-party exchanges connected to the network are able to access the liquidity pools. As a result of the low cost, speed, and ease of use, this presents an opportunity for any token created on the DigitalBits blockchain to first consider launching a liquidity pool on-chain and leveraging the AMM technology. As the aggregate transactional activity increases on-chain from the array of uses, as would the overall utility for digitalbits. thereby enhancing the overall digitalbits token value proposition from first presented in the original DigitalBits whitepaper.

References

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Disclaimer

It is forecasted that it will take over 20 years to exhaust the total supply reserves. However, this is subject to several factors, therefore, this timeline cannot be guaranteed and forecasts may fluctuate from time to time.