# A decentralized synthetic assets exchange on Binance Smart Chain

Exchange for real-world tokenized assets provided by liquidity pools and governed by MARS token holders.

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# Abstract

The Binance Smart Chain (BSC) adoption has been growing exponentially during the first quarter of 2021. The most significant difference with the Ethereum blockchain is BSC's up to 100 times lower price of gas. This fact makes BSC accessible to virtually anyone, while Ethereum can only be used by the selected few who can afford the high transaction costs. Traditional asset classes have yet to enter this globally accessible network. Real-world asset tokenization on BSC has the potential to break down those high entry barriers. We present MarsSwap, a protocol that allows anyone to trade synthetic assets that track real-world assets' performance. The protocol enables trading these assets in a decentralized way by using liquidity providers. These providers will earn rewards for providing liquidity into the protocol's automated market maker smart contracts.

# Introduction

The Binance Smart Chain (BSC) is a fork of Ethereum, which uses the BEP20 smart contract standard for tokens. Since this standard is similar to Ethereum's ERC20, the network can leverage most of the existing architecture and tools currently existing in the Ethereum ecosystem. BSC was launched by Binance in September 2020. Since then, the growth of BSC has been remarkable. By February 2021, BSC had surpassed Ethereum in the number of daily transactions, and by March 2021, it also surpassed it in volume and users. Most of this growth was achieved thanks to the lower transaction costs and faster confirmation times. While Ethereum's average gas price has increased with the network's adoption, BSC's average gas price has been mostly flat, and it's now even cheaper than ever.

As seen in bscscan's stats and metrics on number of daily transactions and unique addresses, BSC's growth has been in a non-stop upward trend since its inception, making it a great new market into which traditional financial instruments can be leveraged.

In addition to this, statistics on [gas price](#) highlight why we're so eager to introduce traditional finance to Binance Smart Chain.

In this paper, we discuss how real-world asset tokenization on BSC can support the democratization of financial assets and the protocol's core mechanisms.

# Real-world asset tokenization

Real-world asset tokenization aims to create on-chain tokens that match the price of tradable assets, like equities, real estate, commodities, foreign currencies, complex derivatives, or non-fungible assets. Tokenizing assets opens the doors for a more efficient and fair financial sector by increasing the accessibility, liquidity, and transparency of these assets. Other benefits include eliminating the middlemen, fractional ownership, fast and cheaper transactions, and no territorial barriers.

## Benefits of asset tokenization

- **Faster and cheaper transactions:** Tokenized assets transactions are executed with smart contracts, ensuring a safe, immutable, and automatized transfer. The low gas price and fast confirmation times on BSC makes transferring ownership of the assets more accessible and fair.
- **Accessibility:** Asset tokenization offers the potential for more open and widely available access by reducing the minimum investments, lockup periods, and by removing most territorial barriers. For example, an investor can invest in a property located overseas without visiting it physically or contracting an agency. This makes investment more secure, faster, and accessible to everyone.
- **Fractional ownership:** BEP20 tokens are highly divisible, typically providing up to 18 decimal places. Thus, reducing the minimum amount required to access these investments. An investor might decide to buy a small fraction of real estate or even a tiny fraction of a famous painting.
- **Eliminating the middlemen:** Tokenized assets can be exchanged on decentralized platforms. It eliminates the need for a centralized organization

that might put entry restrictions on investors, take high fees and introduce delays.

- **Liquidity:** By tokenizing assets, investors might sell their ownership of certain assets on secondary markets. Since tokens can be divided, the ownership can be acquired by thousands of different investors. For example, the owner of a multi-million dollar painting might have trouble finding a single buyer for it. Instead, it can decide to sell it on a secondary market where a large number of investors can acquire fractions of it.
- **Transparency:** Tokenized assets might have the token's holder rights and responsibilities directly embedded in its code. The immutable characteristics of BSC allow tracking exactly who currently has a token's rights and who the previous owners were.

## Implementation

There are mainly two alternatives for implementing real-world asset tokenization:

- **Asset-backed tokens (ABT)**: Tokens that are backed 1:1 with the real-world tradable assets. The implementation of these assets is straightforward, and their risk is limited to the custodian entity backing the assets. Examples of ABTs include stablecoins like BUSD.
- **Synthetic tokens (ST):** Tokens that synthetically provide exposure to the underlying asset price without requiring a 1:1 backing. The implementation of these tokens is more complex than ABTs, but they provide a number of important advantages. Synthetic tokens are more accessible, as they don't face the risk of the custodian limiting access to certain types of investors. Also, these STs don't charge a holding fee, like it's normal for many ABTs backed by tangible assets like gold or real estate. Last, synthetic tokens are truly decentralized since there is no custodian entity that may face censorship or decide to stop providing the service. An example of these assets is the synthetic assets provided by the Mirror Protocol.

## Binance BUSD

BUSD is an ABT stablecoin approved by the New York State Department of Financial Services (NYDFS) launched in partnership with Paxos and Binance.

## Mirror Protocol synthetic tokens

The Mirror Protocol allows the creation of Synthetic tokens that track the price of real-world assets. Mirror synthetics are intended to be used as key building blocks in smart contracts and to bring the world's assets to the blockchain. Originally deployed only on the Terra Network, these **Synthetic tokens** are now multi-chain. Transfers and transactions between Terra, Ethereum, and BSC are now possible via the use of cross-chain bridges.

# The MarsSwap Protocol

The MarsSwap protocol allows anyone to exchange both Asset-Backed Tokens and Synthetic Tokens on the Binance Smart Chain.

BEP20 tokens can be swapped in a decentralized way by interacting with liquidity pools. Users can stake any arbitrary pair of BEP20 tokens into the respective pool, and the platform will generate an LP token in exchange. LP token holders will receive rewards for each swap between the pairs.

In this section, we will detail the different characteristics of the MarsProtocol.

## DEX & Liquidity Pools

The concept of liquidity pools was originally introduced by Uniswap. Each liquidity pool is a trading facility for a pair of BEP20 tokens. When a new pool is created, both tokens start with a balance of 0. In order to allow swapping tokens in a decentralized way, liquidity providers must deposit an initial amount of each token. This first liquidity provider will define the initial price of the liquidity pool. They are incentivized to set the real-world exchange rate for the pair of assets. Otherwise, a

profitable arbitrage opportunity would exist, which will be likely to be taken by an external party.

All subsequent deposits on the pool must stake an amount of tokens proportional to the current exchange rate price.

Liquidity providers receive a unique token that represents the Pair Liquidity Pool (LP-Token). These tokens are minted and sent to the address of the depositor. When the liquidity providers decide to take back their tokens, the LP-Tokens are burned. This process will transfer back to them their proportion of the liquidity pool, plus their proportional reward for each transaction that took place on the pool.

## Liquidity Pool Farms

In order to foment the creation of liquidity on specific pairs of tokenized assets, MarsSwap will provide Farms and Pools. They will allow users to stake their liquidity tokens and, on top of the fee distribution rewards, users will earn MarsSwap's Governance token: MARS.

At launch, MarsSwap will offer farms for BUSD and Mirror Protocol's synthetic tokens.

## Flash Loans

MarsSwap protocol has native support for Flash Loans.
Flash Loans (internally called Flash Swaps) allow users to withdraw up to the total reserves of any token on MarsSwap and use it to execute arbitrary trading logic at no upfront cost, provided that by the end of the transaction, you either:

- pay for the withdrawn tokens with the corresponding pair tokens
- return the withdrawn tokens along with a small fee

Flash Loans are incredibly useful because they obviate upfront capital requirements and unnecessary order-of-operations constraints for multi-step transactions involving MarsSwap.

Flash loans will allow users to benefit from arbitrage opportunities, which will help keep the prices of the tokenized assets in line with the real-world assets while also increasing the number of transactions and rewards for Liquidity Providers.

## Governance Based Migrations

MarsSwap can be upgraded by using its Governance protocol. Instead of being unilaterally able to migrate liquidity pools, any migration must be approved by MARS token holders. This strategy will allow MarsSwap to evolve and keep growing while ensuring that any change is beneficial for the token holders.

The governance contract is behind a Timelock contract, so MARS holders who disagree with a voting result will have time to exit the pools.

# MarsSwap future steps

## Leverage trading and short selling for tokenized assets

After the required levels of liquidity have been archived, the next step for the protocol will be the support for leverage trading and short selling of tokenized assets. Investors can increase their exposure to a specific asset by using leverage or inverse the assets' returns by opening a short position.

This feature will use a system of lending and borrowing. Like in other lending platforms, to protect the lender's assets, borrowers must keep a collateral on MarsSwap. Since maintaining unused collateral might not be ideal for investors, the Mars Protocol will support the use of LP-Tokens as collateral. By implementing this innovative feature, the necessary collateral funds for a safe lending process are guaranteed, even if the collateral funds are staked on a farm or pool.

Borrowers will benefit from their collateral generating rewards while being able to dispose and make use of their borrowed assets.

Leverage and short selling might be used for speculative reasons, but they can also be used as a hedge against impermanent loss.

## Option derivatives for tokenized assets

Options trading has gained a lot of popularity in recent years. The same lending and borrowing functionality implemented for leverage trading can be used for implementing options trading. MarsSwap protocol will allow users to buy calls and puts on any of the supported assets. The protocol will likely start by offering standardized expiration dates, and it will be extended to more customizable derivatives in the future (TBD in accordance to Roadmap).

## Integration with popular dex aggregators

MarsSwap protocol implements an Automated Market Maker (AMM) exchange with custom routing capabilities. It makes it possible to trade cross-assets using the MARS token as a bridge.
This capability makes it attractive for decentralized exchange aggregators to integrate with MarsSwap's Router. Dex aggregators will benefit from high liquidity between synthetic assets, while MarsSwap's liquidity providers and MARS holders will benefit from every transaction on these exchanges.

## Leveraged farming

Using the same lending and borrowing features implemented for leverage trading, MarsSwap can support leveraged farms. These farms will increase the exposure to both a farm's reward and price movements of the staked tokens. On the other hand, for more risk-averse users, MarsSwap will offer farms with smaller APRs but with a built-in hedge against impermanent loss.

## Limit orders

Limit orders on MarsSwap protocol will allow submission, updates, and execution of buy and sell orders at a limit price specified by the users. Once the limit order is submitted and the limit price is reached, market-making agents will be able to read

the orders from the Limit Order smart contract and execute them when an arbitrage opportunity is present.

## Stop Loss and Take Profits

SL and TP are critical functionality for reducing the risk on any trading platform. Still, decentralized exchanges have generally not offered these features. Executing transactions on-chain as a response to events like price movements is not straightforward. MarsSwap protocol will solve this by taking a small fee when the SL or TP is triggered. This fee will be used to reward market participants who close these positions when the thresholds have been reached. The functionality will be embedded into the smart contract, allowing anyone to monitor and profit from closing operations.

# Conclusion

Asset tokenization on Binance Smart Chain has the potential to revolutionize the financial sector by providing a more accessible, cheaper, and faster alternative for gaining exposure to real-world tradable assets.

MarsSwap is a protocol that allows anyone to exchange tokenized assets in a decentralized way on BSC. The protocol's farms enable users to gain rewards for staking tokens into liquidity pools, both for **Asset-backed and Synthetic Tokens.** Also, Flash Loans allow smaller players to profit from arbitrage opportunities without upfront capital requirements.

MarsSwap protocol is governed by MARS token holders. Upgrades and changes to the protocol must be approved before they take effect, ensuring all changes are beneficial for the token holders.

After the required levels of liquidity have been achieved, MarsSwap protocol will introduce key features like leverage trading, options trading, limit orders, stop losses and take profits.

# References

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# Disclaimer

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