Introduction

Morpho Blue is a decentralized protocol enabling the overcollateralized lending and borrowing of crypto assets (ERC20 Tokens) on the Ethereum Virtual Machine . The protocol is implemented as an immutable smart contract, engineered to serve as a trustless base layer for lenders, borrowers, and applications.

Morpho Blue is licensed under a dual license (BUSL-1.1 and GPLv2) which you can find here . Once deployed, Morpho Blue will function in perpetuity, provided the existence of the Ethereum blockchain.

Decentralized, overcollateralized lending and borrowing

A decentralized, overcollateralized lending and borrowing protocol is an autonomous system that allows users to borrow assets by providing more collateral than the value of the borrowed assets and lenders to earn interest on supplied assets.

Basic features and components:

1. Collateralization:
2. To borrow assets, a user must provide collateral as a crypto asset supported by the protocol.
3. Liquidation Loan-To-Value (LLTV):
4. The protocol specifies the minimum value of collateral required relative to the borrowed assets. For example, if this ratio is 90%, the value of borrowed assets must not exceed 90% of the value of the collateral, or the position is eligible for liquidation.
5. Borrowing:
6. A user initiates the borrowing process by interacting with the protocol. They specify the amount of the asset they want to borrow and provide the required collateral.
7. Interest Rates:
8. Borrowers pay interest on the borrowed amount. The amount of interest paid is based on the interest rate model used by the protocol. Interest accrues over time and is payable when the borrower repays the loan.
9. Repayment:
10. Borrowers can repay the loan at any time by returning the borrowed assets plus accrued interest. The borrower can retrieve his collateral from the smart contract once the repayment is confirmed on the blockchain.
11. Liquidation Mechanism:
12. To mitigate the risk of default, protocols include a liquidation mechanism. Suppose the value of the borrowed assets exceeds the LLTV (due to market fluctuations or interest accrual). The position may be liquidated in part or full to repay the loan and any outstanding interest.
13. Lending:
14. A user initiates the lending process by interacting with the protocol. They specify the amount of the asset they want to lend and transfer these assets to the smart contract.
15. Withdrawal:
16. Lenders can withdraw their loan assets plus accrued interest at any time, assuming the market has enough liquidity.

Permissionless market creation

A distinctive feature of Morpho Blue is permissionless market creation: the protocol allows users to create isolated markets consisting of one loan asset, one collateral asset, a Liquidation Loan-To-Value (LLTV), an oracle, and an interest rate model (IRM).

This a departure from the existing paradigm and traditional lending platforms (such as Aave and Compound) which:

1. Require governance approval for asset listing and parameter changes.
2. Pool assets into a single lending pool, sharing risk across the entire protocol.

In Morpho Blue, each parameter is selected at market creation and persists in perpetuity. Or, in other words, are immutable. The LLTV and interest rate model must be chosen from a set of options approved by Morpho Governance.

Once a market is created, users can either lend/borrow assets to/from it with certainty that:

1. It will persist as long as Ethereum exists.
2. The parameters of the market will never change.

Morpho Blue Markets

In Morpho Blue, markets are named based on their individual parameters in the following format:

CollateralAsset/LoanAsset (LLTV, ORACLE, IRM)

Using the following parameters as an example:

CollateralAsset:wstETH LoanAsset:WETH LLTV:94.5% Oracle:ChainlinkOracle IRM:AdaptiveCurveIRM

The market would be namedwstETH/WETH (94.5%, ChainlinkOracle, AdaptiveCurveIRM) Tags: *[morpho-blue](#)