

Swaps

Swap provides the most basic mechanism for exchanging one denom for another. It is a core building block of Multihop Swaps and Taker limit order. The swap operation operates by trading aTokenIn through the liquidity pools that are provided by LPs and outputs a specifiedTokenOut

When performing a swap we iterate through liquidity (PoolReserves &LimitOrderTranche s) from best to worst price. As we iterate through each instance ofTickLiquidity we fully exhaust it before moving to the nextTickLiquidity instance. This iteration continues until ONE of the following conditions is met:

1. All available liquidity has been exhausted.* If there is no available tokenOut liquidity for the given pair at the beginning of the swap it will fail and return anErrInsufficientLiquidity
2.
 - .
3.
 - If swap is called through aIMMEDIATE_OR_CANCEL
4.
 - limit order it will still succeed if liquidity is exhausted and only a portion of theAmountIn
5.
 - has been used. In all other cases a partial fill of a swap will result in a failure.
6. TheAmountIn
7. has been hit (ie. the user has swapped through 100% of the suppliedTokenIn
8. .
9. MaxAmountOut
10. has been set and theTokenOut
11. amount is equal toMaxAmountOut
12. .* In cases where only a portion of the maxAmountIn is used only the used portion ofTokenIn
13.
 - will be debited from the user's account.[Previous Liquidity Iteration Next Fees](#)