TWAP

A simpletime-weighted average price (TWAP) trade may be thought of asn smaller trades happening everyt time interval, commencing at timet0 . Additionally, it is possible to limit a part's validity of the order to a certainspan of time intervalt .

Data Structure

struct Data { IERC20 sellToken; IERC20 buyToken; address receiver; // address(0) if the safe uint256 partSellAmount; // amount to sell in each part uint256 minPartLimit; // minimum buy amount in each part (limit) uint256 t0; uint256 n; uint256 t; uint256 span; bytes32 appData; } note No direction of trade is specified, as for TWAP it is assumed to be asell order Example: Alice wants to sell 12,000,000 DAI for at least 7500 WETH. She wants to do this using a TWAP, executing a part each day over a period of 30 days.

- sellToken
- = DAI
- buytoken
- = WETH
- receiver
- =address(0)
- partSellAmount
- = 12000000 / 30 = 400000 DAI
- minPartLimit
- = 7500 / 30 = 250 WETH
- t0
- = Nominated start time (unix epoch seconds)
- n
- = 30 (number of parts)
- t
- = 86400 (duration of each part, in seconds)
- span
- = 0 (duration ofspan
- , in seconds, or0
- for entire interval)

If Alice also wanted to restrict the duration in which each part traded in each day, she may setspan to a non-zero duration. For example, if Alice wanted to execute the TWAP, each day for 30 days, however only wanted to trade for the first 12 hours of each day, she would setspan to43200 (ie.60 * 60 * 12).

Usingspan allows for use cases such as weekend or week-day only trading.

Methodology

To create a TWAP order:

1. ABI-Encode theIConditionalOrder.ConditionalOrderParams
2. struct with:* handler
3.
    - : set to theTWAP
4.
    - smart contract deployment.
5.
    - salt
6.
    - : set to a unique value.
7.
    - staticInput
8.
    - : the ABI-encodedTWAP.Data
9.
    - struct.
10. Use thestruct
11. from (1) as either a Merkle leaf, or withComposableCoW.create
12. to create a single conditional order.
13. ApproveGPv2VaultRelayer
14. to traden x partSellAmount
15. of the safe'ssellToken
16. tokens (in the example above,GPv2VaultRelayer

17. would receive approval for spending 12,000,000 DAI tokens).

note When callingComposableCoW.create , settingdispatch = true will causeComposableCoW to emit event logs that are indexed by the watch tower automatically. If you wish to maintain a private order (and will submit to the CoW Protocol API through your own infrastructure, you may setdispatch tofalse). Fortunately, when using Safe, it is possible to batch together all the above calls to perform this step atomically, and optimise gas consumption / UX.

note For cancelling a TWAP order, follow the instructions atConditional order cancellation . Edit this page Previous CoW AMM Next Governance