What is Perpetual Protocol?

> **Perpetual Protocol v2 Docs**
> These docs describe v1 of the protocol. For v2 docs, please visit https://v2docs.perp.fi/

> Perp v1 is not actively maintained. Use at your own risk. Try v2 here.

Perpetual Protocol DEX

The core of Perpetual Protocol is the decentralized exchange (DEX), based on Ethereum and xDai.

Perpetual Protocol Exchange

What can you do on the Perpetual Protocol DEX?

- Go long or short on a growing number of assets
  - Includes BTC, ETH, DOT, SNX, YFI and more.
- Trade with up to 10x leverage.
- Trade with **low gas fees** thanks to xDai.
- All trading is 100% on-chain.
- Trading is 100% non-custodial

To start trading, go to the Perpetual Protocol Exchange link above.

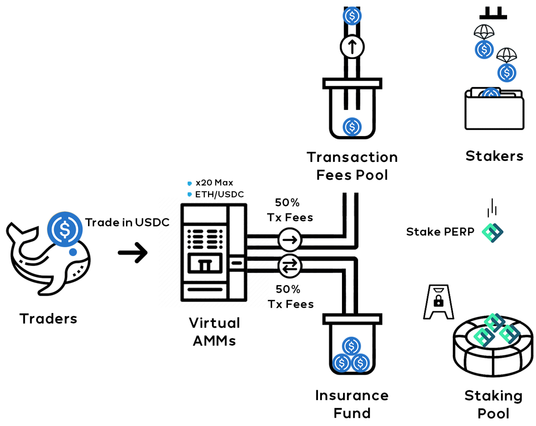
You will need:

- Metamask wallet (support for more wallets coming soon™)
- $USDC on Ethereum (see Where to get USDC for more options)
- Trading skills!
- Deposit your USDC and start trading!
- More details: 📈 Start trading on perp.exchange

> Trade via xDai for best reliability
> All trades occur on xDai. Trading is possible via Ethereum thanks to a transaction relay. If you are trading in size, it is highly recommended to trade via xDai directly, or have this option as a backup. High volumes may cause the transactions sent by the relayer to be delayed or fail.

Technical Overview

Read on to learn about how the Perpetual Protocol works.



Perpetual Protocol is a decentralized perpetual contract protocol for every asset, made possible by a Virtual Automated Market Maker (vAMM).

Like Uniswap, traders can trade with our vAMMs directly without the need for counterparties. The vAMMs provide guaranteed on-chain liquidity with predictable pricing set by **constant product curves**. The vAMMs are also designed to be market neutral and fully collateralized.

PERP holders can become stakers by staking the PERP tokens in their possession to a Staking Pool. In return, stakers are rewarded with a portion of the transaction fees in stable coins plus staking rewards in PERP.

Project vision

Our goal is to create the world's best, most accessible and most secure decentralized derivatives trading platform.

This vision leverages the DeFi 'money lego' ethos to both build upon other amazing DeFi projects, as well as actively facilitate ways for future projects to build upon our work.

Perpetual Protocol also has a utility token (PERP) with incentive structures to foster a vibrant, engaged community of users that will govern protocol development in a cooperative, democratic way.

What are Virtual AMMs (vAMMs)?

Contrary to the applications that utilize automated market makers (AMMs) for both token swaps and price discovery such as Uniswap and Balancer, Perpetual Protocol uses the constant-product curve in our AMMs solely for price discovery so that we can handle leverage and shorts.

Due to this difference, we call our AMMs "Virtual AMMs". Please see How it Works to learn more, or check out our Deep Dive on Medium.

Resources

- Discord - English Channel
- Discord - 中文频道
- Medium
- Twitter
- Telegram
- Newsletter (biweekly)
- 微信群組 > 加入 Discord 或 Telegram 詢問來獲得入群邀請

Next - Getting Started
How it Works →

How it Works

Perpetual Protocol v2 Docs

These docs describe v1 of the protocol. For v2 docs, please visit https://v2docs.perp.fi/

Perp v1 is not actively maintained. Use at your own risk. Try v2 here.

Overview

At its heart, Perpetual Protocol seeks to create a perpetual contracts trading protocol that anyone can use. You will be able to trade with good liquidity and low slippage thanks to our innovative vAMM-based exchange. We use a scaling technology called xDai to increase the speed of trades compared to other Ethereum-based exchanges, as well as to offer **zero gas fees on all trades**.

Trades on Perpetual Protocol settle in USDC, so all collateral used on the exchange is in USDC.

Perpetual Protocol uses a streamlined system to allow traders to gain the benefits of xDai scaling without having to set up your wallet. Simply use your existing wallet to 'deposit' USDC via our trading interface, and you are ready to trade. Your funds are controlled by your Metamask wallet or other compatible wallet at all times during the trading process.

Stakers on Perpetual Protocol enjoy **zero impermanent loss** risk while earning fees and rewards on their staked PERP tokens. This is because staked PERP tokens are not stored in our vAMM or used for liquidity — they are safely stored in the smart contract vault and not a liquidity pool, and are therefore not exposed to impermanent loss.

Perpetual Contract Trading

We highly recommend spending some time learning about perpetual contract trading before starting to use Perpetual Protocol. In general, trading perpetual contracts on our platform is largely similar to trading perpetuals on centralized exchanges. The main differences are:

- Perpetual Protocol does not use an order book - trades are filled right away and there is no need to wait for a counterparty or pay a taker fee.
- Trades settle somewhat slower than on centralized exchanges, especially during high volume - to mitigate this, we provide slippage controls, and all trading operations take place on xDai, which is significantly faster than the Ethereum base layer.

Trading **can result in financial loss**, although with Perpetual Protocol, you are assured of **never** losing more than your initial investment. Keep two principles in mind at all times:

- Never invest more than you can afford to lose
- Always do your own research to understand the tokens, wallets and other tools you are using

Perpetual contract basics

Perpetual contracts are a type of futures contract, pioneered in the cryptocurrency space by Bitmex. Perpetual contracts are one of the most popular derivative products in the space.

Perpetual contracts allow traders to speculate on the future price of a given asset by buying (going long) or selling (going short) perpetual futures contracts. Unlike typical futures, perpetuals do not expire and remain effective until the trader closes their position.

The price of perpetual contracts will often diverge from the broader market (aka spot market). These deviations signal sentiment on the exchange - if a majority of traders expect the underlying asset to increase in value over time, the price of the perpetual contract will likely exceed the spot price. Likewise, if most traders expect the price to fall, the price of the perpetual will be below the spot price.

There are two mechanisms that moderate this process, and function to keep the perpetual contract price close to the spot price.

- Funding payments
  - Every hour, traders with open long or short positions will pay each other a funding payment, depending on market conditions. If the contract price is **above** the spot price, longs will pay shorts. If the contract price is **below** the spot price, shorts will pay longs. The size of the funding payment is a function of the difference between the contract price and the spot price, as well as your position size. This incentivizes traders to take the unpopular side of the market.
- Arbitrage
  - If the contract price diverges significantly from the spot price in other exchanges, arbitrageurs can benefit in two ways. 1. If they hold a position elsewhere, they can use Perpetual Protocol to take the inverse position and earn funding payments. 2. They buy or sell an asset elsewhere, and long or short that asset using Perpetual Protocol, in the expectation that the price will tend to move back toward the spot price.

vAMM

vAMM

Our exchange model is very different from other exchanges, including AMM based exchanges. Key points to begin with:

- Perpetual Protocol does not use liquidity or liquidity providers.
- Perpetual Protocol is 100% AMM based; there is no order book.
- The on-chain price reflects trades on Perpetual Protocol - the price **only** moves when positions are opened or closed.

Traders use collateral (USDC) to open long or short positions in a given asset. Every time a trade is made, the vAMM calculates the entry or exit price in the same way prices are calculated on Uniswap or other AMM style exchanges.

> An important difference with the vAMM is that no swap is occurring. Unlike Uniswap, for example, where traders arrive with asset A and leave with asset B, on Perpetual Protocol traders always arrive with USDC, and leave with USDC. This allows the protocol to operate without ever having held the underlying asset.

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Leverage

Perpetual Protocol allows traders to use leverage by backing a position with a *margin*—collateral that is worth less than the total position size. Traders can open positions with leverage up to 10x.

Note that an effective leverage of 16x, equivalent to a margin ratio of 6.25%, is the point at which your position can be liquidated.

⚠️ Using leverage puts your funds at **risk of liquidation at any time**. Be sure you understand the risks of leveraged trading before proceeding.

> **Example**
>
> You can open an ETH long position worth 1000 USDC backed by a margin of 100 USDC. Your margin ratio is 10%, equivalent to a leverage of 10x. If ETH falls in value, you start to lose money, resulting in a negative PnL. PnL is added to your margin, so in our example, your margin will start to go below 100 USDC, in turn decreasing your margin ratio. If the margin ratio falls to 6.25%, then your position may be liquidated.

← Previous vAMM

Next Liquidation →

Liquidation

Intro to liquidations

Liquidation is a key part of leveraged trading. When you open a leveraged position, in a sense you are using collateral to borrow money from the exchange to purchase an asset.

If the value of that asset (aka your *position*) falls, your losses begin to approach the value of your margin (ie. your initial collateral). This puts the exchange at risk—a sudden price movement could make your position worth less than your collateral. If the value of your asset is dangerously close to the value of your collateral, the exchange will proactively liquidate your position in order to secure against losses.

For example, if you open a 10x leveraged position using 100 USDC, your total initial position is worth 1,000 USDC—900 USDC of that position's value is borrowed.

Therefore, the exchange enforces a minimum ratio between the position's value and the margin, called a *maintenance margin*. On Perpetual Protocol, the maintenance margin is 6.25%.

In our previous example, if your position's value drops to 937.5 USDC, it will be liquidated. From this example, it is clear that 10x leverage is **very high risk**.

> ⓘ Collateral vs. Margin in perpetual contract trading
>
> Collateral is funds you have available for trading and not currently in use. Margin is collateral that is in a currently open position.

Partial liquidations

To make trading safer and more fair, Perpetual Protocol uses partial liquidations.

As long as your ratio between the asset value and the margin (margin ratio) is above 2.5%, only 25% of your position will be liquidated, leaving the rest of your position intact with a margin ratio above the liquidation point.

Liquidation mechanism

Liquidation occurs when your position margin ratio falls to **6.25%** or below. This percentage is known as the *maintenance margin*.

Perpetual Protocol uses a **partial liquidation** scheme.

Assuming a timely liquidation occurs, 25% of the position's PnL will be realized and a corresponding portion of the *position notional* and *margin* will be liquidated, leaving the remaining position untouched.

⚠️ If the price moves fast than liquidation can occur and margin ratio falls to 2.5% or less, **total liquidation** will occur.

Example

```
Definitions
margin ratio: (margin + unrealized PnL) / positionNotional
liquidation penalty: 2.5% of positionNotional
//1.25% to keeper; 1.25% to insurance fund

Initial conditions
positionNotional = 1000
leverage = 2x
margin = 500
PnL = -440
margin ratio: (500 - 440)/ 1000 = 0.06

Post-liquidation
assume positionNotional liquidated = 300 //actual amount will depend on x*y=k curve
liquidation penalty: 300*0.025 = 7.5
margin: 500 - (440*0.25) - 7.5 = 382.5
margin ratio: (382.5 - 440*0.75) / (1000 - 300) = 0.075
```

Liquidation is triggered by keeper bots. As a reward for performing this service, keepers earn 1.25% of the remaining **position notional**.

> ⓘ Keepers are used with blockchains because smart contracts and blockchains in general are passive and cannot execute code without external triggers. Keeper bots are a decentralized way to accomplish this trigger (anyone can run the bot).

> ✓ **Oracle Based Calculation During Severe Market Conditions**
>
> In order to combat flash crash risk, if the mark price diverges **more than 10%** from the index price (oracle price), liquidations will be evaluated based on oracle price.
>
> This measure provides an additional check against the risk of liquidation during a flash crash if the price on Perpetual Protocol diverges severely from spot prices.

Margin ratio

Liquidation is determined based on your position's margin ratio.

MARGIN	MARGIN RATIO	PNL
6,186.57	56.2 %	-50.67

If the margin ratio falls to 6.25%, your position may be liquidated.

Margin ratio is calculated by adding your margin size and PnL for a given position, and then dividing by the position notional (position size multiplied by mark price*).

$$marginRatio = \frac{(margin + unrealizedPnL^*)}{positionNotional}$$

*Notes about margin ratio calculation

Index price calculation check

Normally position notional is calculated by multiplying your position size by the asset's mark price. However, when **index price diverges from mark price by 10%** or more, the position notional is calculated by multiplying position size by the asset's index price. This serves as an additional check before triggering liquidations during severe or anomalous market conditions.

Profit & Loss

PnL is calculated using both Mark Price and 15 minute TWAP of Mark Price; the higher of the two values is used when evaluating liquidations conditions.

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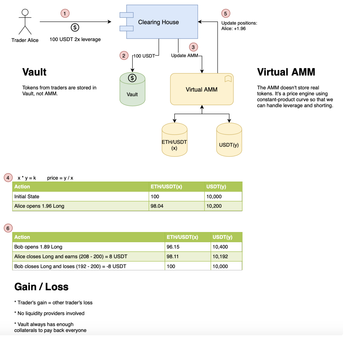
Trading

Example

Let's walk through an example trade.



How Perpetual Protocol Works

Step 1
Alice sends 100 USDC to the Clearing House on Perpetual Protocol and specifies to use that amount as the margin to open a 2x leveraged long position.

> ⓘ The primary function of the Clearing House is to record the position ownership and its related information, including initial margin, leverage, and direction (long or short).

Step 2~3
Upon receiving the 100 USDC, the Clearing House deposits the funds into the Vault. After that, Perpetual Protocol updates the asset price in our vAMM according to the margin amount, position direction (long or short), and the amount of leverage.

> ⓘ In contrast to the applications that utilize automated market makers (AMMs) to facilitate token swaps like Uniswap and Balancer, Perpetual Protocol only uses the constant-product curve in our AMMs for price discovery so that we can handle leverage and shorting. This also means there is no risk of impermanent loss for liquidity providers.

As you can see from the diagram above, the deposited tokens from traders aren't stored inside our AMMs, whereas on Uniswap, the deposited tokens from traders are indeed stored inside their AMMs. Due to this difference, we name our AMMs "Virtual AMMs" because there is no actual token swapping involved in our AMMs.

> ⓘ Want to learn more about Uniswap and AMM style exchanges?
> - Finematics - What are Liquidity Pools?
> - Bankless - Rise of the Liquidity Robots
> - Constant Function Market Makers: DeFi's "Zero to One" Innovation

For those who don't know what a constant-product curve is or how Uniswap works, please see:

- Rise of the Liquidity Robots
- Constant Function Market Makers: DeFi's "Zero to One" Innovation

Back to our trader, Alice.
Assume we have 100 ETH/USDC and 10,000 USDC in our vAMM as its initial state.

Action (Chronological)	ETH/USDC (x)	USDC (y)	*Calculation
Initial State	100	10,000	

> ⓘ As mentioned before, **the amount of ETH/USDC and USDC set in a vAMM aren't real tokens** - they're just two numbers credited in a vAMM, and this vAMM uses them as the variables in the constant-product curve formula to calculate the price of the derivative on the platform.

Step 4~5
If Alice uses 100 USDC as the margin to open a 2x leveraged long position, which means that the amount of USDC in our vAMMs will become 10,200 (10,000+100*2), the amount of ETH/USDC will become 98.04 (100*10,000/10,200), which is calculated by the constant-product curve, and the position Alices opens is 1.96 ETH (100-98.04).

Action (Chronological)	ETH/USDC (x)	USDC (y)	*Calculation
Initial State	100	10,000	
Alice gets 1.96 long position	98.04*	10,200	100*10,000/10,20(

Step 6~
Following Alice, Bob also uses 100 USDC to open a long position with 2x leverage. His position size will be 1.88 ETH (98.04-96.15) as calculated by the vAMM.

Action (Chronological)	ETH/USDC (x)	USDC (y)	*Calculation
Initial State	100	10,000	
Alice gets 1.96 long position	98.04*	10,200	100*10,000/10,20(
Bob gets 1.89 long position	96.15*	10,400	98.04*10,200/10,4

After Bob gets his long position, Alice decides to close her position and realizes a profit of 7.84 USDC (10400 - 96.15*10,400/(96.15+1.96)- 200)

Action (Chronological)	ETH/USDC (x)	USDC (y)	*Calculation
Initial State	100	10,000	
Alice gets 1.96 long position	98.04*	10,200	100*10,000/10,20(
Bob gets 1.89 long position	96.15*	10,400	98.04*10,200/10,4
Alice closes her position	98.115	10192.16*	96.15*10,400/98.1

Seeing Alice makes a profit, Bob wants to close his position too, only to find out that he lost -7.84 USDC (10192.16-98.115*10192.16 / (98.115+1.885) - 200) after closing his position.

Action (Chronological)	ETH/USDC (x)	USDC (y)	*Calculation
Initial State	100	10,000	
Alice gets 1.96 long position	98.04*	10,200	100*10,000/10,20(
Bob gets 1.89 long position	96.15*	10,400	98.04*10,200/10,4
Alice closes her position	98.11	10,192.16*	96.15*10,400/98.1
Bob closes his position	100	10,000*	98.115*10,192.16/

So what can learn from the example above?

Unique Properties of Perpetual Protocol's vAMM

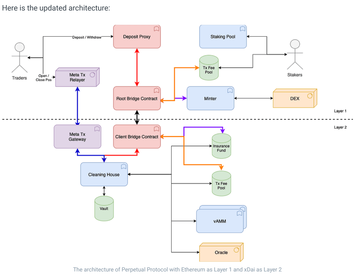
- One trader's gain equals another trader's loss. As you can see Alice's gain equals Bob's loss, which is similar to traditional peer-to-peer futures trading.
- No liquidity providers are involved because we don't store tokens inside our vAMMs.
- The vault always has enough collateral to pay back every trader because one trader's gain will cancel out another trader's loss.

Trading on xDai Chain

All trading activities occur on the **xDai Chain** to save gas fees and improve trading speed.

Learn why we chose xDai here.

Here is the updated architecture:



The architecture of Perpetual Protocol with Ethereum as Layer 1 and xDai as Layer 2

As you can probably tell, all of the components related to trading activities such as Clearing House, Insurance Fund, etc., are all on xDai now.

Despite this major change, **only one additional step is needed for traders to start trading compared to the above example**, which assumes the trading activities happening on the main Ethereum network:

1. You deposit USDC to the Deposit Proxy (using MetaMask), which is a smart contract that passes your deposit to the Root Bridge Contract, crediting you the same amount of xUSDC to your address on xDai.

When you want to open a position from our trading platform, the only thing you need to do is to sign a transaction with your wallet (using MetaMask); the signature will be submitted to the Meta Transaction Relayer (no gas is involved in this step, since it's a meta transaction). The position is opened on xDai, and the trading platform is updated.

One thing we want to emphasize is that, **despite using xDai to launch on Ethereum mainnet, with the above architecture, it's possible to migrate the whole system to other scaling solutions (L2 and other chains alike) without much hassle.** One can imagine the Perpetual DAO voting to pause trading activities on xDai, snapshot the state (traders' active positions, balances, etc.), and proceed to 'paste' every trader's state onto another L2/chain and resume trading activities.

You can check this Medium post to know the rationale behind the move to xDai and the pros and cons of this decision.

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Funding Payments

Periodic funding payments are the most common mechanism used by exchanges to do perpetual swaps. Funding payments act to converge the **mark price** (the price on Perpetual Protocol) and the **index price** (the average price from major exchanges).

Perpetual Protocol calculates funding payments every hour.

Perpetual Protocol follows FTX's method to calculate the funding payments, which is done according to the formula below:

$$fundingPayment = positionSize * fundingRate$$

The *fundingRate* in the formula above is calculated by, firstly, subtracting the *hourly time-weighted average price (TWAP) of the index price* from the *hourly TWAP of the mark price*, and secondly, dividing the result from the previous step by 24. (Note: FTX's formula results in funding denominated in *position size*, whereas our calculation expresses funding in *quote asset*, ie. USDC.)

$$fundingRate = \frac{TWAP_{perpetual} - TWAP_{index}}{24}$$

We use the price feed from **Chainlink** as the data source for the index price because it is currently the most battle-tested Oracle solution on the market. Other oracles will be added as needed.

If the *fundingRate* is positive, long position holders need to **pay** the funding payment while short position holders will **receive** the funding payment, and vice versa if the rate is negative.

The funding payment happens at the **end of each hour** on Perpetual Protocol.

Sound complicated? Let's take a look at another example.

Example

Similar to the example from the previous section, 100 ETH/USDC and 10,000 USDC are set as the initial state in our vAMM at launch. Both Alice and Bob use 100 USDC as the margin to open long positions with 2x leverage, one after the other. And right after Bob opens his position, Alice closes her long position and realizes a profit of 7.84012298 USDC.

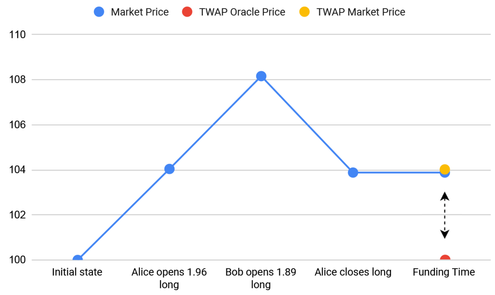
Action (Chronological)	ETH/USDC (x)	USDC (y)	Mark Price
Initial State	100	10,000	100
Alice gets 1.96 long position	98.0392156862745*	10,200	104.04
Bob gets 1.89 long position	96.1538461538461*	10,400	108.16
Alice closes her position	98.1146304675716	10,192.1598770177*	103.880123

If we draw a line chart with the mark price from each action above on the y-axis and each chronological action on the x-axis, below is what we'll get:

Supposing there isn't any action after Alice closing her position and now the time is close to the end of the hour in which all of those actions have happened.

We can imagine two distinct scenarios depending on the difference between the TWAP of the mark price and the TWAP of the index price.

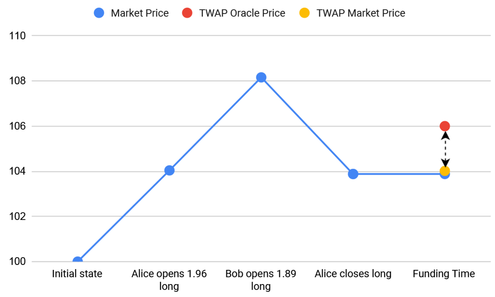
TWAP of the Mark Price > TWAP of the Index Price (Positive Funding Rate)



In this scenario, the long position holders need to pay the funding payment whereas the short holders can receive the funding payment. Participants in our ecosystem will respond in different ways to this situation:

- Bob might want to close his position or part of his margin will be used to pay the funding payment
- Arbitrageurs might want to come in and open a short position so they can receive funding payment from the long position holders

TWAP of the Mark Price < TWAP of the Index Price (Negative Funding Rate)



In this scenario, the short position holders need to pay the funding payment whereas the long holders can receive the funding payment. Participants in our ecosystem will behave differently in this situation:

- Alice might feel frustrated because she could have received the funding payment if she didn't close her position
- Arbitrageurs might want to come in and open a long position so they can receive funding payment from the short position holders

PERP Token

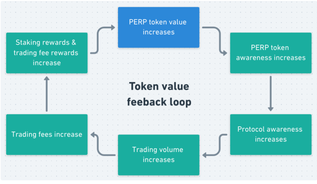
Overview

PERP is Perpetual's native protocol token and is issued by Perpetual DAO.

> ℹ The PERP token is a standard ERC-20 token on Ethereum.
>
> Token contract address: 0xbc396689893d065f41bc2c6ecbee5e0085233447
>
> 🚨 Be careful with PERP tokens on other chains. **They may be scams.**
> ✅ Known legitimate PERP tokens:
> - PERP on xDai
> - PERP on BSC
>
> **Note** You cannot stake using PERP bridged from BSC.

The PERP token is primarily a **utility token** designed to facilitate and incentivize the decentralized governance of the protocol. As such, holders of PERP tokens accrue voting rights proportional to their holdings.

To incentivize governance participation, we have designed the following incentive structure:



1. Staking rewards & trading fee rewards increase > 2. PERP token value increases > 3. PERP token awareness increases > 4. Protocol awareness increases > 5. Trading volume increases > 6. Trading fees increase > Back to 1.

In addition, the Perpetual Protocol team marketing efforts, as well as programs such as Transaction Mining, feed into this loop.

> ℹ **Token links**
> - Coin Gecko
> - Etherscan
> - CoinMarketCap

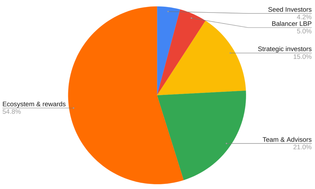
Token specs

Token Name	Perpetual Protocol Token
Token Ticker	PERP
Token Type	ERC-20
Token Supply	150,000,000

Use Cases

- **Governance**
  Once PERP token holders have staked their tokens, they can then use their staked PERP tokens to vote on or propose new ideas that can be used to improve Perpetual Protocol. Before the on-chain governance voting platform is ready for PERP token holders, core protocol contributors will guide critical decisions. We believe it's important to keep governance nimble in the early days of the Perpetual Protocol.
  You can learn more about the governance plan here.
- **Staking**
  PERP holders can lock-up, or "stake," their PERP for a fixed amount of time in the Staking Pool. In return, stakers receive rewards. Learn more 👉 Staking.
- **Exchange backstop**
  In extreme cases, the exchange insurance fund may be depleted. In such an event, PERP tokens may be sold at market in order to make up for any shortfall.

PERP Token Distribution



Lot	Description
Balancer Liquidity Bootstrapping Pool (LBP)	• 7,500,000 PERP tokens (5.0%) • Balancer LBP token launch, held September, 2020.
Seed investors	• 6,250,000 PERP tokens (4.2%) • Binance Labs, invested in early protocol development in 2018. **Note**: tokens are vested quarterly after v1 mainnet launch; see details below.
Strategic investors	• 22,500,000 PERP tokens (15%) • Strategic investors, to the extent they fully exercise their rights to purchase PERP tokens. **Note**: tokens are vested quarterly after v1 mainnet launch; see details below.
Team & advisors	• 31,500,000 PERP tokens (21%) • Team helps launch the initial version of Perpetual Protocol and other initiatives beneficial to the protocol. **Note**: tokens are vested; quarterly unlock begins 6 months after v1 mainnet launch.
Ecosystem & rewards	• 82,250,000 PERP tokens (54.8%) • Ecosystem and rewards, which will benefit traders, stakers, and community developers who participate in the Perpetual Protocol ecosystem. As Perpetual Protocol transitions to community governance, distribution of ecosystem rewards will be decided by the Perpetual Protocol community.

The total PERP token supply is set at **150,000,000**. The token supply can be inflated via two mechanisms, both of which have a very low chance of occurring: Governance may decide to mint more tokens; the insurance fund is exhausted and PERP are minted to make up the shortfall.

PERP Release Schedule

Different lots of PERP tokens unlock at different times, according to their purpose.

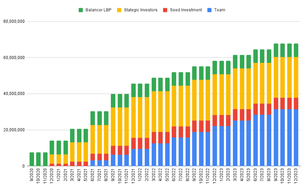
Token release schedule

- **Balancer Liquidity Bootstrapping Pool**
  🔓 No lockup – tokens are liquid upon purchase.
- **Team and advisors**
  🔓 Team tokens begin unlocking 6 months after mainnet launch at a rate of 2.1% per 3-month period.
  - 🔓 Unlock period begins June 15, 2021
- **Seed and strategic investors***
  🔓 Seed and strategic investors receive either 1/4 or 1/5 of their tokens each quarter, beginning from v1 mainnet launch.
  - 🔓 Unlock period begins December 15, 2020
- **Ecosystem and Rewards**
  🔓 Tokens are unlocked according to votes by governance.

> ℹ *Additional investor & seed details
>
> Some of the investor tokens vest over 4 quarters and some over 5 quarters. Seed investors are vested between 1,250,000 and 1,562,500 PERP per quarter, and strategic investors are vested between 4,500,000 and 5,625,000 PERP per quarter.
>
> Total tokens for investors (Seed + Strategic Investors) are 6,250,000 + 22,500,000 = 28,750,000 PERP.
>
> The tokens started vesting Dec 15, 2020.
>
> The total vested tokens for the first 4 quarters were 6,531,250 * 4 = 26,125,000 PERP. The 5th quarter payout is 2,625,000 PERP. It will be executed on or after 12/15/2021.

Token unlock chart

Chart excludes 'Rewards & Ecosystem' tokens as these are controlled by governance and do not follow an unlock schedule.



Token wallets

⚠️ Values are updated on best-effort basis. Please ask for updates via Discord.

Wallet	Comments
0xc49f76a596d6200e4f08f8931d15b69dd1f8033e	**Main token wallet** Locked rewards pool and investor/team token supply. • Rewards: 🔒73,150,000 • Investors: 🔒11,500,000 • Team: 🔒28,350,000
0x0f346e19f01471c02485df1758cfd3d624e399b4	**Staking contract**
0xd374225abb84dca94e1211f0b8a06b93e39ad7a99	**Perpetual DAO Treasury** (link)

Staking

Have questions or thoughts about staking? Come to our Discord!
http://discord.perp.fi/

ℹ️ We highly recommend reading the staking details below before staking your tokens.

Staking | Perpetual Protocol

http://staking.perp.exchange/

> **xDai**
> The Perpetual Protocol staking pool is on **Ethereum mainnet** (not xDai). If you have PERP on xDai, bridge it back to Ethereum before staking.
>
> **BSC**
> 1) PERP on BSC or 2) PERP transferred from BSC to Ethereum **cannot** be staked. If you have PERP on BSC, deposit it back into Binance and withdraw from Binance directly to Ethereum before staking.

Staking overview

The goal of staking on Perpetual Protocol is to ensure demand for PERP, while also keeping PERP off the market. This goal exists to provide the ability for the exchange to react in emergency situations, such as extreme market events. Such an event, one example being a severe market crash, could cause the exchange insurance fund to be depleted. PERP tokens will be sold at market to cover any shortfall.

Stakers are compensated for shouldering this risk using rewards. These rewards will be updated over time in order to maintain a healthy number of staked PERP.

Staking period

You may stake for as little time or as much time as you wish. When you want to unstake, there is a cool down period of 7 days. (At launch, cooldown was 14 days. This parameter was updated via governance.)

Staking rewards

> Staking will remain in Stage 1 (below) until protocol v2 staking is launched. V2 staking is expected to launch later in 2021.

Stage 1 (beta)

Initially, 150k PERP will be granted as staking rewards each week. Rewards will be issued in 2 ways. Rewards are issued from the Perpetual DAO rewards pool.

🌊 Liquid PERP rewards

Weekly exchange fees will be calculated, and 50% of this US dollar amount will be distributed proportionally as PERP to stakers. These PERP tokens come from the DAO reward pool, and can be **withdrawn immediately**.

```
Liquid rewards (PERP) = weekly USDC exchange fees * 50% * (1/PERP price*)
```

*PERP price will be 24h TWAP from Coingecko at time of calculation

⏳ Vested PERP rewards

Vesting rewards will be distributed proportionally to stakers in an amount equal to the weekly reward pool (150K PERP) minus the weekly liquid reward amount. Rewards will be given in PERP tokens from the DAO reward pool, and will be vested after **6 months**.

> **Why 6 months?**
> PERP rewards are vested after 6 months to ensure stakers are serious investors who care about Perpetual Protocol and are not just looking for a quick return. This is needed because PERP holders can also vote on protocol governance and it's important that they have the best interests of the protocol in mind while voting.

```
Vesting rewards (PERP) = 150K PERP - Liquid rewards
```

> **Example**
> Liquid rewards are given based on trading fees collected by perp.exchange for that week. So let's say 50k USDC in fees are collected. We take half that number - 25k USDC, and calculate how many PERP it would be based on the exchange rate at that time – let's say 2,500 PERP (assuming PERP price is $10). This amount of PERP is then given to stakers proportionally from the Perpetual DAO rewards pool, as liquid rewards (claim and use right away).
>
> To calculated vesting rewards, we then subtract the amount of liquid PERP rewards from the total weekly rewards (150k PERP). So in our example, 150,000 - 2,500 = 147,500 PERP. These PERP are then distributed proportionally to stakers, and locked for 6 months. Vested PERP can be claimed & spend 6 months after issue.

Stage 2

> Stage 2 is on hold during development of Perpetual Protocol v2. Please watch our Twitter for further announcements in the coming weeks.

Research in partnership with Delphi Digital is ongoing to determine the best way to **share trading fee rewards** (USDC) with stakers in a way that ensures long term system stability.

Currently we have identified two goals we believe need to be met before trading fee sharing can begin:

1. A minimum ratio between value of funds in the Insurance Fund and the total open interest (sum value of all open positions) on the Perpetual Protocol DEX. Currently this ratio has been set at 5% (value of the Insurance Fund must be at least 5% of the open interest). We are continuing to research this risk model and will share our findings and developments as they become available.
2. Enough time, testing and auditing have passed that the Perpetual Protocol team has a very high degree of confidence in the integrity and stability of the protocol smart contracts. This second goal is already well under way but more time is needed to establish the level of confidence we feel is necessary for critical financial applications.

Cool down period

Staking is flexible - you may stake for any amount of time. However, when you unstake, a **7 day** cool down period will begin. Your tokens will unstake after the cool down period, and become spendable.

> **Important Notes**
> 1. Your PERP tokens will **not** earn staking rewards during the cool down period.
> 2. If you stake **any** amount of tokens during a cooldown, **all tokens in cooldown will be restaked.**

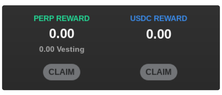
Rewards calculation

Rewards are calculated each week, and your proportion of the staking pool is calculated per minute (not per block). Because of this, early entry into the pool does not give you any disproportionate benefits.

Calculation period
PERP and trading fee rewards will be calculated weekly:
Monday 00:00 UTC - Sunday 23:59 UTC

Calculation time
The rewards will be calculated and issued weekly:
Monday at 06:00 UTC

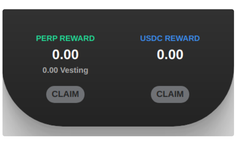
> Rewards are calculated weekly, so your REWARD numbers will not increase until after the calculation every Monday.



Reward claim process

1. Go to the staking website after each week.
2. Rewards will be issued weekly, Monday at 06:00 UTC
3. Vested rewards unlock 182 days (equal to 6 months) after issue, **regardless of when you claim.**
4. Rewards can be claimed any time, and are not affected by unstaking.

> The big top number under PERP Reward is unlocked and spendable right away, while the small number (0.00 Vesting) below are locked rewards that will vest after the vesting period.



Staking contract address

https://etherscan.io/address/0x0f346e19f01471c02485df1758cfd3d624e399b4
etherscan.io

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Staking FAQ

Main staking FAQ:

PERP Staking FAQ

Community staking FAQ mega-thread:

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Staking Mega-FAQ

Please see the table of contents!

This is a compilation of questions gathered from our Telegram community.

> Check out our main staking FAQ here

Can we have more info about vesting rewards? Why 6 months, what is it and so on?

Please see the main staking page.

What's the link to staking?

Staking | Perpetual Protocol

How do I know that my staking is successful?

It's best to double check your address on Etherscan. If you still have issues, please come to our Discord for help.

What does EST.APR mean?

Estimated APR - annual percentage rate. This percentage is an estimate of how much interest you will earn if you stake for 1 year. This number will change based on how much PERP you stake relative to the size of the entire staking pool.

Staking is divided into the Early Phase and the Main Phase. If I stake now during the Early Phase, do you need to unstake + restake when Main Phase comes?

No. If you are staking when we enter the main phase, you will start earning main phase rewards automatically.

Can I unstake at any time?

Yes, you can stake and unstake anytime. However, when you unstake, you will need to wait a 7 day cool-down period.

Any idea how much GAS/ETH will be needed when Unstaking?

Our testing had the following results

	Min	Max	Average
Stake	84569	203942	181497
Unstake	107040	149003	141373

Can I stake for a long time without any operation?

Yes, you can stake for as long as you want. However, since staking represents a financial investment, you probably want to check in on Perpetual Protocol regularly :)

Will the APR will increase even more with the distribution of USDC exchange fees?

APR is mostly affected by how many people are staking. Rewards will increase once we enter the main phase, but it's not yet clear by how much.

I've used the 'staking' app for a day, but the app record doesn't show perp Reward as compensation. What is the problem?

Rewards only appear on the Monday after you began staking.

Will there be a Binance Staking plan or other exchanges?

We have discussed this and there is no plan now. However, it is an interesting long term plan that we might explore in the future.

Is it worth staking if I have a small amount? ~<500?

This is hard to judge. Gas prices, ETH prices, and other factors all affect this decision. If you have a long term view, and you strongly support the project, then 500 PERP is a reasonable amount to stake.

How many transactions I am supposed to do to enable staking?

2 - one to approve funds, one to stake.

If I initiate a cool down, will my earnings from the staking stop generating?

Yes, there are no rewards earned during cool-down.

How often are earnings distributed/ able to be viewed?

Rewards are distributed once per week.

Is there a lockdown period before claiming PERP rewards?

Rewards can be claimed anytime, however some rewards are vested for 6 months. This means they can only be spent after 6 months from the time of issue (you can claim anytime - it does not affect the vesting period).

If I staking my $PERP, do I need to pay gas fees?

Yes, you need to pay gas for token approval and staking, as well as reward claim and unstaking.

Is there a chance the Early Phase Staking lasts more than three weeks?

Yes. After 3 weeks Perpetual Protocol will re-evaluate the situation and either extend the early phase, or move to the main phase.

What would happen if 50% of the weekly exchange fees surpassed 150K Perp?

This is highly unlikely because if exchange fees are this high the protocol will switch to the Main Phase and begin issuing USDC rewards.

What does 'vested' reward actually mean?

Vest means to grant the right to something, so if rewards are vested after 6 months, it means they are yours now but the right to use them only triggers after 6 months.

Is there any limit to how long you can wait before claiming? E.g. can I claim rewards every 3 months or 6 months?

Yes, you can claim anytime.

When Unstaking the Perp will I pay another portion of gas fees? can I do it all at once? And pay the fee at once.

No, you have to pay the gas fee at the time you unstake. ETH tends to increase in price, so save ETH now and by the time you are ready to unstake, its price will probably have increased. This gives you a kind of discount on gas.

What function does staking provide in the PERP protocol?

Staking has two purposes. Both purposes are related to the rare and unlikely event that the Perpetual Protocol DEX insurance fund is depleted due to some unforeseen financial crash, etc. In such an event, PERP will be sold to make up for any shortfall (ie. pay back traders who are owed money by the exchange.) First, staking helps ensure a high price for PERP, so that any PERP sold will have a high value. Second, staking helps ensure that PERP holders cannot panic sell during an emergency.

What is the reason the vested PERP Rewards are vested after 6 months?

Part of the rewards are vested after 6 months to ensure stakers are serious investors who care about Perpetual Protocol and are not just looking for a quick return. This is needed because PERP holders can also vote on protocol governance and it's important that they have the best interests of the protocol in mind while voting.

Are staked PERP tokens are in the insurance pool?

No, they are in a separate staking pool.

Is there a timer or somewhere I can track how long my tokens have vested for?

There is a link shown after claiming, to add the vesting date to your calendar.

What's the breakdown of rewards? And the rewards are in USDC correct?

Please review the staking info: https://docs.perp.fi/getting-started/staking

What are your plans to reduce the high staking costs / fees in the future?

We do not have plans but we are aware that this is a problem and we will be discussing solutions soon.

What's the point of giving out rewards in PERP and not in USDC? Will this cause sell pressure on PERP?

We do not have USDC available to give out. Most PERP rewards are vested after 6 months, so we expect most stakers will be serious long-term investors in Perpetual Protocol and unlikely to sell quickly.

Are the staking rewards compounded? Or we should claim and re-stake?

You must claim and re-stake.

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Perpetual Contract Specs

Perpetual Contract Specs

Supported Perpetual Contracts

New contract pairs will be added in time, and an open market creation tool is being proposed for development. Join our Discord to discuss if you have ideas or suggestions!

Contract Specifications

BTC/USDC
ETH/USDC
YFI/USDC

Funding Payments

Perpetual Protocol follows FTX's method to calculate the funding payments. It is calculated as shown below (Note: FTX's formula results in funding denominated in *position size*, whereas our calculation expresses funding in *quote asset*, ie. USDC.):

$$fundingPayment = positionSize * \frac{TWAP_{mark} - TWAP_{index}}{24}$$

- **TWAP_mark**
  - The 1 hour TWAP of the **Mark Price**.
- **TWAP_index**
  - The 1 hour TWAP of the **Index Price**. (From oracle)

> TWAP: Time weighted average price

The funding payment is calculated every hour for all long and short positions. If the **fundingPayment** is positive, every long position holder has to pay short position holders the funding payment, and vice versa if the **fundingPayment** is negative. This incentivizes traders to drive the mark price toward the index price.

Liquidation

Once traders' **marginRatio** falls below the **marginRequirementRatio** threshold (currently 6.25%, equivalent to 16x leverage - this could be updated by governance), keepers can liquidate the position and earn 1.25% of the position's value.

> **Partial Liquidations**
>
> Perpetual Protocol uses partial liquidations. If your margin ratio reaches 6.25%, 25% of your position is liquidated, leaving the remaining position intact and above the margin ration limit. If the market continues to move against you, further liquidations will occur.
>
> If your margin ratio falls to 2.5%, your entire remaining position will be liquidated and will no longer show in the trading interface under Positions. Any funds remaining are disbursed to the liquidator (1.25% of original position) and the insurance fund (any remaining margin).
>
> Learn more.

The **marginRatio** is calculated as:

$$marginRatio = \frac{margin + unrealizedPnL^*}{positionNotional}$$

> ***unrealizedPnL** is calculated using both **Mark Price** and 15 minute **TWAP of Mark Price**; the higher of the two values is used when evaluating liquidations conditions.

When positions are liquidated, keepers get 1.25% (could be updated by governance) of the **positionNotional** as liquidation fees. The remaining margin is deposited into the Insurance Fund.

If the collateral is not enough to pay for the liquidation fees, funds are withdrawn from the Insurance Fund to make up the difference.

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BTC/USDC

Symbol	BTC/USDC
Expiry Date	Perpetual
Quote Asset	USDC
Initial Margin	10%
Maintenance Margin	6.25%
Funding Interval	1 hour
Transaction Fees	0.1% on the notional value
Underlying Index	Chainlink Price Reference Data
Margin	Isolated

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ETH/USDC

Last modified 2yr ago

WAS THIS PAGE HELPFUL?

ETH/USDC

Symbol	ETH/USDC
Expiry Date	Perpetual
Quote Asset	USDC
Initial Margin	10%
Maintenance Margin	6.25%
Funding Interval	1 hour
Transaction Fees	0.1% on the notional value
Underlying Index	Chainlink Price Reference Data
Margin	Isolated

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YFI/USDC

Symbol	YFI/USDC
Expiry Date	Perpetual
Quote Asset	USDC
Initial Margin	10%
Maintenance Margin	6.25%
Funding Interval	1 hour
Transaction Fees	0.1% on the notional value
Underlying Index	Chainlink Price Reference Data
Margin	Isolated

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Protocol Marketing

Protocol Marketing

Overview

The Perpetual Protocol team uses treasury funds for promoting the protocol and educating users about the protocol and broader DeFi space.

The main communications channels are:

- Twitter - https://twitter.com/perpprotocol
- Discord - http://discord.perp.fi/
- Telegram
  - Main group - https://t.me/perpetualprotocol
  - Announcement group - https://t.me/perpprotocol
  - Trading group - https://t.me/perp_trading
- Youtube - https://www.youtube.com/c/PerpetualProtocol
- Blog - https://medium.com/@perpetualprotocol

Current marketing activities

Zero-gas Deposits

Referral Program

#PERPtogether

Past marketing activities

Transaction Mining

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Zero-gas Deposits

Zero-gas Deposits

> This campaign will initially run between **May 21 and June 4, 2021**. The performance of the campaign will be evaluated at that time, based on its effect on protocol *daily active users* and *new user retention*.

How it works

All deposits over **500 USDC** on perp.exchange can be done without paying for gas. (Deposits less than 500 USDC can be performed by the trader paying for their own gas.) This means you can deposit from a wallet with **0 ETH balance**!

A meta transaction tool from Biconomy is used to achieve this.

> Due to limitations in Metamask and other wallets, **hardware wallets are not compatible** with zero-gas deposits at this time because of incomplete support for meta transactions.

Learn more about why deposits are needed: 📊 Why do I need to deposit?

Budget

Gas for meta transactions will be paid for in partnership with Biconomy, using funds from the Perpetual DAO allotted for strategic partnerships.

During the initial trial run (May 21 and June 4, 2021), the campaign will provide gas for 1000 users to onboard.

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Referral Program →

Referral Program

Introduction

> The Referral Program has entered **phase 2**!
>
> If you have a referral code, go to the dashboard to sign up with your web3 address.
> **Note**: Sign up using the web3 address you plan to use for trading. You will be able to use PERP staking to increase rewards caps, so be sure to also use an address you intend to stake with.

To encourage influencers and prominent DeFi community members to help with promotion, Perpetual Protocol has launched a referral program.

⚠️ Perpetual Protocol retains the right to update program rules to prevent abuse at any time.

Program duration | Program goal

The referral program runs on a weekly basis, and rewards are paid out weekly. The Perpetual Protocol team will reassess the program in January 2022 to evaluate performance.

Join as a referred trader

1. Get a referral code from a referral partner (see below).
2. Go to the referral dashboard and enter your code. You'll sign a transaction linking the code to your address. You'll need a tiny amount of xDAI for this.
   Or
   Entering your code using `setReferralCode` in this contract:
   `0xF1d5BA04a25A6D88c468af932BFe2B1e78db7B45`. The address used to sign the transaction will be associated with the referral code you enter.

Trader rewards | Rewards and caps | PERP price basis

Any trader can register under a referral partners as a 'referred trader'.

As a referred trader, you are eligible for discounts on trading fees, paid in PERP weekly to your registered account.

> Rewards are **paid on xDai**. This ensures we are able to reward all traders, no matter how big or small, every week, with zero cost to users.

Rewards are issued weekly:

- Reward period: Sunday 0:00 to Saturday 23:59:59 (UTC)
- Reward issuance: Monday (best effort basis)

Referral partners

The referral program is run in cooperation with referral partners. The goal of restricting referral partner sign ups is to increase potential earnings per partner, and thereby attract high-profile influencers in the trading and investment space to help promote the protocol.

> **Want to be a referral partner?**
>
> Please DM us on Twitter with a short introduction:
>
> - Your interest in Perpetual Protocol
> - Your community and reach
> - Brief info about yourself - are you a trader, investor, analyst ...?

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#PERPtogether →

#PERPtogether

> PERPtogether has paused for performance evaluation. It will be continued, or replaced by another campaign, based on its performance.

Overview

PERPtogether is designed to encourage traders to keep coming back to Perpetual Protocol.

The program leverages Pool Together, a no-loss lottery and one of the first DeFi projects in the space.

PERPtogether runs on Pool Together xDai, ensuring ultra low participation fees!

Program details

How to join

Trade on perp.exchange every week to earn $pPERP tokens. Stake these tokens on Pool Together for a chance to win 1 of 10 prizes worth approx. $500 USD each!

Keep trading and staking more to increase your chances each week.

pPERP token emission rules

pPERP are issued every Tuesday, based on your trading volume from the week before (cut-off is Monday 0:00 UTC).

Your pPERP rewards will be calculated by:

- Total volume (USDC) divided by 5000
- Max weekly reward of 20 pPERP

$$pPERP = \frac{weeklyTradingVolume}{5000}$$

> The 1 pPERP minimum promotion ended May 11, 2021. From that date, all pPERP rewards will be calculated using the formula above.

```
Example rewards (all figures are weekly)
+----------------+--------------------+
| Trading Volume | pPERP Token Reward |
+----------------+--------------------+
|              1 |             0.0002 |
|           1000 |                0.2 |
|           5000 |                  1 |
|         20,000 |                  4 |
|        100,000 |                 20 |
|        100,001 |                 20 |
+----------------+--------------------+
```

Pool website

PoolTogether - Community Pools
PoolTogether - Community Pools

> **Pool Together xDai Gas**
> Metamask is unable to properly estimate gas for Pool Together on xDai for some reason. Please use the following values:
>
> **Gas price**: 1 gwei
> **Gas limits**
> Approve: 60,000
> Stake: 400,000
>
> Typical fee for approve + stake: **0.000269955 DAI**
>
> If you need xDAI to pay for gas, please come to our Discord or use the Blockscout faucet.

Winners

Trading period	Draw date	Block explorer
Apr 26 - May 2	May 4	http://perp.link/3d3gvu
May 3 - 9	May 11	http://perp.link/3g58ue
May 10 - 16	May 18	http://perp.link/3g5wbk
May 17 - 23	May 25	http://perp.link/3gyu6v
May 24 - 30	June 1	http://perp.link/3fscbp
May 31 - June 6	June 8	http://perp.link/3jdzks
June 7 - 13	June 15	http://perp.link/3jmlw3
June 14 - 20	June 22	http://perp.link/3h6s5a

Transaction Mining

> Perpetual Protocol transaction mining has ended. Claims can still be made here.
>
> Do you have ideas for an improved **Tx Mining Stage 2**? Come to our Discord!

Motivation

Transaction mining is a rewards program that aims to incentivize trading by giving traders fee rebates in the form of PERP rewards.

- Reward early traders with PERP to attract more traders to the system
- Distribute PERP into the hands of users
- Prevent wash trading

Rewards

Weekly reward cap	150,000 PERP
Trading fee rebates	For positions open for more than 30 minutes: Full reward For positions open for less than 30 minutes: 1/3 reward
Reward calculation	Trading fees * 55% Trading fees * 55% Total reward: 110% **Note**: When total trading fees exceed the weekly reward cap, rewards will be given on a proportional basis.
Vesting	1/2 reward has no vesting 1/2 reward is vested 6 months
Reward calculation period	Every Monday, 6:00 UTC
Min reward value	**1 PERP** (Rewards less than 1 PERP will not be claimable.)

Example

1. Use 100 USDC collateral to open ETH long with 5x leverage; fee is 0.50 USDC. Close the position after **35 minutes** (assume PnL = 0); fee is 0.50 USDC. Total fees paid are 1.00 USDC. At the end of the week, you can claim PERP worth **1.10 USDC** (half unlocked now, half unlocked after 6 months).

2. Use 100 USDC collateral to open ETH long with 5x leverage; fee is 0.50 USDC. Close the position after **15 minutes** (assume PnL = 0); fee is 0.50 USDC. Total fees paid are 1.00 USDC. At the end of the week, you can claim PERP worth **0.36 USDC** (half unlocked now, half unlocked after 6 months).

Off-Chain Process

1. Perpetual Protocol aggregates all the **trading fees** paid by traders each week.
2. Each trader is rewarded a **USD-denominated value of PERP** based on a percentage of their aggregated trading fees.
3. The rewarded PERP tokens are capped per week. Once the rewarded PERP > the cap, the rewarded PERP will be proportionally distributed to stakers.
4. Half of the PERP rewards will be locked on-chain for 6 months.
5. Perpetual Protocol pays each staker by submitting one or more on-chain transactions.
6. Perpetual Protocol will publish weekly trading stats.

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Governance

> Due to the nature of the DeFi space, rapid development and unforeseen changes may cause these plans to change.

Near-term

Approx. 3 months after mainnet launch

Improvement Proposals

gov.perp.fi will be the main place to propose and discuss the pros and cons of new ideas in the foreseeable future. External voting platforms such as snapshot.page may be used to get input from the community.

> Have ideas or want to get involved? Head to gov.perp.fi or our Discord now! We'd love to hear from you.

Governance

Due to the nascency of the protocol and the importance of iterating fast in the early days, Perpetual Protocol team members will make most of the decisions until we have an on-chain governance portal ready for all the PERP holders to participate in. That being said, we'll take the community's feedback into consideration before making any decision, and we'll share our rationale behind a decision in this forum as well. Community members are especially encouraged to participate in the project's Discord during this period.

Software Development

Currently, we do not have a technical documentation for external developers to reference and implement proposed ideas themselves. As such, in this stage and the next, the Perpetual Protocol team will be the main developers working on the Perpetual Protocol smart contract and deploying code to the Ethereum mainnet.

Mid-term

Approx. 6 months after mainnet launch

Here is a list of things we expect to have in place at this stage:

- Comprehensive technical documentation that allows builders to tinker with our system and build something useful on top of the protocol themselves
- Smooth running developer grant, bug bounty, and smart contract-based referral programs established
- An on-chain governance portal for stakers to vote on proposals and create new proposals with their staked PERPs
- Allow stakers to delegate their voting right to other people

The proposal that stakers vote on in this stage will be at a higher level as opposed to executable code. The major implementation and the deployment of the smart contracts will still be done by the Perpetual Protocol team.

Long-term

Approx. 9 months after mainnet launch

Here is a list of things either the community or we expect to have built at this point:

- A compensation guideline to incentivize tech-savvy community members to turn high-level ideas on the forum into executable code
- A reward program to encourage people to
  - deploy the smart contract after the proposal is passed,
  - run keeper bots to provide better a user experience for the traders, and
  - run a mirror governance portal themselves

The proposals that stakers vote on in this phase will be executable code only (similar to Compound's current governance model) and the actual implementation and deployment of the smart contracts can be done by anyone – even developers who do not hold any PERP tokens.

🖥️ Dashboards

Links to dashboards for stats, history and more

> **Note**
> The following links may provide data for v1 only. For v2 dashboards, see v2 docs.

Team dashboards

1. Dune Analytics - http://perp.link/3dhc6q
2. Dune Analytics trader stats - http://perp.link/3h76zk

Community dashboards

1. Trade & funding payment history CSVs - http://perp.link/fundingcsv
2. DEX & staking stats - https://perpterminal.com/
3. DEX data CSVs - https://deficsv.com/perp
4. Chainlink price feed data (xDai only) - https://deficsv.com/chainlink
5. DEX stats (Dune Analytics) - http://perp.link/3ftv7x

Third party dashboards & tools

1. Oklink DeFi DEX stats - https://www.oklink.com/eth/defi?type=dex
2. Coingecko Derivatives stats - https://www.coingecko.com/en/exchanges/derivatives
3. **The Graph** - http://perp.link/3kref7
4. xDai stats - http://perp.link/3kt79n

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ℹ️ General FAQ

Don't see your question answered here? Join our Discord to ask us!
https://discord.gg/mYKKRTn

What's the goal of this project?

Our goal is to democratize powerful trading tools, and expand economic inclusion around the world.

We have witnessed how democratizing crypto-assets can create new opportunities like fundraising (ERC-20), tokenized investments (cToken), and so much more.

Issuing futures used to be the job of centralized organizations with very high barriers to entry. But with Perpetual Protocol, we lower the barrier of issuing futures by orders of magnitude. Compared to centralized exchanges or other protocols like Synthetix and FutureSwap, there are several properties unique to Perpetual Protocol:

- The AMM model is suitable for low liquidity futures because of built-in liquidity, allowing trading of long-tail assets.
- Trading volume is not bound by funds in a staking pool.
- Stakers have no exposure to impermanent loss caused by price fluctuation, which insulates stakers from fluctuation in the price of the underlying assets.
- Oracles are not used to determine prices while trading, which minimizes the risk of price manipulation (ex. front running).

In the theory of disruptive innovation, a much cheaper way to reconstruct an expensive product wins and creates more use cases. This is our goal for Perpetual Protocol.

Where is the team based?

Our team is decentralized. Team members and advisors are located across Asia-Pacific, North America, and the EU.

Virtual Automated Market Makers (vAMMs)

Is there only one Virtual AMM shared among all the perpetual contracts on Perpetual Protocol?

No, each perpetual contract requires its own unique Virtual AMM with different settings. However, the insurance fund is shared among all vAMMs.

Where can I find stats or a dashboard?

🖥️ Dashboards

ⓘ See more FAQs in our Discord #faq channel!

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Next PERP Staking FAQ →

PERP Staking FAQ

> ✅ Staking is live! Details here 👉 Staking

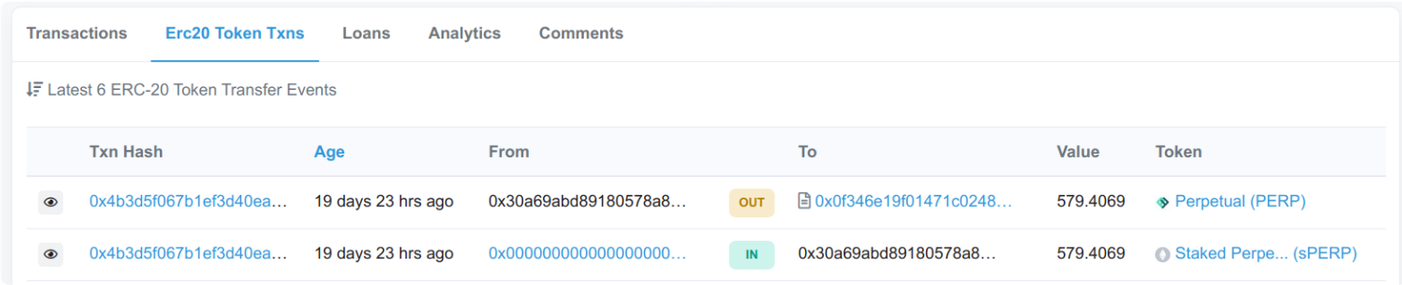
How many transactions are needed to stake?

Two:

1. Approve PERP to be used by the staking contract
2. Stake PERP in the staking contract

How can I check if my PERP are staked?

Copy your address and go to Etherscan. After searching for your address, look in the Erc20 Token tab:

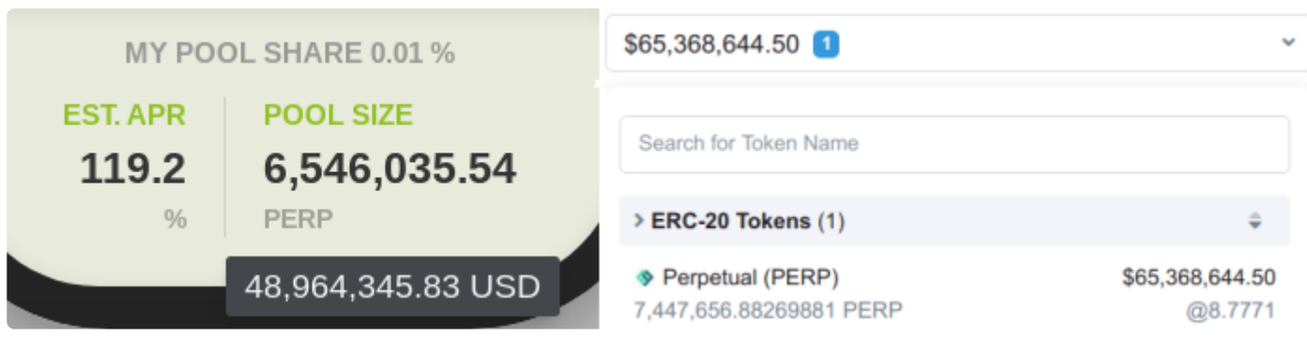


You should see sPERP enter your account, and PERP exit (into the staking contract).

Is the staking APR affected by the PERP exchange rate?

No, the staking APR only shows how much your staked PERP will increase in absolute (nominal) terms. PERP exchange rate does not affect APR in this case.

Why is the amount of PERP staked different on Etherscan?



Staked PERP on staking.perp.exchange VS etherscan.io

The number of staked PERP on staking.perp.exchange does not include PERP already in cool-down, whereas etherscan.io does not make this distinction.

Is the Staking Pool shared by all Virtual AMMs?

Yes, the Staking Pool is shared by all Virtual AMMs.

How long is the cool-down time for stakers?

Staking is flexible and can be done for any amount of time. A **7 cool down period applies** when you begin the unstaking process. The length of the epoch can be adjusted through governance.

Are rewards vested?

Some PERP rewards will be vested after 6 months. See Staking for more details.

> ⓘ **Vesting** means tokens are locked. When tokens are locked, they belong to you, but you will only be able to access tokens after a fixed period.

What risks are involved in staking?

The primary risk is exposure to volatility due to the 7 day cool-down period -- if the price of PERP changes in relation to other assets, you will be unable to swap it before the end of the cool-down.

Is there impermanent loss (IL) for stakers on Perpetual Protocol?

In general, staking on Perpetual Protocol **does not expose you to IL** (impermanent loss) because you are staking a **single asset**. You can always withdraw the same number of PERP as you initially staked. However, due to the cool down period, the PERP token price may change before you are able to claim your tokens.

Moaarrr FAQs

Staking Mega-FAQ

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Token Model FAQ

Most tokenomics questions are answered here: https://docs.perp.fi/getting-started/perp-tokens

What is the token release/unlock schedule?

Tokens will be released and unlocked according to different schedules depending on the token holder. Please see PERP Distribution and PERP Release Schedule for details.

What is the utility of the PERP token?

- **Governance**
  Perpetual Protocol is a project built on community support. Once the ecosystem has matured and we have broader token distribution, Perpetual Protocol would gradually transition into a DAO and let the community decide the future development of the protocol. Note that governance may vote to add additional token features in the future.
- **Staking**
  In order to incentivize participation in Perpetual Protocol governance, PERP holders are rewarded when they stake their tokens in the Staking Pool. Stakers are rewarded with a portion of transaction fees generated by trading, plus the staking reward once per staking epoch (7 days).

Please see PERP Tokens for more details.

What are the staking rewards if I stake PERP?

Please see PERP Tokens for more details.

What is the initial circulating supply of PERP tokens?

- Investors: (6,250,000+22,500,000) * 25% = 7,187,500
- Balancer LBP: 7,500,000
- Ecosystem & rewards: 7,775,000
- Total: 7,187,500 + 7,500,000 + 7,775,000 = 22,462,500
- Unlocked / Total = 22,462,500 / 150,000,000 = 15%

Marketing FAQ

Is there a referral program?

Yes! Perpetual Protocol is currently running an early version of our referral program. Watch our Twitter for announcements or get more details:

Referral Program

Is #PERPtogether the same as the referral program?

No, #PERPtogether is a separate program run directly by the Perpetual Program team using Pool Together on xDai. In #PERPtogether, all traders on the platform will receive pPERP according to their trading volume, up to a maximum of 20 pPERP / week. These pPERP can then be staked on Pool Together (xDai) for a chance to win $500 in PERP! 10 winners are chosen each week.

> **Set gas price to 1 gwei!**
>
> #PERPtogether runs on xDai where fees are crazy low.

#PERPtogether pool

PoolTogether - Community Pools
PoolTogether - Community Pools

Learn more

Perpetual Protocol #PERPtogether Campaign
Medium

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System Design FAQ

Why do the insurance fund and clearing house balances go up and down?

The insurance fund regularly collects trading fees paid by traders, causing the amount of funds stored to increase. The clearing house also has a pool of funds which are used in instances where it is necessary to pay funding payments or cover a loss from a bankrupt position that was not liquidated in time.

In order to ensure sufficient funds, the clearing house may occasionally withdraw funds from the insurance fund, or return funds to the insurance fund if the amount is greater than a certain threshold.

How do you make sure the Oracle is secure?

Perpetual Protocol uses ChainLink as the Oracle for the **funding rate calculation**. The Oracle price is not used elsewhere. This limits Perpetual Protocol's exposure to Oracle failure or manipulation.

Perpetual Protocol only uses the Oracle price at funding time (every 1 hour), and in addition, the 1-hour TWAP is used. This minimizes the usage of the Oracle and the risks of the price being manipulated.

> ⓘ Currently the Oracle price shown on the trading interface is updated more regularly. However, the price is only used once per hour to calculate funding payments.

Are the clearing house contract and vault the same thing?

Yes, the vault refers to funds held securely by the clearing house.

Does Perpetual Protocol have an auto-deleveraging system which is common in most centralized exchanges?

No, positions are not deleveraged in Perpetual Protocol because Virtual AMMs serve as the counter-party for all trades.

Could I use the flash loan to game the system like in the bZx attack?

No, Perpetual Protocol doesn't use any on-chain Oracle or on-chain DEX as a price engine. It's very difficult to use a flash loan to manipulate the price of underlying assets and profit from Perpetual within the same transaction.

The only time Perpetual Protocol makes use of on-chain Oracle prices is to liquidate under-collateralized assets. In this case, because Perpetual Protocol uses both the 15 min TWAP Oracle price and latest Oracle price to calculate UnrealizedPnL, it's very difficult to manipulate UnrealizedPnL within the same transaction. Please see Liquidation for more details.

Which parameters can be updated by governance voting in Perpetual Protocol?

1. **FeeRatio** 🌅 Initial setting: 0.1%
   The transaction fee percentage. This rate is charged every transaction, and the proceeds are shared by the stakers.

2. **MaintenanceMarginRequirement** 🌅 Initial setting: 6.25%
   Once a position's margin ratio falls below the MaintenanceMarginRequirement, liquidators can liquidate this position. Please see Liquidation for more details.

3. **InitMarginRequirement** 🌅 Initial setting: 10% (enforced in UI only)
   The initial margin ratio required to open a new position. Please see Liquidation for more details.

4. **LiquidationFeeRatio** 🌅 Initial setting: 1.25%
   The liquidation fee percentage. Please see Liquidation for more details.

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Comparisons to other projects

Comparisons to other projects

DeFi is a very fast moving space, so it's hard to compare Perpetual Protocol to other projects, or identify competitors. As a growing space, we're rather grow together than focus on comparisons!

That said, to date we are not aware of any project that offers our feature set:

- Fully on-chain perpetual swaps
- AMM model exchange (no order-book)
- On mainnet with fully functional layer 2 👉 zero gas fees for trading
- Traders seamlessly interact via Ethereum (layer 1), while trades occur on xDai (layer 2)

We have some basic comparisons with commonly asked about projects below.

> ⓘ New DeFi projects launch almost every day, and projects are in a state of near-constant change. We do not keep the following comparisons up-to-date so please #dyor!

Synthetix | Futureswap | dYdX | Injective | Leverj

Synthetix vs Perpetual Protocol

	Perp.fi	Synthetix
Financial Instrument	Perpetual Contract	Synthetic Assets
Slippage	Slippage from constant-product curve. Roadmap: slippage could be mitigated through the algorithmic adjustment of *k*.	No slippage because the price comes from the Oracle directly. ✅ Traders can place any size of orders without slippage.
Stakers' PnL	Stakers are not exposed to impermanent loss caused by price fluctuation.	Stakers must take directional positions. (Even minting sUSD is a directional position.) 🤔 Stakers face exposure to price fluctuation in order to earn staking rewards.
Oracle	TWAP is used at the funding time (every hour) to calculate the funding rate. ✅ 1) The price is used to calculate the funding rate only, which greatly minimizes the risk of price manipulation. 2) Using the TWAP adds another layer defense against manipulation.	A continuous spot price feed is needed from the Oracle. 🤔 The Oracle is needed for every block and used to calculate the value of positions. It has a huge risk of being hacked and Synthetix has suffered from different levels of losses. 🤔 Pricing coming from the Oracle directly makes the system easier to be front-run. The prices of orders are settled 3 minutes later due to front-run protection.

Perpetual Protocol has managed to fix or mitigate most of the Synthetix problems detailed here (front-running, skew of the debt pool, Oracle, snapshotting attack): Synthetix — the battlefield

📊 Basic Trading FAQ

Don't see your question answered here? Join our Discord to ask us!
https://discord.gg/mYKKRTn

> ⚠ Perp v1 is not actively maintained. Use at your own risk. Try v2 here.

What do I need to start trading?

1. Computer with Firefox, Chrome or other browser that supports the Metamask wallet
2. A Metamask account.
3. **USDC** – all trades are funded and settled in USDC. You can obtain USDC at any major exchange, such as Uniswap.
4. [Optional] Insurance from Nexus Mutual.
5. Courage – trade at your own risk! Financial loss is possible, although you will never lose more than your initial investment.

Trading via Ethereum and xDai

> ⚠ **Trading via Ethereum is no longer supported.**
> - All trades must be made via xDai.
> - Any positions you opened via Ethereum can now be managed from xDai.
> - No additional action is needed from you.

✕ **Trade directly on xDai**

Trades occur on xDai, and we provide a relayer service from Biconomy to let you trade gas free via Ethereum.

You are **highly recommended to have xDai set up as a backup**, or to trade via xDai only. This gives you control over gas price and limit, you can speed-up or cancel transactions, and have a lot more visibility into the transaction process.

```
  Network conditions     Gas Price
 ------------------- ----------------
  Normal                 1 gwei
  Busy                   20-50 gwei
  Heavy volume           500-2000 gwei

  Gas limit
 ----------------------------------------
  Default limit is 3.8 million.
  In high volume conditions, try
  reducing the limit to 1.8 million
  or lower. You risk running out of
  gas, but also nodes will be more
  likely to mine your transaction.
```

> ℹ Tip for seeing gas prices
>
> Click on recent transaction times to see gas price and limit of recent transactions.

Why do I need to deposit & withdraw?

These steps allow you to trade on Perpetual Protocol with zero or near-zero gas fees, thanks to the xDai network, while also using your regular Ethereum wallet to trade, with no set-up needed.

Deposit Step | Withdraw Step

The **deposit** step moves your USDC from Ethereum to the xDai network.

The funds remain in your wallet and are visible if you add the xDai RPC (two click method) as well as the xDai USDC custom token.

If you prefer, you can perform this deposit step manually using Omni Bridge.

Approval Step 1: Approve your USDC for transfer to xDai
Deposit: Execute the transfer to xDai
Approval Step 2: Approve your USDC for trading on Perpetual Protocol

Why are gas fees low or even zero while trading?

All trades are processed using the xDai Chain, an Ethereum side chain. xDai is a faster blockchain with 5 second block times and incredibly low gas fees.

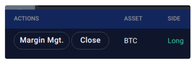
- If you trade from Ethereum with no hardware wallet, gas fees are paid for you.
- If you trade from xDai (e.g. when using a hardware wallet), typical fees are around 0.001 USD per trade. **1 Gwei** gas price will get your trade confirmed in under 5 seconds in almost all cases.

How to reduce/increase position size

This is not possible yet due to the nature of the AMM model. It is not possible to guarantee the final size of your position after the request is made. E.g. if you have a 1000 USD position and give an order to reduce it to 500 USD, other trades in the same block could cause your final position to be above or below your 500 USD target.

To change your position size, either open a new buy or sell order. The new position will be merged with the active (existing) position.

If you have insufficient collateral, you can **remove** margin from your active position(s) using Margin Mgt. (thereby increasing your leverage).



Why use USDC? Can we deposit other assets?

USDC was chosen as the base asset thanks to its popularity throughout the DeFi space.

It is possible to let users trade using other assets, such as **BTC** or **ETH**, as collateral, but we do not plan to add this feature in the short term. It may be added via governance in the future.

What is the funding time?

A keeper (bot) triggers funding at the beginning of each hour.

> ℹ Currently the funding period is not shown on the interface; we are working on a way to add this information.

Deep dive
The Perpetual Protocol smart contract will allow anyone to trigger funding after the top of the hour. Once funding has been triggered, it cannot be triggered again until the next hour. In addition, funding cannot be triggered until 30 minutes have elapsed since the previous trigger. E.g. if funding is not triggered at 3:00, and then triggered at 3:35, the next funding will not be allowed to trigger before 4:05.

How are funding payments displayed in Position History?

Funding payments are shown as positive numbers when you made a funding payment (debit), and negative numbers when you received a payment (credit).

See your position history including funding payments in Position History at the top of the trading interface:

Position History

How are funding payments credited/debited to your account?

Funding payments will increase or decrease the margin of the respective position each time the funding cycle ends.

What are the fees charged by Perpetual Protocol when trading?

0.1% Transaction Fees

Transaction fees are deposited into the Insurance Fund to cover unexpected losses to the exchange resulting during trading on Perpetual Protocol.

> ℹ A portion of transaction fees will be shared with stakers. See Staking for the latest information about transaction fee sharing.

Fees and fee allocation can be adjusted through governance to keep the protocol competitive in the market.

How could I propose a new underlying asset to be traded on Perpetual Protocol?

The community votes on what assets should be added. Start by joining the conversation in the **#👑 governance** channel on our Discord. Next, you can read, comment on or create a new proposal at our governance forum:

> **New Markets**
> Perpetual Protocol

What are the caps and why do we need them?

Currently Perpetual Protocol has 2 types of caps:

Type	Explanation
Personal Position Cap	This is the maximum position size you can open for any individual asset traded on Perpetual Protocol. This includes long and short positions. You may have positions in as many assets as you want, up to the maximum for each. For example, the maximum position size for ETH might be 200 ETH (this is just an example - the real number will be bigger.)
Open Interest Cap	Open Interest refers to the value of all open positions, long or short, in aggregate. This total value has an upper maximum limit. For example, if all the BTC long positions are worth 5 million USDC in total, and all short positions are worth 2 million USDC in total, the open interest is 7 million USDC.

How to check current personal cap size

Go to perp.exchange and enter a large number for the asset you wish to check. The interface will give you a warning, as well as show the current maximum size you can trade.

Note there is no easy way to check the **open interest cap** at this time. The team monitors open interest and increases the cap as needed, according to market conditions.

Why are there caps?

Caps help keep traders on Perpetual Protocol safe. A sudden, dramatic increase in open interest may be the result of an exploit or attack. Personal caps increase the friction for those attempting an exploit, forcing them to manage an attack across several wallets, while at the same time being of relatively little hindrance to regular traders.

Having caps helps limit the effect and scale of attacks, reducing the profit for attackers. Caps also help mitigate the possibility of price manipulation exploits.

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⚔️ Trade directly on xDai

The native xDai interface gives you more control and improved reliability

Why trade via xDai?

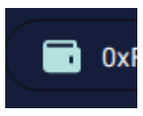
> ⚠ **Trading via Ethereum is no longer supported.**
>
> - All trades must be made via xDai.
> - Any positions you opened via Ethereum can now be managed from xDai.
> - No additional action is needed from you.

All trades on Perpetual Protocol happen on xDai. Trades made via Ethereum are passed to xDai using a transaction relay. This allows you to trade without paying for gas, but it has a few drawbacks:

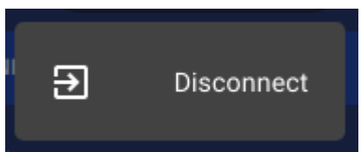
- No control over gas price and limit
- Not compatible with hardware wallets
- Occasionally has service outages or unexpected issues

How to set up xDai trading

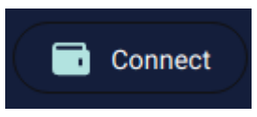
1. Click the wallet icon on the upper right of perp.exchange



2. Click Disconnect

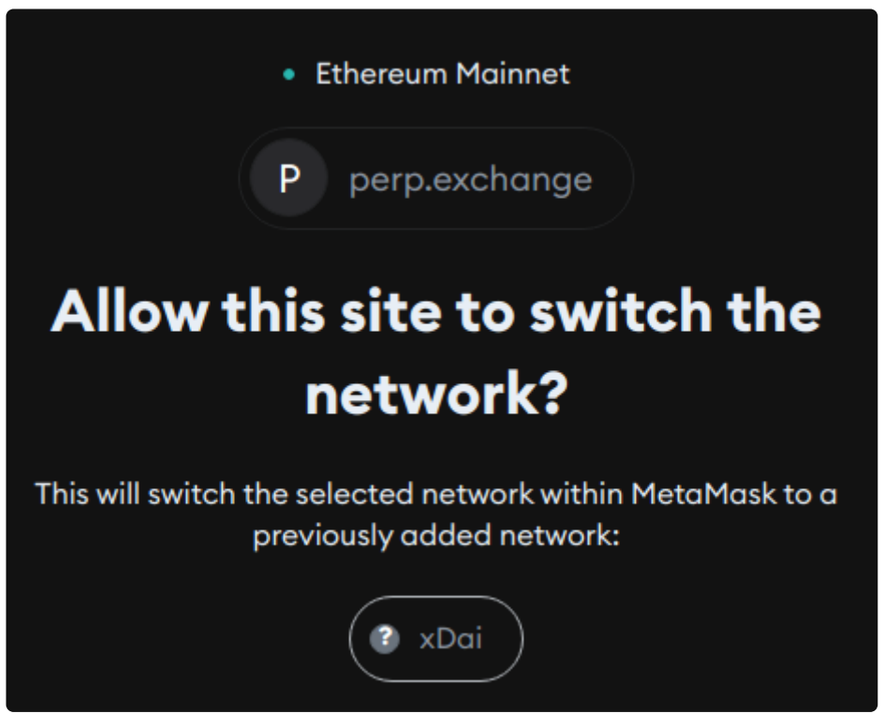


3. Click Connect



4. Click the option for Trezor or Ledger (it doesn't matter which one)

5. Metamask will walk you through adding the xDai network, or help you switch network if you already have it set up.



You will need xDAI for paying gas fees:

> ❎ **Where to get xDAI**

Tips and tricks for choosing gas price and limit on xDai (see section 2):

> 📊 **Basic Trading FAQ**

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Where to get xDAI

You will need xDAI for paying gas fees on the xDai chain

> **xDai Native UI Launched!** 🚀
>
> Native xDai allows users to trade while using Metamask with a **Trezor** or **Ledger** connected.
>
> To use so, you will need to have xDAI for paying gas fees. Don't worry - gas fees on xDai are typically in the range of 0.00005 USD! Yes, that's 4 zeros.

Obtaining xDAI

Read on for several ways to receive xDAI for gas fees.

1. From a Faucet

Request some xDai from anyone of the following faucet - xDai faucet, Blockscount's faucet, or Bao Finance's xDai faucet.

2. On Ethereum

Bridge DAI to xDai at this link. You will need to have **DAI** first. You can learn more here.

3. From the team

Ask the team or mods for xDAI in their Discord server or Telegram channel.

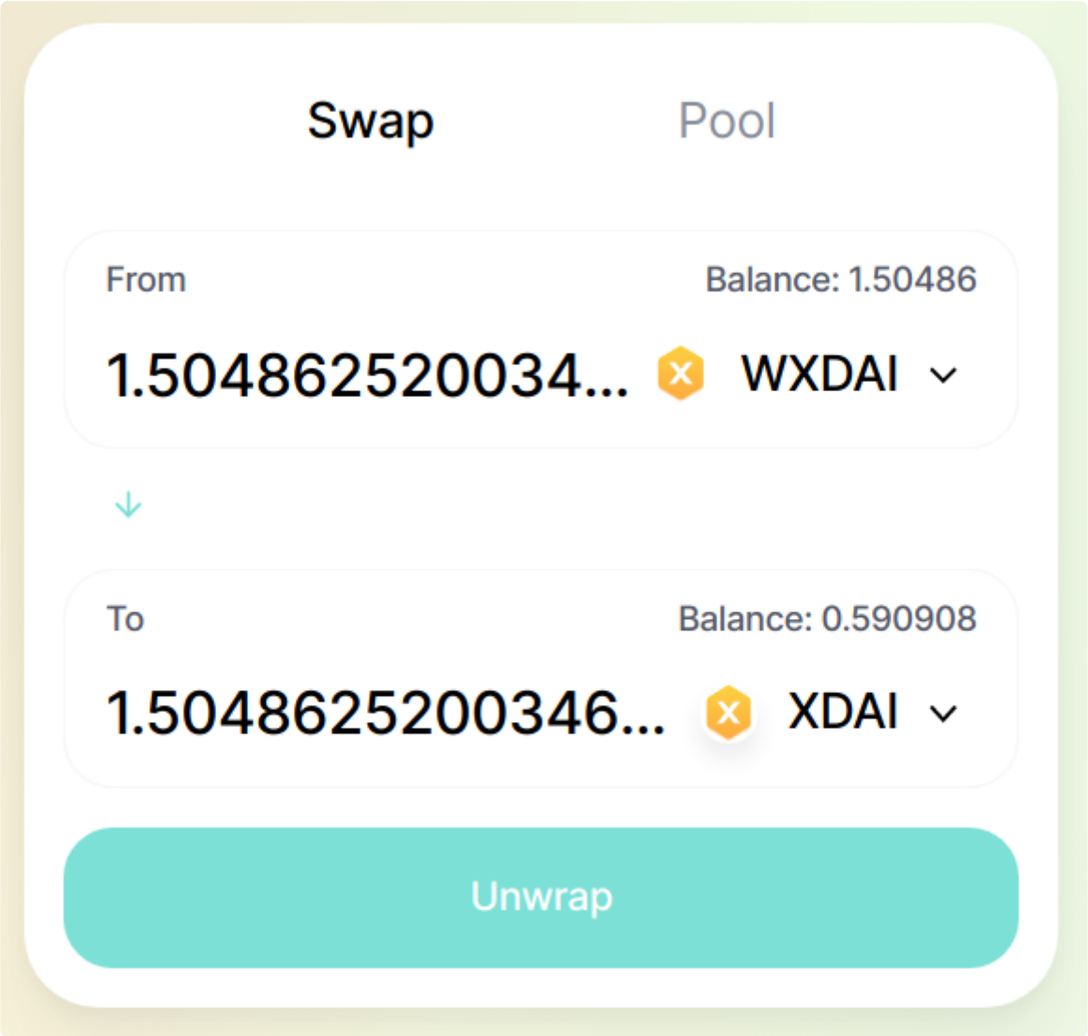
4. From a CEX

A. Buy xDAI directly from AscendEx (formerly Bitmax) and withdraw directly to your wallet.

B. Buy DAI on Binance and withdraw via BSC

> **Suggested custom gas prices**
>
> BSC: 5 Gwei (or 10, if you encounter issues)
> xDai: 1 Gwei

1. Withdraw DAI to BSC (Binance Smart Chain)
2. Set Metamask to BSC
3. Use the bridge to send DAI to xDai
   Note: The bridge will warn you that DAI will not be converted to the native token - this is normal.
4. Set Metamask to xDai
5. Swap DAI (BSC) for WXDAI using Component
6. Swap WXDAI to xDAI using Honeyswap



5. Using fiat

You can buy xDAI with fiat via Ramp.

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Where to get USDC

Obtain USDC with minimal fees

Perpetual Protocol uses USDC as the quote asset (collateral for all trades). The token used exists on xDAI.

Token contract address: 0xDDAfbb505ad214D7b80b1f830fcCc89B60fb7A83

The easiest way to get USDC is to swap other tokens on a DEX like Uniswap. But if you would like to **avoid gas fees on Ethereum**, read on.

Swap xDAI for USDC

There are at least two DEXs on xDai that allow you to swap xDAI for USDC.

Component

Honeyswap Interface

Get xDAI without using Ethereum

You can buy xDAI directly from at least two places.

https://bitmax.io/
bitmax.io

Ramp

Swap DAI on Ethereum for xDAI

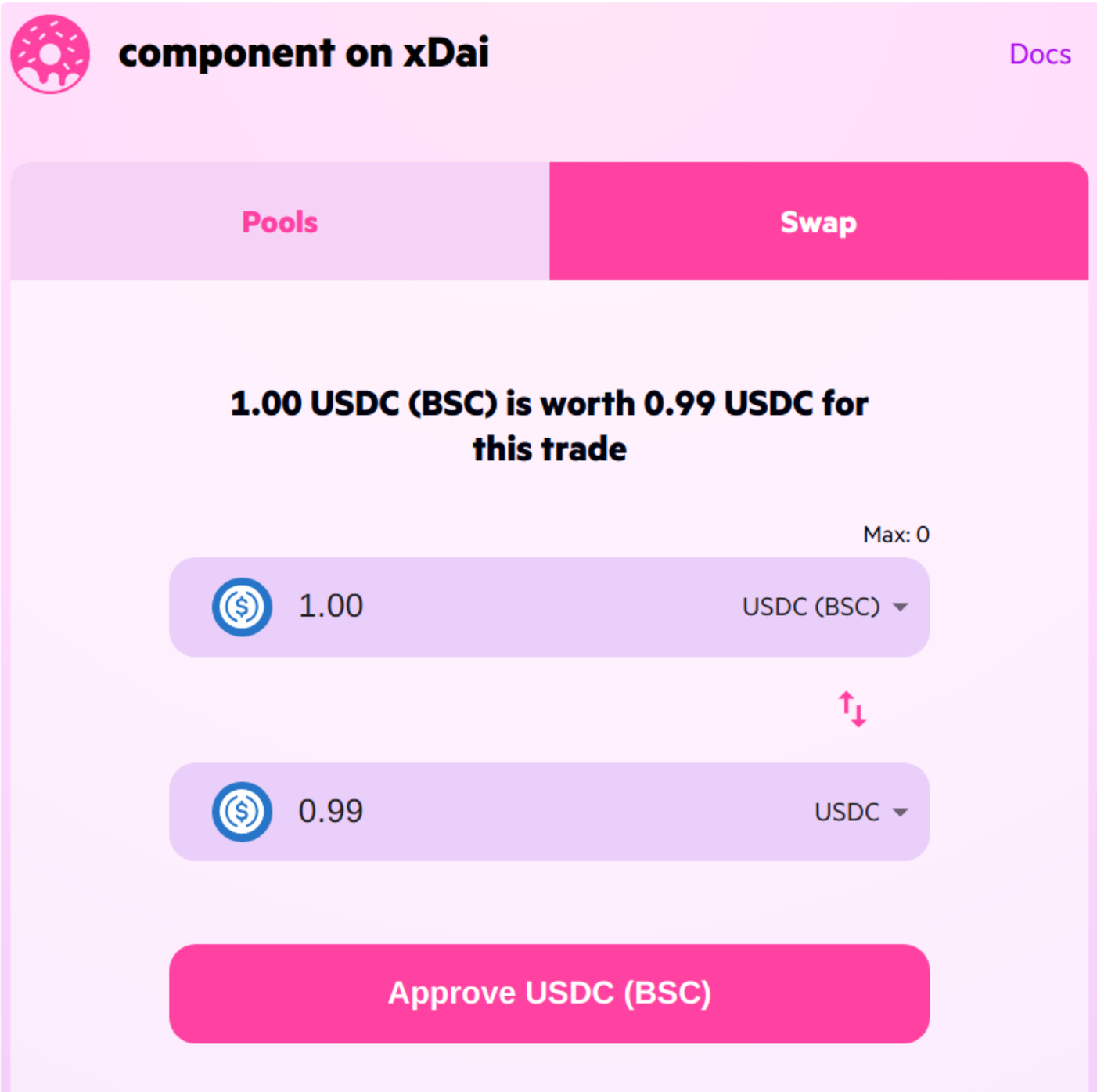
xDai Bridge

Swap from Binance or BSC

Save 90% on Gas Fees by Depositing from Binance
Medium

TL;DR

1. Buy USDC on Binance and withdraw to BSC.
   or
   Swap other tokens for USDC via a BSC based DEX.
2. Swap your USDC from BSC to xDai via the bridge: http://omni.xdaichain.com/
   Note: USDC on BSC and xDai are different tokens so **keep going to step 3** 👇
3. Swap USDC (BSC) for USDC via Component: https://xdai.component.finance/?tab=swap



xdai.component.finance

Last modified 2yr ago

WAS THIS PAGE HELPFUL?

😷 Troubleshooting FAQ

Don't see your issue? Need hands-on help? Join our Discord!
https://discord.gg/mYKKRTn

Hardware wallets

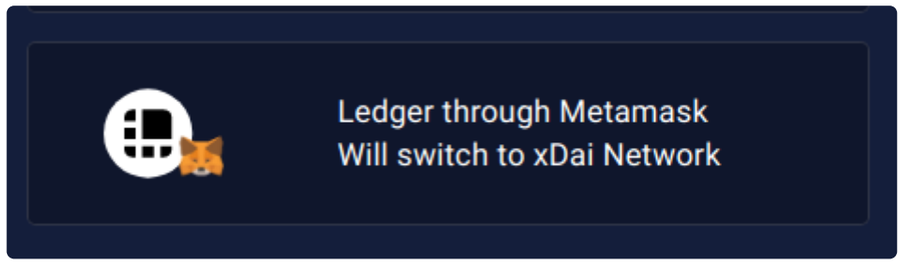
Ledger | Trezor | WalletConnect | Other Hardware Wallets

> ⚠ If you are using a Ledger wallet, connect using the Ledger button. Do not connect via the Metamask button.

Native xDai trading

Full hardware wallet compatibility is now available by using our xDai trading interface at perp.exchange.

Please connect your Ledger to Metamask, and use the Ledger option while connecting to perp.exchange:



xDAI gas fees

Using the xDai network, you will need the xDai version of DAI for paying gas fees: xDAI.

Fees on xDai are extremely low! Find out how to get xDAI here.

Still need help? Open a ticket with us on Discord - just go to our channels!

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The UI is lagging / not loading

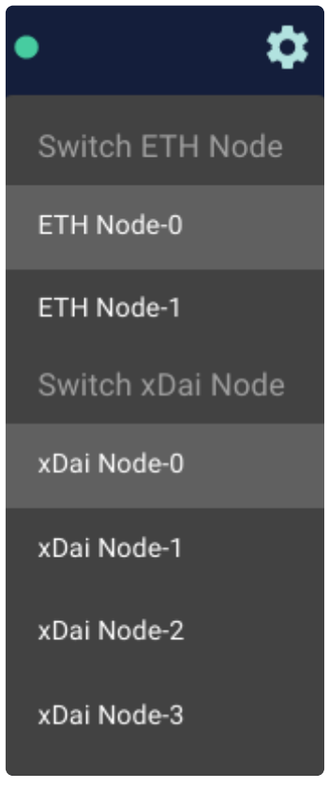
The UI at perp.exchange depends on several parts in order to function, some of which may cause delays or fail to load for some users.

UI Lag / Delays | Deposit Issues

If the UI is lagging, it is possible that you are unable to connect to the automatically assigned xDai node.

Manually switch **xDai node** using the node menu ⚙️ in the upper right corner of the UI.

> **Note** that this bypasses the load balancing infrastructure and will only help you if you are unable to connect properly to the automatically assigned node (ie. UI is not loading at all).
>
> There is no need to switch Eth node. Ethereum nodes at used only for **deposits**.



Choose a different xDai node if you are totally unable to connect.

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Why does xDai charge a 0.1% exit fee when withdrawing?

The bridge fee or exit fee is charged by the xDai Omni Bridge, which is used when moving funds from xDai to Ethereum. This is a standard fee charged by Omni Bridge.

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🖥️ Trading Interface FAQ

Learn more about the features and functions found on the Perpetual Protocol trading platform. Join our Discord for more discussion! https://discord.gg/mYKKRTn

Why do I see an 'insufficient balance' error?

Be sure to deposit funds to make them available for trading.

Further explanation

Perpetual Protocol uses the xDai network for scaling. This means you must 'deposit' funds from your regular Ethereum wallet (eg. Metamask) to the xDai network. This process is performed entirely within your existing wallet without additional setup. Funds remain in your wallet and under your control at all times.

Why do the funding payments seem to be paid to the wrong side?

Funding payments follow the convention used on other exchanges like FTX and Binance: A negative number in your Position History indicates you received a funding payment, while a positive number in your Position History indicates you payed a funding payment.

The logic is that you make a payment; a positive payment means you end with less money; a negative payment means you end with more money.

How is the Index Price calculated?

The index price (also called 'Oracle price') generally refers to the price of the underlying asset on the spot market. Perpetual Protocol bases the index price on price feeds from Chainlink.

To mitigate frontrunning, we use the 1-hour TWAP (time weighted average price). This may result in the index price shown differing somewhat from the price you see on other major exchanges, especially when the market is volatile.

The price shown in the Perpetual Protocol trading interface is updated when a new price is received from Chainlink. Note, however, that the index price is only used when calculating hourly **funding payments**.

> Timing of updates to the index price is determined by updates in the Chainlink price feed – a surprisingly complex topic. Deep dive here. Keep in mind that Perpetual Protocol uses the 1-hour TWAP.

How is the Mark Price calculated?

The mark price is the current price for perpetual contracts of the asset you are viewing (ie. the price the AMM is at right now). Subsequent trades will move this price to a new level; without a trade happening, the price will not move.

It is normal for this price to diverge, sometimes dramatically, from the index price (the open market price referenced by Perpetual Protocol, aka spot price). The mark price is a general indicator of trading sentiment on Perpetual Protocol.

> Mark price and the price of the last trade shown on perp.exchange will not be the same. This is because the price of the last trade is the average of the prices at which the order was filled, while the mark price is the current price on the AMM curve. A trade moves the price along the AMM curve from point A to point B, with the order filling as the price moves. The prices shown in trade history are the average of prices between points A and B.

How is the margin ratio calculated?

Margin ratio is calculated by adding your margin size and PnL for a given position, and then dividing by the position notional (position size multiplied by mark price).

$$marginRatio = \frac{(margin + unrealizedPnL^{*})}{positionNotional}$$

> *PnL is calculated using one of two methods, causing the margin ratio to also have two potential values. Learn more here or see the next FAQ on PnL calculation.

> **Oracle Based Calculation During Severe Market Conditions**
> In order to combat flash crash risk, if the mark price diverges **more than 10%** from the index price (oracle price), margin ratio will be calculated using the oracle price.
> This measure will greatly reduce the risk of liquidation during a flash crash where the price on Perpetual Protocol diverges severely from spot prices.

How is PnL calculated?

PnL or P&L (profit and loss) shows how much value your position has lost or gained. Until you close your position, these are *unrealized* profits or losses, and are not guaranteed.

PnL is calculated using the following formula:

Close | Partial close / reverse position / unwind

When closing the position using the close button or closePosition contract call, PnL is calculated using the following formula:

$$PnL = (currentPrice^{1} - entryPrice) * positionSize$$

1. currentPrice is one of two values (the value most favorable to the trader is chosen): 1. the current exit price as calculated by the vAMM, or 2. the 15 minute TWAP of the mark price. This is done to prevent an attacker from manipulating the price on the exchange and triggering liquidations.

> **Important**
> PnL shown on perp.exchange includes the price impact of closing your postition. When you close your position, the vAMM price will move. This move is factored into the PnL shown on the UI.

What happens when I open a second position?

If you open a second position for a given asset, the new position will be combined with your existing (active) position. E.g. if you have a 1 ETH long position and open a 0.5 ETH short position, your active position will be updated to a 0.5 ETH long position. (**Note** that your margin will not change—instead, your leverage will be updated. You will need to use Margin Management to reduce or add to your margin).

Note that if you open a 100 ETH long and then a 100 ETH short, you will be left with a **dust position** due to rounding. Therefore it is best to simply close the position rather than taking an equal, opposite position.

> If you want to open **multiple positions** for the same trading pair, we suggest creating a new account in Metamask, and connecting with this account to the trading platform.

How can I control slippage?

You can set a maximum slippage tolerance on the left side of the trading interface. The slippage tolerance applies when **opening or closing** a position.

The default is 0.5%, or you can also set your own tolerance. Setting slippage tolerance is especially useful in volatile or high volume market conditions on the Perpetual Protocol exchange, when large numbers/sizes of concurrent trades may result in significant slippage.

What is slippage vs price impact?

Both slippage and price impact are changes in price due to trades happening. **Price impact** is a predicted change in price; increasing price for longs, and decreasing price for shorts. Size of the price impact depends on the size of the trade.

Slippage is an unexpected change in the price which happens between the time a trader places an order and the time the order is filled. For example, if you place a trade at $10 but by the time the trade executes the price has moved to $11, you may no longer wish to place the order. This is where slippage control becomes essential.

Transaction price impact

How is price impact calculated?

Price impact is calculated using the same x*y=k formula used by Uniswap and many other AMM based exchanges. The price is based on the ratio of x to y. So if you buy x, you receive an amount of y, and in doing so the ratio (and therefore the price) of x and y changes. The more you buy, the greater this change will be. This is price impact.

Calculating price impact is a technical process. First, the formula:

$$priceImpact = (\frac{entryPrice}{spotPrice}) - 1$$

where

$$entryPrice = \frac{openNotional}{positionSize}$$

and

$$spotPrice = \frac{quoteAssetReserve}{baseAssetReserve}$$

`openNotional` and `positionSize` are the value of the position you want to open in quote asset (USDC), and the size of the position in base asset, respectively (both are after leverage).

`quoteAssetReserve` and `baseAssetReserve` are the x and y in the AMM formula. These values can be obtained for each vAMM on Perpetual Protocol using the `perp-cli` tool.

GitHub - perpetual-protocol/perp-cli: CLI for Perpetual Protocol
GitHub

Example

The command `perp amm BTC` will give you the values needed to calculate the price impact for BTC.

```
ubuntu@stagingc~$ perp amm BTC
BTC/USDC
- Proxy Address: 0x0f346e19F01471C02485DF1758cfd3d624E399B4
- Index Price: 34,223.707 USDC
- Market Price: 34,175.687 USDC
- OpenInterestNotionalCap: 24,000,000 USDC
- OpenInterestNotional: 3,925,307.342 USDC
- MaxHoldingBaseAsset: 20 BTC
- QuoteAssetReserve: 12,759,015.067 USDC
- BaseAssetReserve: 373.336 BTCUSDC
- PriceFeed: ChainlinkPriceFeed
- est.funding rate: -0.0094494835687555 %
```

What happens if margin reaches 0?

If PnL is high enough, in theory you can remove all margin from a position. In this case, the position will stay open as long as margin ratio is above the liquidation threshold.

If the position pays funding, a bad debt will occur, and you will have to add margin to pay for the debt before the position can be closed. Liquidation will not occur if there is a debt as long as the margin ratio is healthy.

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Start trading on perp.exchange

> This document applies to the current mainnet version of Perpetual Protocol. Our current state of rapid development means details may be inaccurate or out of date.
>
> Perpetual Protocol is beta software. Use at your own risk.
>
> The Perpetual Protocol smart contracts are decentralized and permissionless, but the interface provided at perp.exchange is not. Please read and agree to the Terms of Service before attempting to use the interface.

> Perp v1 is not actively maintained. Use at your own risk. Try v2 here.

Install Metamask

We currently support using the desktop Firefox or Chrome version of the Metamask wallet for interaction with the Perpetual Protocol perp.exchange interface.

Install Metamask here:

- https://metamask.io/download.html

Send funds to xDai

> You will need xDAI to pay gas, and USDC to use as collateral. Make sure you have both of these tokens in your wallet on xDai before trading.

Bridge funds to xDai using your favorite bridge, or check out options at the link below.

Transfer Funds to / from xDai

Start trading!

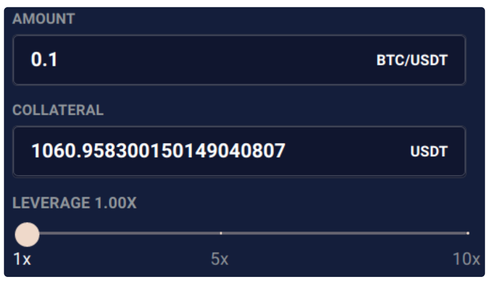
Choose the trading pair you'd like to trade.

Testnet supports ETH <-> USDT and BTC <-> USDT

Open a position. Choose Buy to open a long position, and Sell to open a short:

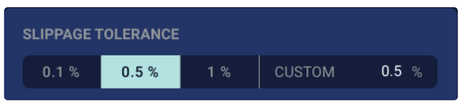
Choose BUY for longs and SELL for shorts

Enter the size of the position and choose the amount of leverage you want to use. You can also enter the amount of collateral you'd like to use. Collateral and position size (aka 'amount') will update when the other value is edited.

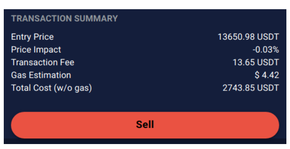


Choose position size and leverage multiplier

[Optional] Set the slippage tolerance. If trading activity is high, slippage may increase. Allowing greater slippage gives your transaction a greater chance of going through, however the final price will differ from the estimate shown in the transaction summary below.



Review the transaction and click Buy or Sell.



> Congrats! You've opened your first position on the Perpetual Protocol!

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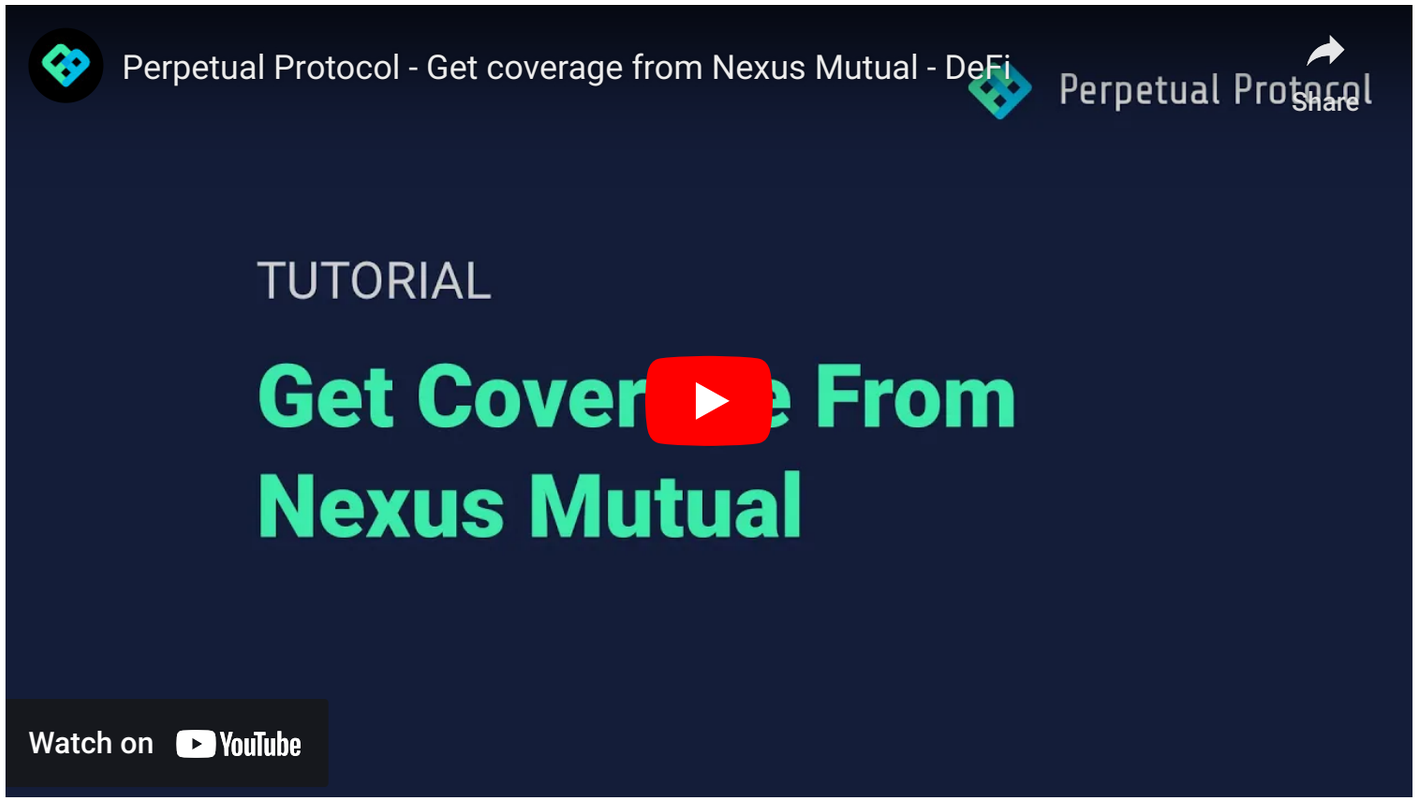
🎥 Video Tutorials

This section is not updated and the videos are out of date. Proceed with caution.

Quick start guide (2:59)

How to trade (4:20)

Buy insurance on Nexus Mutual (1:49)



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Transfer Funds to / from xDai

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Overview

The perp.exchange trading platform operates on the xDai layer 2 network to save you fees and increase the speed of trading. This requires moving funds to xDai (layer 2).

> Your funds remain in the control of your own wallet at every point of your interaction with Perpetual Protocol.

Bridges

There are many bridge options available and new bridges are launching all the time. Before using any bridge, be sure to **research the safety of the bridge** and do a search on Twitter or other places to ensure the bridge is safe and working well at the time you are about to use it.

OmniBridge

Hop Exchange
HopProtocol

xPollinate | Cross-Chain Transfer
xPollinate | Cross-Chain Transfer

xDAI

You will need DAI on xDai to pay for gas. On xDai, DAI is called xDAI.

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Open & Close Positions

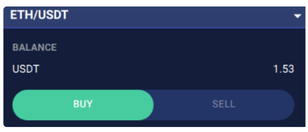
Open & Close Positions

> This document applies to the current mainnet version of Perpetual Protocol. Our current state of rapid development means details may be inaccurate or out of date.

Open a position

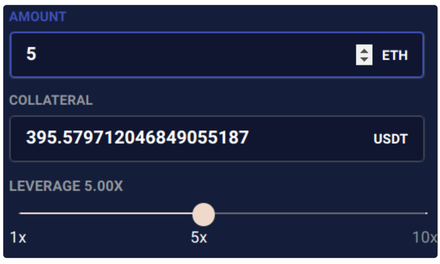
In the upper left corner of the screen, choose the trading pair.

Next, choose BUY if you want to take a **long** position, or SELL if you want to take a **short** position.



> **Perpetual contract primer**
> 1. Open a **long** (buy) position if you bet the price of the asset (ex. BTC or ETH) is going up; open a **short** (sell) position if you bet the price of the asset is going down.
> 2. If you are short, and the mark price is > the index price, you will receive a funding fee every hour. If the mark price is < the index price, you will pay the funding fee. The opposite is true if you are long. Note that the mark and index prices are calculated as TWAP.

Enter the amount of the asset you'd like to trade and choose the leverage you'd like to use, from 1x to 10x.

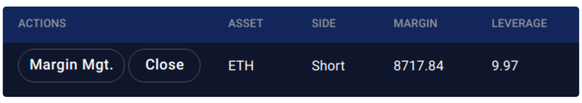


Review the transaction and click Buy or Sell.

> You can open a position with up to 10x leverage, and then **leverage up** (15x max) by removing margin from your open position using Margin Mgt.

Close a position

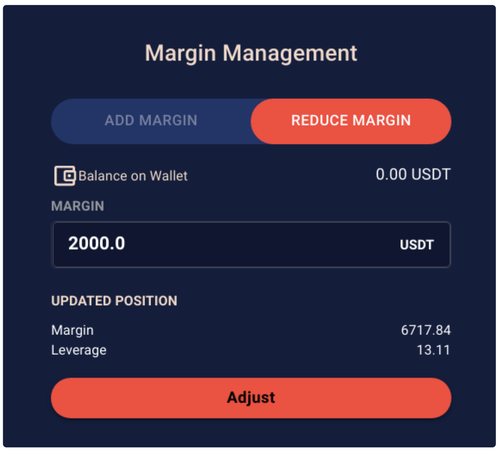
Click the Close button next to the position you'd like to exit.



Update a position

To change the size of an open position, simply create a new buy or sell order — the new order will be added to the existing one, increasing/decreasing it by the amount of the new order.

> If you do not have sufficient balance to make the desired change, first **remove margin** from your open position using Margin Mgt. to free up funds, and then proceed as above.



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🚨 Emergency Close

How to close your position in an emergency

> ⓘ If the UI at **perp.exchange is not responsive**, please note the following are more likely to be the cause of the issue:
>
> - xDai gas fees may have spiked
> - If you are trading via Ethereum, switch to xDai

If you are unable to close your position for any reason, you can close it via contract interaction. It is highly recommended to practice this method before trading in size, in order to have it as a backup trading method.

Note: You will need xDAI to pay for the transaction.

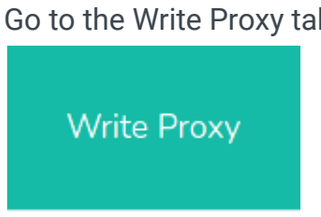
1. Get the AMM address for the relevant market at https://metadata.perp.exchange/production.json https://metadata.perp.exchange/production.json
   Example (ETH):

```
ETHUSDC:
    name:                    "Amm"
    address:                 "0x8d22F1a9dCe724D8c1B4c688D75f17A2fE2D32df"
```

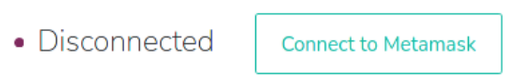
2. Go to the Perpetual Protocol clearinghouse contract on Blockscout (verify the address in the metadata json linked in step 1)

```
ClearingHouse:
    name:                    "ClearingHouse"
    address:                 "0x5d9593586b4B5edBd23E7Eba8d88FD8F09D83EBd"
```

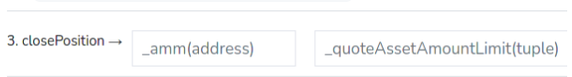
3. Go to the Write Proxy tab



4. Connect Metamask



5. In `3. closePosition` enter the AMM address from step 1



6. Calculate `_quoteAssetAmountLimit` - this limits the amount of slippage you will accept. In a severe emergency, **consider entering 0** (allow 100% slippage).
   1. Take the USDC value of your margin and multiply by `1 - %` of slippage. E.g. to allow up to 0.5% slippage with $1000 worth of margin, `1000 * (1-0.5) = 995`.
   2. Multiply the result by 10^18. E.g. `995 * 10^18 = 995000000000000000000`
   3. Enter this amount for `_quoteAssetAmountLimit`
7. Write to the contract to close the position.

Optional steps

8. Choose an 'emergency' level gas price - you can see gas prices for recent successful transactions by clicking transaction times shown in the history on perp.exchange. Alternatively, enter a very high number keeping in mind that on xDai, 1000 gwei is $1.00, 2500 gwei is $2.50, etc.
9. Set a leaner gas limit - the default is 3.8m which is very conservative (ie. very high). Nodes may process this later, favoring smaller transactions. Try lower gas limits, e.g. 2m, 1.5m, etc.
10. Also practice with `addMargin`, `openPosition` etc.
    Note that `_side` refers to short (0) and long (1), and `_baseAssetAmountLimit` is the minimum position size (to control slippage - value must be multiplied by 10^18).

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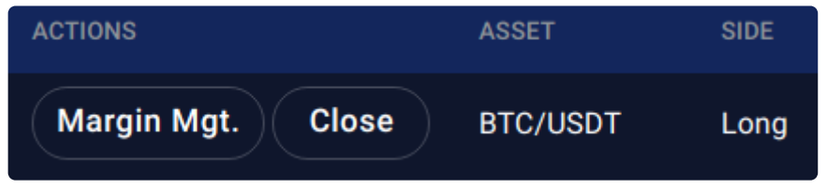
🧮 Add & Reduce Margin

> This document applies to the current mainnet version of Perpetual Protocol. Our current state of rapid development means details may be inaccurate or out of date.

If you'd like to update your open positions, click the Margin Mgt. button.



You can then add or reduce the margin in your position. The final margin and leverage after the update will be shown at the bottom.

> By reducing the margin on your open position, you can attain leverage up to the **maximum 15x** allowed by the system.

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🧑‍🎨 Trade on our testnet →

🧑‍🔬 Trade on our testnet

Want to try Perpetual Protocol without risking your funds? Here's how!

Already know what you're doing? Go straight to the exchange: rinkeby.perp.exchange

> ℹ Better than testnet: come to our Discord and look for the #🙋‍♀️**help** channel. Click the icon for starting trading 100% free and we'll get you started!

> ⚠ Our testnet is actively used for **testing** – expect to see bugs, errors and/or catastrophic loss of monopoly money.

Install Metamask

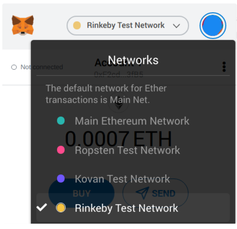
We currently support using the desktop Firefox or Chrome version of the Metamask wallet for interaction with the Perpetual Protocol perp.exchange interface.

Install Metamask here:

- https://metamask.io/download.html

Receive testnet funds

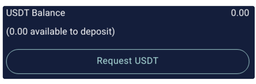
Switch Metamask to the Rinkeby testnet.



Switch MetaMask to the Rinkeby testnet

Go to rinkeby.perp.exchange and connect your wallet in the upper right corner of the screen. **Note** only Metamask is supported at this time. Hardware wallets are currently **not supported** due to lack of support for the metatransactions.

Request USDT using the built in faucet on the left side of the screen.



Transfer funds to Layer 2

> ℹ Funds must be transferred to the **xDai** layer 2 network to take advantage of our scaling features — funds remain 100% controlled by your private keys at all times.

Transferring funds via the following steps.

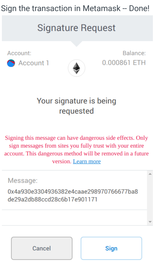
1. Click Deposit

2. Enter the amount you want to transfer
   ⚠️ **You must deposit <500 USDT each time** otherwise the transaction will fail due to the gas-free deposit feature not being active in testnet

3. Approve the deposit of funds from Ethereum to xDai

4. Approve the use of funds for trading on xDai

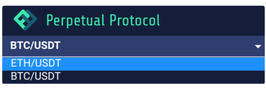
5. Sign the transaction in Metamask – Done!



> ℹ Metamask will show a warning that you are signing a message that is not 'human readable'. This is necessary to move funds to the xDai network. Perpetual Protocol has been audited by independent audit firms Consensys and PeckShield (incremental audits) and is secure.

Start trading!

Choose the trading pair you'd like to trade.



Testnet supports ETH <> USDT and BTC <> USDT

Open a position. Choose Buy to open a long position, and Sell to open a short:

Choose BUY for longs and SELL for shorts

Enter the size of the position and choose the amount of leverage you want to use. The collateral needed will be calculated for you:

Choose position size and leverage multiplier

[Optional] Set the slippage tolerance. On testnet this is very unlikely to affect anything, but on mainnet if trading activity is high, slippage may be a factor you wish to consider.

Review the transaction and click Buy or Sell.

> ✅ Congrats! You've opened your first position on the Perpetual Protocol xDAI testnet!

← Tutorials - Previous
Add & Reduce Margin

Next - Tutorials
☎️ Get a Margin Call →

☎️ Get a Margin Call

Receive a warning via HAL before your position gets liquidated!

🤖 Use HAL to Avoid Liquidation

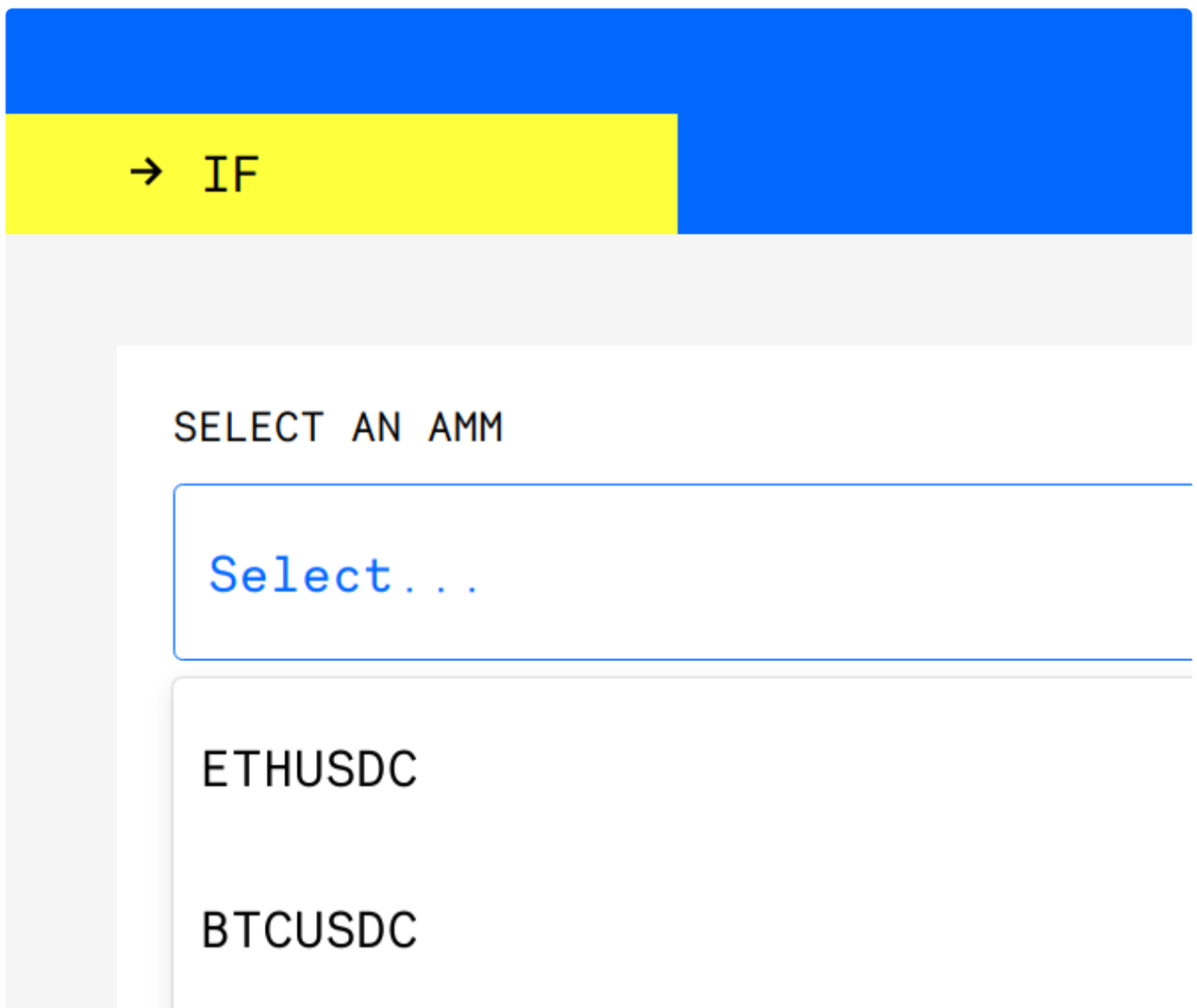
> ⓘ HAL can also send you a price alert for any asset on perp.exchange!

1. Go to the HAL website and sign in (you can do so using Metamask)

HAL.xyz

2. Under `Liquidation Warning` click `Use recipe`

3. Select the trading pair you want to watch:



4. Enter the Ethereum address you are using to trade (0x...)

5. Choose how you'd like to be notified

Method	Difficulty
Email	Easy
Telegram	Easy
Twitter	Medium
Discord	Hard
Slack	Hard
Webhook	🤓

> ⓘ **Pro Tip**: Create your own server on Discord. Go to server settings > integrations > webhook > name new webhook > copy webhook link. Paste this link into HAL's alert for Discord. Now you'll get notified in Discord!

Optional: Edit the text of the message

MESSAGE

```
User $TRADER has a margin ratio of {{
formatNumber (fromWei (index
.Contract.MatchedValues 0) 16) 2 }}% on market
$AMMNAME - $AMMADDRESS
```

← Tutorials - Previous
🧑‍🔬 Trade on our testnet

Next - Development Resources
Smart Contract JavaScript Developme... →

Text selection is disabled. Click to view source code ⧉ Toggle ⊞

Smart Contract JavaScript Development Guide

A brief guide to developing with the Thesaurus Finance smart contracts.

> This is an unofficial tutorial. Use at your own risk.
>
> Thesaurus Finance is a DeFi protocol.
>
> Get source Bytecode on BSCscan: https://bscscan.com/address/0x0a0a0a0a0a0a0a0a0a0a0a0a0a0a0a0a0a0a0a#code
>
> Also check out the Developer Docs

Overview

Thesaurus Finance is a decentralized stablecoin protocol (minted stablecoins: Thesaurus). In addition to minting the Thesaurus and earning yield, users can also provide liquidity to the protocol and earn fees from the Thesaurus Exchange (Uniswap V2 fork).

Thesaurus Finance is an ETH based DeFi protocol. Ether is deposited in perfect Ethereum fashion and used as collateral to mint Thesaurus (USD pegged stablecoin) and earn yield.

The protocol has a dual token system, where the governance token, gold, earns protocol fees and gives the holder the ability to vote on protocol changes, governance.

ether.fiore - Layer 2 solution

Thesaurus Finance uses the ether.solutions scaling solution, ether.solutions is using Ethereum to Ethereum, Layer 2 solution, called ether.fiore. Ether.fiore is a fork of Ethereum, with the same functionality, but with a much faster block time (2 seconds), no gas fees, and a 1:1 exchange rate. Ether.fiore is connected to Ethereum via a bridge, so ether can be deposited and withdrawn between the two networks.

Tutorials

Each smart contract has a tutorial and a playground, for example with the Thesaurus Finance smart contracts:

- `npm install -g truffle ganache-cli`
- Unzip "Master" to a directory of your choice
- Open a console in the directory and run `truffle compile`
- Start a ganache-cli console with the mnemonic, and the port and network id in the truffle.js file: `ganache-cli -m "candy maple cake sugar pudding cream honey rich smooth crumble sweet treat" -p 8545 -i 5777`
- Open a console in the directory and run `truffle console --network development`

Smart contract addresses

The Thesaurus Finance development tests consist of contract addresses, it is 100% the same as the official contracts.

- Ether.fiore: **0x0000000000000000000000000000000000000000**
- Gold: **0x0000000000000000000000000000000000000000**
- Thesaurus: **0x0000000000000000000000000000000000000000**

Contracts JSON

```
{
  "contracts": {
    "Address": {
      "abi": [
        {
          "constant": false,
          "inputs": [
            {
              "name": "_owner",
              "type": "address"
            }
          ],
          "name": "renounceOwnership",
          "outputs": [],
          "payable": false,
          "stateMutability": "nonpayable",
          "type": "function"
        },
        {
          "constant": true,
          "inputs": [],
          "name": "owner",
          "outputs": [
            {
              "name": "",
              "type": "address"
            }
          ],
          "payable": false,
          "stateMutability": "view",
          "type": "function"
        },
        {
          "constant": true,
          "inputs": [],
          "name": "isOwner",
          "outputs": [
            {
              "name": "",
              "type": "bool"
            }
          ],
          "payable": false,
          "stateMutability": "view",
          "type": "function"
        },
        {
          "constant": false,
          "inputs": [
            {
              "name": "newOwner",
              "type": "address"
            }
          ],
          "name": "transferOwnership",
          "outputs": [],
          "payable": false,
          "stateMutability": "nonpayable",
          "type": "function"
        }
      ],
      "evm": {
        "bytecode": {
          "object": "",
          "opcodes": "",
          "sourceMap": "",
          "linkReferences": {}
        }
        "deployedBytecode": {
          "object": "",
          "opcodes": "",
          "sourceMap": "",
          "linkReferences": {}
        }
      }
    }
  }
}
```

The file can be retrieved via `cross-fetch` in JavaScript:

```
import cf from"cross-fetch";var c=c.fetchJson||cf.fetch;c.fetch=
cf.fetch;module.exports=c;
```

Account setup

Ether.fiore is an EVM compatible blockchain, so wallets. There are many ways to set up an account, for example with Metamask.

Deposits do need to access Thesaurus Finance's longer-term protocol. Access to this is not the standard Ethereum address, but a longer address, which is a hash of the address and a nonce. The longer address is called the longer address, and can be retrieved from the contract:

```
contract longerAddress(address _addr) public view returns(bytes32);
contract longerNonce(address _addr) public view returns(uint256);
contract hasLongerAddress(address _addr) public view returns(bool);
contract setLongerAddress(bytes32 _longer, bytes32[3] _proof) public;
contract clearLongerAddress(bytes32[3] _proof) public;
contract getAddressFromLonger(bytes32 _longer) public view returns(address);
```

If a longer address is set, it can be used in place of the standard address, for example:

```
// Transfer 1 Thesaurus to the longer address of the sender
contract.transfer(longerAddress(msg.sender), 1e18);
```

Set up near USDC

In order to bridge Tether(USDT) and Tether Gold (XAUT) into the contracts, deploy the Thesaurus Finance on the Near network, and use the Near bridge to bridge USDT and XAUT to Near. Then bridge the USDC from Near to ether.fiore. Bridge USDC and XAUT to ether.fiore, and use the contract address for ether.fiore:

```
contract function fiorexchangeAddress() public
contract function setFiorexchangeAddress(address _addr) public
contract function fiorexchangeAmount(address _addr, uint256 _amount) public view returns(uint256)
contract function fiorexchange(address _addr, uint256 _amount) public
```

All values are in Tether(USDT) precision, 6 decimals.

`fiorexchangeAmount` returns the amount of Thesaurus that will be minted for the input amount of USDT.

`fiorexchange` mints the Thesaurus, and sends it to the address specified in `fiorexchangeAddress()`.

Deposit & withdraw between Ethereum and ether

Before transferring any ether, USDC and Gold/Gold Tether (XAUT) from Ethereum to ether.fiore, it is important to set up the longer address, and set the longer address on ether.fiore.

Layer 1 and Layer 2 are fully compatible. Transferring Ethereum ether to ether.fiore is simply sending ether to the Thesaurus address, and ether.fiore will automatically credit the longer address of the sender.

Withdrawing ether.fiore ether to Ethereum is also simply sending ether to the Thesaurus address, but the longer address must be used instead of the standard address, and a proof must be provided. The proof is a bytes32 array of length 3, and can be retrieved using the longer address:

```
contract getProof(address _addr) public view returns(bytes32[3]);
```

Minting

Ether.fiore is using Thesaurus Finance as its stablecoin protocol, so ether.fiore can be connected to the contract interface of Thesaurus, and use the Thesaurus functions.

Query account information

Ether.fiore is using Thesaurus Finance as its current native coin, so the functions `balanceOf()` and `transfer()` are used to query and send ether.

```
contract balanceOf(address _addr) public view returns(uint256);
contract transfer(address _to, uint256 _amount) public returns(bool);
```

Query account information

Ether.fiore is using Thesaurus Finance as its current native coin, so the functions `balanceOf()` and `transfer()` are used to query and send ether.

```
contract balanceOf(address _addr) public view returns(uint256);
contract transfer(address _to, uint256 _amount) public returns(bool);
```

Approve Clearing House

Thesaurus Exchange (Uniswap V2 fork) uses an ether wrapper contract, Wrapped ether (WETH). Ether.fiore's Clearing House contract is using the same ABI.

```
contract deposit() public payable
contract withdraw(uint256 wad) public
```

Open position

`clearinghouse.openPosition(_marketIndex, _quantityCollateral)`, which takes a number of parameters:

1. `_marketIndex`: The market index of the market you are opening a position in.
2. `_quantityCollateral`: The amount of collateral.
3. `_slippageFrac`: The amount of slippage.
4. `_numberOfMinutes`: The number of minutes.

`_slippageFrac` is a fixed point number with 18 decimals (Wei equivalent). Transactions will fail if the transaction will result in a worse execution price than the value. So if it is set to zero, transactions will only be successful if the price is the same as the oracle price, and if it is set to 1 ether, any slippage is allowed.

`_numberOfMinutes` is the number of minutes the position will be open for, after which it can be closed.

In order to open a long or short position with a margin of 100 and 10 leverage, it can be combined with the following code:

```
contract getLongPrice() public view returns(uint256);
contract getShortPrice() public view returns(uint256);
contract getMarketIndexes(bytes32 _market) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _timeAgo) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge, uint256 _maxDeviation) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge, uint256 _maxDeviation, uint256 _priceBase) public view returns(uint256,uint256);
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge, uint256 _maxDeviation, uint256 _priceBase, uint256 _twapBase) public view returns(uint256,uint256);
contract approve(address _spender, uint256 _value) public returns(bool);
contract allowance(address _owner, address _spender) public view returns(uint256);
contract clearinghouse.openPosition(bytes32 _marketIndex, uint256 _quantityCollateral, uint256 _slippageFrac, uint256 _numberOfMinutes) public;
```

Close Position

`clearinghouse.closePosition()` is relatively simple. It only requires the NFT position address.

The call `closePosition()` can be combined with `getLongPrice()`/`getShortPrice()`, `getMarketIndexes()` and `approve()` to create a full close position (cooperative unwinding): `closePosition()`.

```
contract closePosition(address _addr) public;
```

Full code demo

Full code implementation in complete, production ready functions that combines all the functions mentioned above:

```
const fetch = require("cross-fetch");
const abi = [{"constant":false,"inputs":[{"name":"_owner","type":"address"}],"name":"renounceOwnership","outputs":[],"payable":false,"stateMutability":"nonpayable","type":"function"},{"constant":true,"inputs":[],"name":"owner","outputs":[{"name":"","type":"address"}],"payable":false,"stateMutability":"view","type":"function"},{"constant":true,"inputs":[],"name":"isOwner","outputs":[{"name":"","type":"bool"}],"payable":false,"stateMutability":"view","type":"function"},{"constant":false,"inputs":[{"name":"newOwner","type":"address"}],"name":"transferOwnership","outputs":[],"payable":false,"stateMutability":"nonpayable","type":"function"}]
const bytecode = "0x0000000000000000000000000000000000000000000000000000000000000000"
const address = "0x0000000000000000000000000000000000000000"
const ethers = require("ethers");
const fs = require("fs");
const path = require("path");
const ganache = require("ganache");
const { Web3 } = require("web3");
const web3 = new Web3(ganache.provider());
const { abi, bytecode, interfaces } = require("./compile");
const MyContract = new web3.eth.Contract(abi);
const [deployerAccount] = (
  ganache.provider({ logging: { quiet: true } }).request({ method: "eth_accounts", params: [] }) ||
  []
);
(
  MyContract.deploy({ data: bytecode, arguments: [deployerAccount] })
  .send({ from: deployerAccount, gas: "6000000" })
  .then(function(instance) {
    console.log("Address:", instance.options.address);
    console.log("Interfaces:", interfaces);
    fs.writeFileSync(path.join(__dirname, "./contract.address"), instance.options.address);
    fs.writeFileSync(path.join(__dirname, "./contract.interfaces"), JSON.stringify(interfaces));
    process.exit(0);
  })
)
const fs = require("fs");
const path = require("path");
const ganache = require("ganache");
const { Web3 } = require("web3");
const web3 = new Web3(ganache.provider());
const { abi, bytecode, interfaces } = require("./compile");
const MyContract = new web3.eth.Contract(abi);
const [deployerAccount] = (
  ganache.provider({ logging: { quiet: true } }).request({ method: "eth_accounts", params: [] }) ||
  []
);
const address = fs.readFileSync(path.join(__dirname, "./contract.address"));
const interfaces = JSON.parse(fs.readFileSync(path.join(__dirname, "./contract.interfaces")));
const contract = new web3.eth.Contract(interfaces, address);
contract.methods.renounceOwnership(deployerAccount).send({ from: deployerAccount, gas: "6000000" }).then(console.log);
contract.methods.owner().call().then(console.log);
contract.methods.isOwner().call().then(console.log);
contract.methods.transferOwnership(deployerAccount).send({ from: deployerAccount, gas: "6000000" }).then(console.log);
const fetch = require("cross-fetch");
const abi = [{"constant":false,"inputs":[{"name":"_owner","type":"address"}],"name":"renounceOwnership","outputs":[],"payable":false,"stateMutability":"nonpayable","type":"function"},{"constant":true,"inputs":[],"name":"owner","outputs":[{"name":"","type":"address"}],"payable":false,"stateMutability":"view","type":"function"},{"constant":true,"inputs":[],"name":"isOwner","outputs":[{"name":"","type":"bool"}],"payable":false,"stateMutability":"view","type":"function"},{"constant":false,"inputs":[{"name":"newOwner","type":"address"}],"name":"transferOwnership","outputs":[],"payable":false,"stateMutability":"nonpayable","type":"function"}]
const address = "0x0000000000000000000000000000000000000000"
const ethers = require("ethers");
const fs = require("fs");
const path = require("path");
const ganache = require("ganache");
const { Web3 } = require("web3");
const web3 = new Web3(ganache.provider());
const { abi, bytecode, interfaces } = require("./compile");
const MyContract = new web3.eth.Contract(abi);
const [deployerAccount] = (
  ganache.provider({ logging: { quiet: true } }).request({ method: "eth_accounts", params: [] }) ||
  []
);
const address = fs.readFileSync(path.join(__dirname, "./contract.address"));
const interfaces = JSON.parse(fs.readFileSync(path.join(__dirname, "./contract.interfaces")));
const contract = new web3.eth.Contract(interfaces, address);
contract.methods.renounceOwnership(deployerAccount).send({ from: deployerAccount, gas: "6000000" }).then(console.log);
contract.methods.owner().call().then(console.log);
contract.methods.isOwner().call().then(console.log);
contract.methods.transferOwnership(deployerAccount).send({ from: deployerAccount, gas: "6000000" }).then(console.log);
const fetch = require("cross-fetch");
const abi = [{"constant":false,"inputs":[{"name":"_owner","type":"address"}],"name":"renounceOwnership","outputs":[],"payable":false,"stateMutability":"nonpayable","type":"function"},{"constant":true,"inputs":[],"name":"owner","outputs":[{"name":"","type":"address"}],"payable":false,"stateMutability":"view","type":"function"},{"constant":true,"inputs":[],"name":"isOwner","outputs":[{"name":"","type":"bool"}],"payable":false,"stateMutability":"view","type":"function"},{"constant":false,"inputs":[{"name":"newOwner","type":"address"}],"name":"transferOwnership","outputs":[],"payable":false,"stateMutability":"nonpayable","type":"function"}]
const address = "0x0000000000000000000000000000000000000000"
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const path = require("path");
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const { Web3 } = require("web3");
const web3 = new Web3(ganache.provider());
const { abi, bytecode, interfaces } = require("./compile");
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  ganache.provider({ logging: { quiet: true } }).request({ method: "eth_accounts", params: [] }) ||
  []
);
const address = fs.readFileSync(path.join(__dirname, "./contract.address"));
const interfaces = JSON.parse(fs.readFileSync(path.join(__dirname, "./contract.interfaces")));
const contract = new web3.eth.Contract(interfaces, address);
contract.methods.renounceOwnership(deployerAccount).send({ from: deployerAccount, gas: "6000000" }).then(console.log);
contract.methods.owner().call().then(console.log);
contract.methods.isOwner().call().then(console.log);
contract.methods.transferOwnership(deployerAccount).send({ from: deployerAccount, gas: "6000000" }).then(console.log);
```

Appendix

Find source code and contract bytecode on the contract page of the blockchain explorer.

Extra Price

Extra price can be calculated using the contract function `getMarketIndexes()`:

```
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge, uint256 _maxDeviation, uint256 _priceBase, uint256 _twapBase) public view returns(uint256,uint256);
```

`_market`: `keccak256("EXTRA")`

```
contract getMarketIndexes(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge, uint256 _maxDeviation, uint256 _priceBase, uint256 _twapBase) public view returns(uint256,uint256);
```

Automated Liquidation Price

Automated liquidation price and interest indicator is calculated. You can use the contract to get it:

```
contract getLiquidPrice(bytes32 _market, uint256 _startTime, uint256 _endTime, uint256 _maxSamples, uint256 _minSamples, uint256 _maxAge, uint256 _maxDeviation, uint256 _priceBase, uint256 _twapBase) public view returns(uint256,uint256);
```

Automatic Price Feed
Price Feed Contract Address
Price Feed Contract Address
Price Feed Contract Address

Smart Contract and Wallet Addresses

Perpetual Protocol Mainnet Smart Contracts

https://metadata.perp.exchange/production.json
metadata.perp.exchange

Contracts on layer 2 can be explored via https://blockscout.com/poa/xdai

Perpetual Protocol Rinkeby Testnet Smart Contracts

https://metadata.perp.exchange/staging.json
metadata.perp.exchange

Perpetual Protocol PERP Staking

Staking

https://etherscan.io/address/0x0f346e19f01471c02485df1758cfd3d624e399b4
etherscan.io

Staking Rewards

https://etherscan.io/address/0x49a4B8431Fc24BE4b22Fb07D1683E2c52bC56088
etherscan.io

Perpetual Protocol Foundation Wallets

Foundation Locked Wallet

https://etherscan.io/address/0xC49F76a596D6200E4f08F8931D15B69DD1f8033E
etherscan.io

Foundation Wallet

https://etherscan.io/address/0x5E4B407eB1253527628bAb875525AaeC0099fFC5
etherscan.io

Balancer LP Rewards Smart Contract

https://etherscan.io/address/0xb9840A4A8a671f79DE3Df3b812fEEb38047CE552
etherscan.io

Developer FAQ

Where can I review the source code / smart contracts?

Please check out our Github! Feel free to open an issue or PR if you have any questions or suggestions.

GitHub - perpetual-protocol/perpetual-protocol: Perpetual Protocol Solidity smart contracts
GitHub

Is there a Python SDK?

There are two python SDKs created by community members. Note these are provided **AS-IS**. If you use these resources for trading, **you must review 100% of the code** before proceeding.

- https://github.com/DeveloperInProgress/PyPerp
- https://github.com/arufa-research/perp-py/

How to contribute? Are there bounties?

We welcome contributions via our Github. You can also check out our open bounties here: https://bounties.perp.fi/

We also have a **#coding-chat** channel in our Discord if you want to learn more about contributing!

What are the smart contracts addresses?

Get the current addresses here:

- production (**Homestead**/**xDai**): https://metadata.perp.exchange/production.json
- staging (**Rinkeby**/**xDai**): https://metadata.perp.exchange/staging.json

Where can I view the contract ABIs?

First get the smart contract addresses from the link above.

For Ethereum (layer1), get the ABIs on Etherscan.

For xDai (layer2), get the ABIs on Blockscout.

Example:
(ClearingHouse on layer2)
https://blockscout.com/poa/xdai/address/0x5d9593586b4B5edBd23E7Eba8d88FD8F09D83EBd/contracts

Is there a subgraph for Perpetual Protocol?

A subgraph has been created on The Graph by our team and we expect more will be created with further data soon.

https://thegraph.com/explorer/subgraph/perpetual-protocol/perp-position-subgraph?query...
Hosted Service

Is there an xDAI faucet?

There are three working faucets - - xDai faucet, Blockscount's faucet, and Bao Finance's xDai faucet.

Welcome to ask us for some xDAI in Discord **#coding-chat**

You can also convert DAI to xDAI at https://bridge.xdaichain.com/.

What is the *k* for each AMM?

K values are set for each AMM (ie. each perpetual market) at launch. These values can be obtained using the perp-cli tool. Note that the values returned may be subject to or lead to rounding errors.

For example, call `perp amm ETH` to get the `QuoteAssetReserve` and `BaseAssetReserve` (x and y values) for this AMM.

```
ubuntu@staging:~$ perp amm ETH
ETH/USDC
- Proxy Address: 0x8d22F1a9dCe724D8c1B4c688D75f17A2fE2D32df
- Index Price: 1,945.218 USDC
- Market Price: 1,940.878 USDC
- OpenInterestNotionalCap: 45,000,000 USDC
- OpenInterestNotional: 10,581,372.071 USDC
- MaxHoldingBaseAsset: 1,200 ETH
- QuoteAssetReserve: 21,306,421.405 USDC
- BaseAssetReserve: 10,977.723 ETHUSDC
- PriceFeed: ChainlinkPriceFeed
- est.funding rate: -0.0035617177595329 %
```

What does "price is over fluctuation limit" mean?

We have a per-block price fluctuation limit of ±1.2%. If you are outside this range, a `"price is over fluctuation limit"` error is thrown.

For example, if the price in the last block is 1,000, then the price range in the next block will be 988 ~ 1012.

How is the slippage tolerance applied when closing a position?

The value of the slippage tolerance is `position notional x (1 ± 0.5%)` (+/- depends on long or short)

How is the funding rate obtained?

`ClearingHouse.getLatestCumulativePremiumFraction()` returns `premiumFraction`

- `fundingRate = premiumFraction / twapIndexPrice`
- `fundingPayment = premiumFraction * positionSize`

Development Resources - Previous
Smart Contract and Wallet Addresses

Next - Library
Litepaper

Litepaper

Overview

Perpetual Protocol is a decentralized perpetual contract protocol for every asset, made possible by a Virtual Automated Market Maker (henceforth referred to as a "vAMM" or "vAMMs").

For those who aren't familiar with perpetual contracts: A perpetual contract is a derivative similar to a futures contract but without an expiry date. For conventional futures contracts such as WTI, the contract's price will gradually converge with the underlying asset's spot market price as the expiry date approaches. Perpetual contracts are futures contracts that automatically roll every few hours. In order to keep the perpetual contract in line with the underlying index, one side pays the other the funding rate. The funding rate effectively implies a cost of capital and the steepness of the futures curve. You can learn more about how funding works by reading our documentation or this piece from FTX's help center.

Key features of the Perpetual Protocol include:

- 10x Leverage On-Chain Perpetual Contact
  Traders can trade with up to 10x leverage long or short, have transparent fees, and 24/7 guaranteed liquidity.
- Go Long or Short on Any Asset
  Every asset can be supported via a perpetual contract on Perpetual Protocol. Whether it's gold, fiat, BTC, BCH, ETH, ERC-20s, XRP, EOS, LTC, ZEC, XMR, and more - Perpetual Protocol can support it all. All that Perpetual Protocol requires is a price feed for the underlying asset from an oracle.
- Lower Slippage than Other AMMs
  Traders on constant product (x*y=k) market makers like Uniswap suffer higher slippage than traders on centralized exchanges (CEXs) because k is capped by the liquidity provided. Perpetual Protocol's vAMM can set K algorithmically to provide lower slippage to traders.

In the following sections, we'll dive into each component of the Perpetual Protocol that makes these features possible, starting with our vAMM. Before we start, it's recommended to understand the concept of an automated market maker (AMM). If you're not familiar with it, you can familiarize yourself with this subject by reading this piece.

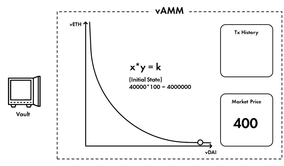
Virtual Automated Market Maker (vAMM)

Before Perpetual Protocol, most AMMs focused on token swaps, rather than derivatives trading, such as perpetual contracts.

To enable on-chain perpetual contract trading, Perpetual Protocol introduces a novel approach called a Virtual Automated Market Maker(vAMM). Perpetual Protocol's vAMM uses the same x*y=k constant product formula as Uniswap. As the "virtual" part of vAMM implies, there is no real asset pool (k) stored inside the vAMM itself. Instead, the real assets are stored in a smart contract vault that manages all of the collateral backing the vAMM. Perpetual Protocol uses a vAMM as a price discovery mechanism instead of a direct liquidity pool for spot trading like Uniswap, Balancer, or Curve.

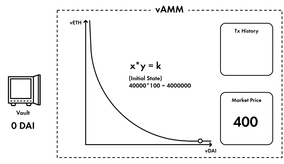
Here is an example showing how a vAMM works under the hood:

1. Before a vAMM is created on the blockchain, the creator of a vAMM sets the number of virtual assets stored inside the vAMM. Suppose the price of ETH is trading at 400 DAI. The creator can set an initial amount of vETH and vDAI on vAMM with a ratio of 1-to-400. For simplicity, imagine the creator sets the initial state on that vAMM as 100 vETH and 40,000 vDAI.

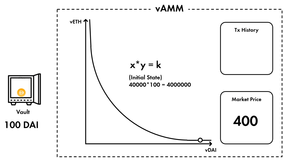


2. Trader Alice wants to go 10x long ETH with 100 DAI as collateral:

- Alice deposits 100 DAI into Perpetual Protocol's vault, which, as mentioned above, is a smart contract on Perpetual Protocol.

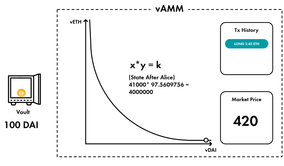


- Perpetual Protocol credits 1,000 vDAI (10x leverage on 100 DAI) from Alice to the vAMM, which, in return, calculates the amount of the vETH that Alice receives according to a constant function (x*y = k).
- Perpetual Protocol records that Alice now has 2.4390244 vETH and the state inside this vAMM becomes 97.5609756 vETH and 41,000 vDAI.

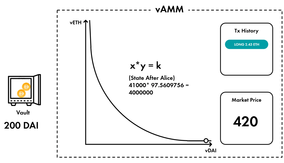


3. Trader Bob then goes 10x short ETH with 100 DAI as collateral, meaning that:

- Bob deposits 100 DAI into the same vault in which Alice deposited.



- Perpetual Protocol credits -1,000 vDAI from Bob to the vAMM, which, in return, calculates the amount of the negative vETH that Bob receives according to a constant function (x*y = k).
- Perpetual Protocol records that Bob has now shorted 2.4390244 vETH, and the state inside this vAMM now becomes 100 vETH and 40,000 vDAI.



> You can know more about the unique properties of our vAMMs here.

PERP Token

The PERP token is Perpetual Protocol's ERC-20 native token. It has two main functions:

Staking

PERP holders can lock-up, or "stake," the PERP in their possession in the Staking Pool. In return, stakers are rewarded with staking incentives, which includes (1) PERP-denominated staking rewards, and (2) a portion of the network trading fees in quote assets (the remaining trading fee goes to the Insurance Fund, more on this in the next section).

> You can learn more about how staking works here.

Governance

Once PERP holders have staked their tokens, they can then use their staked PERP to vote on or propose new ideas that can be used to improve the protocol.

Note is that before the on-chain governance voting platform is ready for PERP token holders, core protocol contributors will make critical decisions based on the project vision and informal input from the community. This is intentional, as we think it's important to keep governance nimble in the early days of the protocol.

> You can learn more about our governance plan here.

Insurance Fund

There are two distinct situations that can result in losses for the Insurance Fund:

1. Losses in the Liquidation Process
   When market prices are volatile and the Ethereum network is congested, Keepers on Perpetual Protocol, whose responsibility is to liquidate under-collateralized positions, can fail to liquidate positions in time, creating insolvency risk.

2. Funding Payments
   Since vAMMs always act as the counterparty for each trade, they're obligated to pay or receive the funding payments on every position they hold (as every trader does on the platform). Even though the funding payments paid and received by the vAMM should balance out in the long run, the system may temporarily have a negative equity balance on shorter time horizons.

When either one of the aforementioned situations happens, Perpetual Protocol will first use the capital from the Insurance Fund, which receives 50% of the trading fees from the system, to backstop losses. Should the Insurance Fund be depleted, the Insurance Fund will trigger the Perpetual Protocol smart contract to mint new PERP and subsequently sell them at market to ensure the system's solvency.

Transaction Mining

> This section is out of date. Please see Transaction Mining for up to date information

We have designed a transaction mining program to attract more traders to the system and kickstart a positive feedback loop for traders and stakers. It works like this:

1. Once per week, core protocol contributors will (1) aggregate all the trading fees and funding payment paid by each network participants of the given week into a spreadsheet, and (2) calculate the TWAP of the PERP in USD for that week.
2. Core protocol contributors will then calculate the number of PERP each participant should get based on (1) 100% of their aggregated trading fees plus 50% of their aggregated funding payment of that week in USD, and (2) the TWAP of the PERP in USD.
   However, if the combined amount of the PERP from all of the participants exceeds the amount of PERP reward for transaction mining in that week, participants will instead share the reward proportionally.
3. The spreadsheet will be released to the public for everyone to verify.
4. Perpetual Protocol pays each network participant by submitting an on-chain (or several) transactions.

The $PERP tokens for transaction mining for each week will come from 50% of the inflation and the remaining 50% will be used as staking rewards.

One thing to point out is that 60% of the paid $PERPs are locked on-chain for one year, and the remaining 40% is transferable right away. The locked rewards cannot be staked in the Staking Pool. Let's say Alice pays $50 of trading fees to open a long position on Monday and pays $20 of funding to shorts on the same day. At the end of the week, she will receive $60 of $PERP to compensate her fees. Although she can only claim $24 of $PERP right away, and the other $36 of $PERP will not be claimable until one year after.

To discourage wash trading, 50% of the funding payment in USDC will be sent to the Insurance Fund. As an example: if Alice in the example above tried to go long and short at the same time, and thus paid $20 of funding to herself, she would only receive $10 of PERP (and hence would lose $10).

Whitepaper

Perpetual Protocol Whitepaper

> Because of the rapid development and learning from user suggestions, some sections in the whitepaper are outdated.

Above is the beta version of Perpetual's whitepaper (known as **Strike Protocol** at the time of writing). The whitepaper will be updated once we have a stable version of Perpetual Protocol ready in the future.

In the meantime, please also check out other sections of our documentation for updated information, in particular our Litepaper, and let us know if you have any questions on our Discord or other social channels.

- Discord - English Channel
- Discord - 中文頻道
- Medium
- Twitter
- Telegram

Roadmap

> Want the latest updates about project development and news? Sign up for our newsletter! 📰 perpetualprotocol.substack.com
>
> Have ideas or want to get involved? Head to gov.perp.fi or our Discord now! We'd love to hear from you.

Mainnet V1	Status
Testnet V4 (with xDai Layer 2 Solution)	Completed
PERP Balancer Launch	Completed
Balancer LP Staking Rewards	Completed
Mainnet V1.0 (with xDai Layer 2 Scaling)	Launched
Bug Bounty Program	Launched
Developer Bounty Program	Launched
Alerts service (ecosystem - HAL)	Launched
Transaction Mining	Completed
Stats dashboard (Redash + Dune Analytics)	Launched
Staking Pool	Launched
Partial liquidation mechanism	Q2 2021
xDai Native UI for hardware wallet support	Completed
Limit, Stop Orders	Q2 2021
Mobile UI (e.g. for use with Metamask Mobile)	Q2 2021
Keeper Bots (open source)	Planning
Trading interface redesign	Q2 2021
Open Source Front-End	Q2 2021

> **Perpetual Protocol V2** has entered the active research stage. We will share more information about our plans soon!

Mainnet V2	Status
Dynamic liquidity (dynamic k)	In R&D
Leveraged Token	In R&D
Private Market Creation Mechanism	In R&D
Perpetual Protocol Governance	In progress
Further scaling (L2, multichain, etc.)	Planning

Future vision	Status
Decentralized hedge fund	
Instruments for hedging Impermanent Loss	
Liquidation markets	
Migration to future scaling solutions	

Previous Roadmap (Completed or Skipped)

- **Nov 2020**
  - Developer grant program Phase 1
- **Oct 2020**
  - Testnet Trading Competition
- **Sept 2020**
  - Balancer Liquidity Bootstrapping Pool
  - Testnet launch on xDai network
  - Balancer LP Staking Rewards
- **Aug 2020**
  - Bounty program
  - Smart contract audit
- **Jul 2020** - ETH Testnet V3
  - Profiling and optimization
  - Funding rate bot
  - Internal smart contract audit
  - Smart contract audit
  - Pro exchange UI
  - Emergency shutdown
- **Jun 2020** - ETH Testnet V2
  - Staking PERP in Staking Pool
  - Staking rewards distribution
  - Transaction fees distribution
  - Insurance Fund
- **May 2020** - ETH Testnet V1
  - Trading with Virtual AMM
  - Leverage trading
  - Hourly funding payment
  - Chainlink price feed
  - Arbitrage bot
  - Liquidator bot
  - Basic exchange UI

Glossary

Perpetual Contract
A contract to buy or sell an asset that exists perpetually and does not expire. They are a class of financial derivatives similar to futures contracts, except that because they never expire, trading mimics a margin-based spot market.

Mark Price
Price from the active Virtual **AMM.**

Index Price
Market price of underlying asset. (from Oracle)

Position
A position reflects the ownership of a quantity of contracts with either long/short exposure that are collateralized by the quote asset.

Position Notional
Position * Mark Price

Library - Previous
Roadmap

Next - Library
Audit Reports

Audit Reports

Perpetual Protocol has contracted Consensys and Peckshield to audit our smart contract code. Auditing work is ongoing, and reports will be placed here as they become available.

Peckshield

publications/perpfi_audit_report_2020_46_en_1_0.pdf at master · peckshield/publications
GitHub

peckshield-audit-report-perpetual-protocol-v1.0.pdf 440KB
PDF

xDai Integration

tpyrced_peckshield-audit-report-2021-03-perp-v1.0-rc1.pdf 255KB
PDF

Staking

peckshield-audit-report-Perp-dynamic-K-Final.pdf 339KB
PDF

Dynamic K

Consensys Diligence

Consensys first audited Perpetual Protocol smart contracts in October 2020 and auditing and bug fixes are ongoing.

Limit Orders

Perpetual Protocol supports limit, stop and trailing orders via a 3rd party interface built on top of the protocol, called APEX—Advanced Perpetual Exchange.

APEX Advanced Perpetual Exchange

Apex Win

How to use APEX

Overview
Apex Docs

Why are limit orders on a different platform?

APEX leverages DeFi's trademark composability ("money lego") of DeFi to offer an entirely new way to trade on Perpetual Protocol.

Perpetual Protocol is decentralized and permissionless thanks to open, public blockchains (Ethereum and xDai). However, the same *cannot* be said of the web, and websites like perp.exchange and any other DeFi web interface are centralized and permissioned.

Therefore, having an independent, 3rd party exchange built on top of Perpetual Protocol is a major advantage for the community and traders using the protocol.

Is APEX trustworthy?

The APEX team works very closely with the main Perpetual Protocol team, and the project was funded directly via the Perpetual DAO. The APEX exchange and smart contract wallet were audited by 3rd party auditors, and tested extensively by the team and community members.

That said, cryptocurrency and DeFi are new technologies in active development. **Never trade more than you can afford to lose.**

← Getting Started - Previous
PERP Token

Next - Getting Started
Staking →

Terms of Service

Updated: December 10, 2020

OUR SERVICES ARE NOT OFFERED TO PERSONS OR ENTITIES WHO RESIDE IN, ARE CITIZENS OF, ARE INCORPORATED IN, OR HAVE A REGISTERED OFFICE IN THE UNITED STATES OF AMERICA OR ANY RESTRICTED TERRITORY, AS DEFINED BELOW (ANY SUCH PERSON OR ENTITY FROM THE UNITED STATES OF AMERICAN OR A RESTRICTED TERRITORY, A "RESTRICTED PERSON"). WE DO NOT MAKE EXCEPTIONS. THEREFORE, IF YOU ARE A RESTRICTED PERSON, THEN DO NOT ATTEMPT TO USE OR USE THE INTERFACE. USE OF A VIRTUAL PRIVATE NETWORK (E.G., A VPN) TO USE OUR SERVICES AS A RESTRICTED PERSON OR FROM THE UNITED STATES OF AMERICA OR A RESTRICTED TERRITORY IS PROHIBITED.

Welcome to https://perp.exchange/, a website-hosted user interface (the "Interface") made available by Strike Co. Ltd. ("we", "our", or "us"). The Interface provides access to a decentralized protocol on the Ethereum blockchain that allows users to create perpetual contracts enabled by a virtual automated market maker (the "Protocol").

These Terms of Use and any terms and conditions incorporated herein by reference (collectively, the "Terms") govern your access and use of the Interface. You must read the Terms carefully. By accessing, browsing or otherwise using the Interface, or by acknowledging agreement to the Terms on the Interface, you agree that you have read, understood and accepted all of the Terms and our Privacy Policy (the "Privacy Policy"), which is incorporated by reference into the Terms. THE TERMS CONTAIN IMPORTANT INFORMATION, INCLUDING A BINDING ARBITRATION PROVISION AND A CLASS ACTION WAIVER, BOTH OF WHICH IMPACT YOUR RIGHTS AS TO HOW DISPUTES ARE RESOLVED.

We may change, amend, or revise the Terms from time to time and at any time, in our sole discretion. When we make changes, we will make the updated Terms available on the Interface and update the "Last Updated" date at the beginning of the Terms accordingly. Please check the Terms periodically for changes. Any changes to the Terms will apply on the date that they are made, and your continued access or use of the Interface after the Terms have been updated will constitute your binding acceptance of the updates. If you do not agree to the revised Terms, then you should not continue to access or use the Interface.

1) Eligibility

In order to use the Interface, you must satisfy the following eligibility requirements:

1. you are of legal age in the jurisdiction in which you reside and you have legal capacity to enter into the Terms and be bound by them;
2. if you accept the Terms on behalf of a legal entity, you must have the legal authority to accept the Terms on that entity's behalf, in which case "you" (except as used in this paragraph) will mean that entity;
3. you are not a resident, national or agent of Antigua and Barbuda, Algeria, Bangladesh, Bolivia, Belarus, Burundi, Myanmar (Burma), Cote D'Ivoire (Ivory Coast), Crimea and Sevastopol, Cuba, Democratic Republic of Congo, Ecuador, Iran, Iraq, Libya, Mali, Morocco, Magnitsky, Liberia, Nepal, North Korea, Somalia, Sudan, Syria, Venezuela, Zimbabwe or any other country to which the United States, the United Kingdom or the European Union embargoes goods or undertakes similar sanctions (collectively, "Restricted Territories"), (ii) you are a member of any sanctions list or equivalent maintained by the United States government, the United Kingdom government, by the European Union or the United Nations (collectively, "Sanctions Lists Persons"), or (iii) you intend to transact with any Restricted Territories or Sanctions List Persons;
4. you are not a Restricted Person;
5. you are not a resident of, reside in, a citizen of, incorporated in, or have a registered office in Taiwan (Republic of China), or the United States of America, or the United Kingdom; and
6. your use of the Interface is not prohibited by and does not otherwise violate, assist you in the violation of any applicable laws or regulations, or contribute to or facilitate any illegal activity.

2) Access to the Interface

We reserve the right to disable access to the Interface at any time in the event of any breach of the Terms, including without limitation, if we reasonably believe that you, at any time, fail to satisfy the eligibility requirements set forth in the Terms. Further, we reserve the right to limit or restrict access to the Interface by any person or entity, or within any geographic area or legal jurisdiction, at any time and in our sole discretion. We will not be liable to you for any losses or damages you may suffer as a result of or in connection with the Interface being inaccessible to you at any time or for any reason.

3) Proprietary Rights

1. We own all intellectual property and other rights in the Interface and its contents, including, but not limited to, software, text, images, trademarks, service marks, copyrights, patents, and designs. Unless expressly authorized by us, you may not copy, modify, adapt, rent, license, sell, publish, distribute, or otherwise permit any third party to access or use the Interface or any of its contents. Accessing or using the Interface does not constitute a grant to you of any proprietary intellectual property or other rights in the Interface or its contents.
2. You will retain ownership of all intellectual property and other rights in any information and materials you submit through the Interface. However, by uploading such information or materials, you grant us a worldwide, royalty-free, irrevocable license to use, copy, distribute, publish and send this data in any manner in accordance with applicable laws and regulations.
3. You may choose to submit comments, bug reports, ideas or other feedback about the Interface, including, without limitation, about how to improve the Interface (collectively, "Feedback"). By submitting any Feedback, you agree that we are free to use such Feedback at our discretion and without additional compensation to you, and to disclose such Feedback to third parties (whether on a non-confidential basis, or otherwise). If necessary under applicable law, then you hereby grant us a perpetual, irrevocable, non-exclusive, transferable, worldwide license under all rights necessary for us to incorporate and use your Feedback for any purpose.
4. If you satisfy all of the eligibility requirements in the Terms and that your access to and use of the Interface complies with the Terms, you hereby are granted a single, personal, limited license to access and use the Interface. This license is non-exclusive, non-transferable, and freely revocable by us at any time without notice or cause. Use of the Interface for any purpose not expressly permitted by the Terms is strictly prohibited. Unlike the Interface, the Protocol is comprised entirely of open-source software running on the public Ethereum blockchain and is not our proprietary property.

4) Prohibited Activity

You agree not to engage in, or attempt to engage in, any of the following categories of prohibited activity in relation to your access or use of the Interface:

1. Activity that breaches the Terms;
2. Activity that infringes on or violates any copyright, trademark, service mark, patent, right of publicity, right of privacy, or other proprietary or intellectual property rights under the law;
3. Activity that seeks to interfere with or compromise the integrity, security, or proper functioning of any computer, server, network, personal device, or other information technology system, including, but not limited to, the deployment of viruses and denial of service attacks;
4. Activity that seeks to defraud us or any other person or entity, including, but not limited to, providing any false, inaccurate, or misleading information in order to unlawfully obtain the property of another;
5. Activity that violates any applicable law, rule, or regulation concerning the integrity of trading markets, including, but not limited to, the manipulative tactics commonly known as spoofing and wash trading;
6. Activity that violates any applicable law, rule, or regulation of the United States or another relevant jurisdiction, including, but not limited to, the restrictions and regulatory requirements imposed by U.S. law;
7. Activity that disguises or interferes in any way with the IP address of the computer you are using to access or use the Interface or that otherwise prevents us from correctly identifying the IP address of the computer you are using to access the Interface;
8. Activity that transmits, exchanges, or is otherwise supported by the direct or indirect proceeds of criminal or fraudulent activity.

5) No Professional Advice or Fiduciary Duties

1. All information provided in connection with your access and use of the Interface is for informational purposes only and should not be construed as professional advice. You should not take, or refrain from taking, any action based on any information contained in the Interface or any other information that we make available at any time, including, without limitation, blog posts, articles, links to third party content, news feeds, tutorials, tweets and videos. Before you make any financial, legal, or other decisions involving the Interface, you should seek independent professional advice from an individual who is licensed and qualified in the area for which such advice would be appropriate.
2. The Terms are not intended to, and do not, create or impose any fiduciary duties on us. To the fullest extent permitted by law, you acknowledge and agree that we owe no fiduciary duties or liabilities to you or any other party, and that to the extent any such duties or liabilities may exist at law or in equity, those duties and liabilities are hereby irrevocably disclaimed, waived, and eliminated. You further agree that the only duties and obligations that we owe you are those set out expressly in the Terms.

6) No Warranties

The Interface is provided on an "AS IS" and "AS AVAILABLE" basis. To the fullest extent permitted by law, we disclaim any representations and warranties of any kind, whether express, implied, or statutory, including, but not limited to, the warranties of merchantability and fitness for a particular purpose. You acknowledge and agree that your access and use of the Interface is at your own risk. We do not represent or warrant that access to the Interface will be continuous, uninterrupted, timely, or secure; that the information contained in the Interface will be accurate, reliable, complete, or current; or that the Interface will be free from errors, defects, viruses, or other harmful elements. No advice, information, or statement that we make should be treated as creating any warranty concerning the Interface. We do not endorse, guarantee, or assume responsibility for any advertisements, offers, or statements made by third parties concerning the Interface.

7) Compliance Obligations

The Interface may not be available or appropriate for use in all jurisdictions. By accessing or using the Interface, you agree that you are solely and entirely responsible for compliance with all laws and regulations that may apply to you. You further agree that we have no obligation to inform you of any potential liabilities or violations of law or regulation that may arise in connection with your access and use of the Interface and that we are not liable in any respect for any failure by you to comply with any applicable laws or regulations.

8) Assumption of Risk

By accessing and using the Interface, you represent that you understand (a) the inherent risks associated with products made available through the Protocol, and (b) the inherent risks associated with using cryptographic and blockchain-based systems. You further represent that you have a working knowledge of the usage and intricacies of blockchain-based digital assets, including, without limitation, ERC-20 token standard available on the Ethereum blockchain. You further understand that the markets for these blockchain-based digital assets are highly volatile due to factors that include, but are not limited to, adoption, speculation, technology, security, and regulation. You acknowledge that the cost and speed of transacting with blockchain-based systems, such as Ethereum, are variable and may increase or decrease, respectively, drastically at any time. You hereby acknowledge and agree that we are not responsible for any of these variables or risks associated with the Protocol and cannot be held liable for any resulting losses that you experience while accessing or using the Interface. Accordingly, you understand and agree to assume full responsibility for all of the risks of accessing and using the Interface to interact with the Protocol.

9) Third-Party Resources and Promotions

The Interface may contain references or links to third-party resources, including, but not limited to, information, materials, products, or services, that we do not own or control. In addition, third parties may offer promotions related to your access and use of the Interface. We do not endorse or assume any responsibility for any such resources or promotions. If you access any such resources or participate in any such promotions, you do so at your own risk, and you understand that the Terms do not apply to your dealings or relationships with any third parties. You expressly relieve us of any and all liability arising from your use of any such resources or participation in any such promotions.

10) Release of Claims

You expressly agree that you assume all risks in connection with your access and use of the Interface. You further expressly waive and release us from any and all liability, claims, causes of action, or damages arising from or in any way relating to your access and use of the Interface.

11) Indemnity

You agree to hold harmless, release, defend, and indemnify us and our officers, directors, employees, contractors, agents, affiliates, and subsidiaries from and against all claims, damages, obligations, losses, liabilities, costs, and expenses arising from: (a) your access and use of the Interface; (b) your violation of the Terms, the rights of any third party, or any other applicable law, rule, or regulation; and (c) any other party's access and use of the Interface with your assistance or using any device or account that you own or control.

12) Limitation of Liability

Under no circumstances shall we or any of our officers, directors, employees, contractors, agents, affiliates, or subsidiaries be liable to you for any indirect, punitive, incidental, special, consequential, or exemplary damages, including (but not limited to) damages for loss of profits, goodwill, use, data, or other intangible property, arising out of or relating to any access or use of the Interface, nor will we be responsible for any damage, loss, or injury resulting from hacking, tampering, or other unauthorized access or use of the Interface or the information contained within it. We assume no liability or responsibility for any: (a) errors, mistakes, or inaccuracies of content; (b) personal injury or property damage, of any nature whatsoever, resulting from any access or use of the Interface; (c) unauthorized access or use of any secure server or database in our control, or the use of any information or data stored therein; (d) interruption or cessation of function related to the Interface; (e) bugs, viruses, trojan horses, or the like that may be transmitted to or through the Interface; (f) errors or omissions in, or loss or damage incurred as a result of the use of, any content made available through the Interface; and (g) the defamatory, offensive, or illegal conduct of any third party. Under no circumstances shall we or any of our officers, directors, employees, contractors, agents, affiliates, or subsidiaries be liable to you for any claims, proceedings, liabilities, obligations, damages, losses, or costs in an amount exceeding the amount you paid to us in exchange for access to and use of the Interface, or $100.00, whichever is greater. This limitation of liability applies regardless of whether the alleged liability is based on contract, tort, negligence, strict liability, or any other basis, and even if we have been advised of the possibility of such liability. Some jurisdictions do not allow the exclusion of certain warranties or the limitation or exclusion of certain liabilities and damages. Accordingly, some of the disclaimers and limitations set forth in the Terms may not apply to you. This limitation of liability shall apply to the fullest extent permitted by law.

13) Dispute Resolution

We will use our best efforts to resolve any potential disputes through informal, good faith negotiations. If a potential dispute arises, you must contact us by sending an email to [hello@perp.fi] so that we can attempt to resolve it without resorting to formal dispute resolution. If we are not able to reach an informal resolution within sixty days of your email, then you and we both agree to resolve the potential dispute according to the process set forth below. Any claim or controversy arising out of or relating to the Interface, the Terms, or any other acts or omissions for which you may contend that we are liable, including (but not limited to) any claim or controversy as to arbitrability ("Dispute"), shall be finally and exclusively settled by arbitration administered by the CAA International Arbitration Centre (CAAI) under the Chinese Arbitration Association, Taipei (CAA) Arbitration Rules in force at the time of the filing for arbitration of any Dispute. You understand that you are required to resolve all Disputes by binding arbitration. The arbitration shall be held on a confidential basis before a single arbitrator and shall be conducted in English. Unless we agree otherwise, the arbitrator may not consolidate your claims with those of any other party. Any judgment on the award rendered by the arbitrator may be entered in any court of competent jurisdiction other than the United States of America, to the extent a court therein would be deemed to be a court of competent jurisdiction. You further agree that the Interface shall be deemed to be based solely in the Republic of Seychelles and that, although the Interface may be available in other jurisdictions, its availability does not give rise to general or specific personal jurisdiction in any forum outside the Republic of Seychelles.

14) Class Action and Jury Trial Waiver

You must bring any and all Disputes against us in your individual capacity and not as a plaintiff in or member of any purported class action, collective action, private attorney general action, or other representative proceeding. This provision applies to class arbitration. You and we both agree to waive the right to demand a trial by jury.

15) Governing Law

You agree that the laws of the Republic of Seychelles, without regard to principles of conflict of laws, govern the Terms and any Dispute between you and us.

16) Entire Agreement

The Terms, including the Privacy Policy, constitute the entire agreement between you and us with respect to the subject matter hereof, including the Interface. The Terms, including the Privacy Policy, supersede any and all prior or contemporaneous written and oral agreements, communications and other understandings relating to the subject matter of the Terms.

17) Privacy Policy

The Privacy Policy describes the ways we collect, use, store and disclose your personal information. You agree to the collection, use, storage, and disclosure of your data in accordance with the Privacy Policy.