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A Detailed Introduction to Liquidity Pool (LP) Tokens

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<https://www.btcc.com/en-US/academy/research-analysis/a-detailed-introduction-to-liquidity-pool-lp-tokens>

A primer on the Liquidity Pool (LP) token mechanism, including where you can provide liquidity, what you can do with LP tokens, and so on. Learn more!

Most modern decentralized [exchanges](#) (DEXs) fall under a specific category of trading platform known as an “automated market maker” or AMM. These are platforms that use the weighting of assets in decentralized liquidity pools to determine their values — usually using a constant product formula to do so.

The assets available in these liquidity pools are used to serve traders, who withdraw assets from one side of the pool (buying) and add assets to the other side (selling) in a single move. For example, in a USDC/BUSD liquidity pool, a user might withdraw 1,000 BUSD from the pool and add 1,000 USDC in return.

Unlike traditional centralized exchanges (CEXs), which often use centralized market makers to provide much of their order book depth, AMMs allow anybody to become a liquidity provider — by simply contributing assets to one or more liquidity pools. By doing so, they increase liquidity in the pool (i.e. pool depth) and receive a share of any transaction fees it generates in return.

To keep track of who contributed to the liquidity pool and how much their contribution is worth, DEXes provide users with an equivalent number of LP tokens. These LP tokens represent each user’s share in the liquidity pool and can be returned to the platform to retrieve the tokens they represent. They can also be used for a variety of other purposes — many of which unlock additional revenue streams for the liquidity provider.

Where Allow Users to Contribute Liquidity?

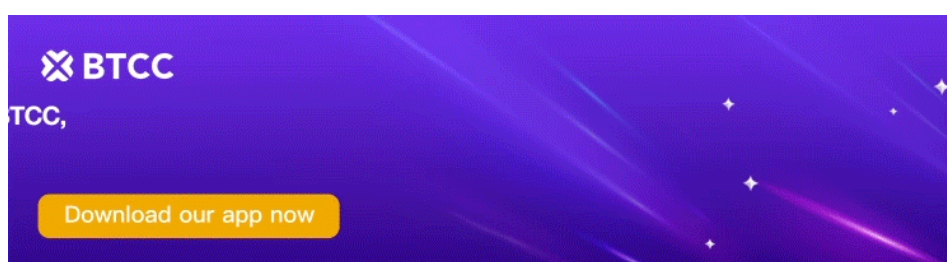
When most people think about liquidity, they think about the kind of liquidity that is used to

facilitate swaps on decentralized exchanges. After all, the majority of liquidity providers only contribute liquidity to AMMs, and the vast majority of all cryptocurrency liquidity in existence is used to power these platforms.

But DEXes aren't the only places individuals can contribute liquidity to. As the decentralized finance ([DeFi](#)) landscape has expanded in complexity and variety, a range of once centralized services now has decentralized equivalents — many of which allow users to contribute liquidity to help with operations.

Here are some of the other types of platforms users can typically provide liquidity to:

- **Open lending protocols:** Decentralized lending protocols like Compound and [Aave](#) have seen dramatic growth in recent years, and consistently rank among the most popular DeFi protocols on supported chains. These are primarily powered by user-contributed liquidity pools, which are used to fund collateralized loans. In most cases, liquidity providers earn a proportional fraction of the interest rate paid by borrowers, and in some cases also earn additional rewards in the form of governance tokens.
- **DAOs:** As decentralized autonomous organizations grow in popularity, so too has their need for access to instant capital — which could then be used to fund acquisitions for the DAO, pay for operations and more. Because of this, a large number of DAOs now have a community-funded treasury, which is filled by community members. In many cases, those that provide liquidity to the treasury are able to withdraw their funds whenever they choose and will earn rewards for the period in which they contributed.
- **Decentralized insurance protocols:** As DeFi has grown in popularity, so too has the need for users to protect themselves against hacks, thefts and other unexpected events. A new range of DeFi insurance platforms now allow users to take out coverage plans against specified events, and usually make use of pooled liquidity from so-called “insurance underwriters”. These funds may be used to pay out any successful coverage claims and liquidity providers earn their fair chunk of the insurance premium (and potentially additional governance token rewards).
- **Decentralized bridges:** A growing number of cross-chain bridges allow users to contribute liquidity to pools on one or more chains to help facilitate seamless and rapid token transfers across chains. In return for contributing liquidity, LPs usually receive a fraction of the ‘cross-chain fee’ — that is, the fee that bridge users pay for moving their asset from one chain to another, usually somewhere around 0.05% to 0.1% of the transfer size.



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Reasons Why People Provide Liquidity

Liquidity provision is becoming an incredibly popular activity in the DeFi space and some of the most popular decentralized exchanges can have tens of thousands of liquidity providers alone. Overall, there are likely somewhere more than 100,000 unique distinct DeFi liquidity providers globally.

In general, most liquidity providers are looking for one thing — profit. Depending on the pool they contribute to and the platform they participate on, it can be possible to earn anywhere from almost nothing up to well over 100% APY. Indeed, according to data from APY.vision, the most profitable pools have generated more than 1,000% APY for participants since their inception, while even less popular pools can provide bank-beating yields.

Overall, the vast majority of people provide liquidity in the expectation that they will earn a fair yield on their deposit — whether this is in the form of liquidity fees, farming yields, or governance token rewards. In a small fraction of cases, users may simply provide liquidity to help support their favorite projects, since increased liquidity helps to defend the project token against wild price movements while allowing new users to gain exposure to new coins/tokens without suffering excess slippage.



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What Can Users Do with Liquidity Pool Tokens?

As we briefly touched on, LP tokens are primarily used to represent an individual's stake in a particular liquidity pool. As such, they can be held until the individual needs to retrieve their deposited assets along with any accumulated profits (or actualized losses), at which point they can return them to the platform, which will burn them and return their assets.

But that's not all they can be used for. Here, we take a look at some other uses for LP tokens.

1. **Transferring between individuals:** LP tokens represent ownership of underlying tokens

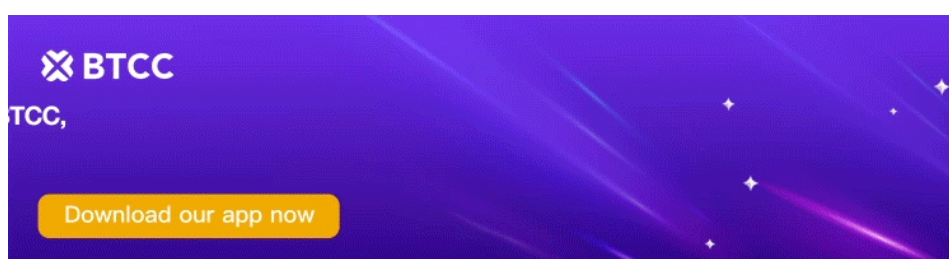
locked up in an associated liquidity pool. Anybody who holds these LP tokens can therefore be considered the owner of these tokens. Because of this, LP tokens can be simply transferred between individuals, allowing the recipient to claim the tokens whenever they choose and gain any profits they generate. In some cases, it can be more gas efficient to send LP tokens rather than the underlying tokens to the recipient — particularly if the recipient planned to contribute to the same pool after receiving the funds.

2. **Used for yield farming (or liquidity mining):** Yield farming is without a doubt the most popular use of LP tokens. This entails staking LP tokens in one or more yield farms to earn an additional source of yield in a secondary token. SushiSwap, for example, allows users to stake their SushiSwap LP tokens to earn additional rewards in the form of SUSHI.
3. **Take a loan against them:** A growing number of decentralized lending protocols are beginning to allow users to use their LP tokens as collateral for a loan. This allows users to continue earning rewards on their LP tokens, while being able to extract capital from their holdings without needing to sell their underlying LP tokens. Abracadabra.money and 1Pool Finance are two such platforms that offer this functionality. That said, users need to consider the opportunity cost of doing this since they will no longer be able to use these LP tokens for yield farming.
4. **Burn them:** In some cases, project owners who have provided liquidity for their tokens can opt to 'burn' their associated LP tokens. This entails manually sending their LP tokens to a known 'burn address', rendering them irrecoverable. Doing this ensures that the token will always have at least some liquidity, and is typically used as a defense against 'rug pulls'.



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What Risks Are Involved?

When performed correctly and using a risk-averse strategy, liquidity provision can provide a relatively lucrative and reliable revenue stream for participants.

But it's not without its fair share of risks. Chief among these is the risk of hacks. As DeFi protocols grow in uptake and their TVLs swell, they are increasingly targeted by hackers who will attempt to exploit the protocol to make off with user funds.

Unfortunately, this is relatively commonplace in 2022, and barely a month goes by without at least one DeFi protocol losing tens of millions of dollars in a hack. Though there are now a variety of decentralized insurance options available in most cases, these are elective, and few liquidity providers take out a plan before it's too late.

Impermanent losses (ILs) are another often overlooked risk. This is simply the losses that a user can face if the value of their liquidity drops falls below what it would have been worth if the user simply held their tokens without providing them as liquidity. ILs can often be offset if the yields from transaction fee revenue are sufficient enough, but this isn't always the case, and many liquidity providers fail to take this into account when calculating their yields.

Finally, there is the risk of token collapse. This happens when one (or both) tokens in a decentralized liquidity pool lose a large portion of their value, which can lead to significant losses for the liquidity provider - due to the constant product formula used by most automated market makers. This most often happens when at least one side of the liquidity pool is a highly volatile token, whose value suddenly drops. Fortunately, this is relatively rare, and most liquidity providers will never experience a full token crash event.