What is Blockchain Bridge?The Complete Guide

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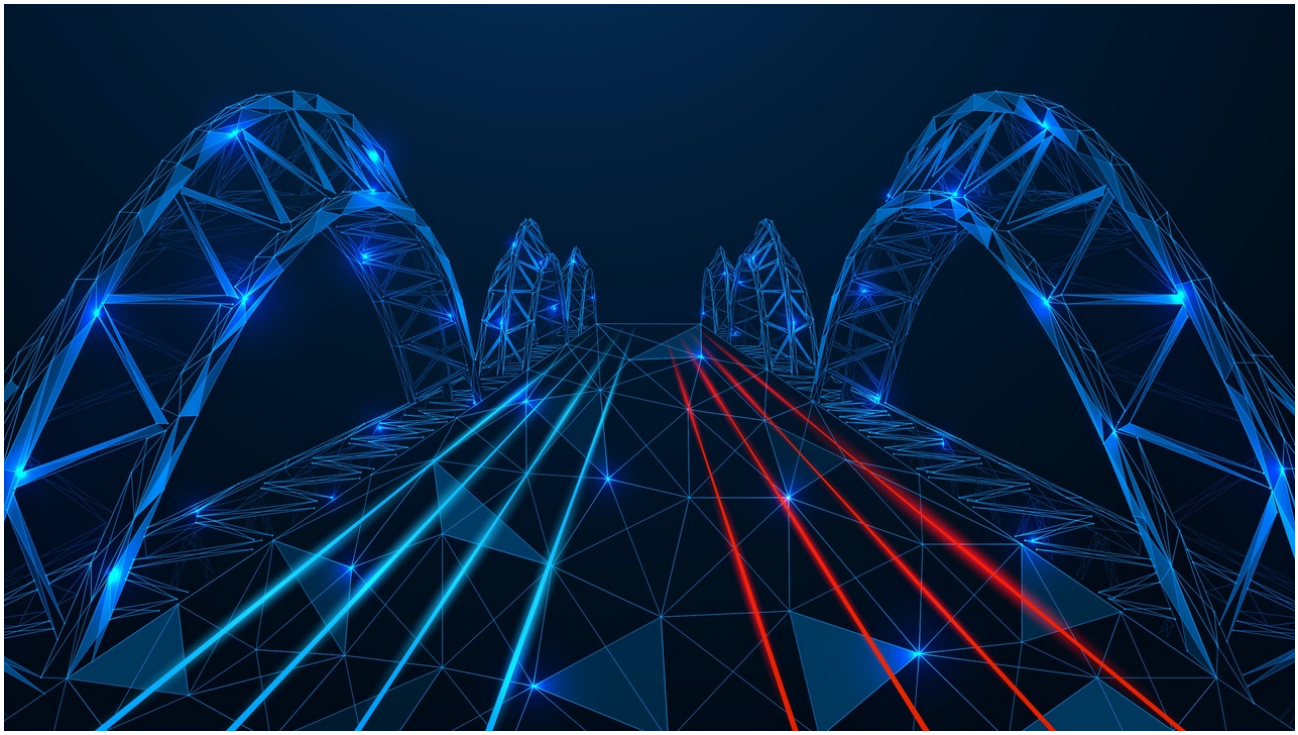
Modern blockchain technology has some limitations, especially when Web3 space is developing so rapidly. What follows is the need to provide users with more choices and increase scalability for blockchain developers. This is why blockchain bridges play an important role in the blockchain technology.

Blockchain bridge, also known as cross-chain bridge, connects blockchains so that users can send and receive digital assets and data between different blockchains. There are many questions about the impact of blockchain bridges, their purpose and their security. In this article, we will take an in-depth look at it.

What is a Blockchain Bridge?

The main idea of blockchain bridge is to act as a way of interaction between different blockchains. Many blockchains lack interoperability, which means that they cannot communicate well with each other alone. Therefore, this is why the bridge must be implemented.

Considering that assets from one blockchain are usually incompatible with foreign blockchains, the bridge is actually an asset of another blockchain. For example, if you want to bring bitcoin to the Ethereum blockchain for consumption, the bridge will wrap bitcoin in a blank code to make it compatible with the target blockchain. In the case of Ethereum, the bridge just turns bitcoin token into ERC-20 t token — Ethereum’s native replaceable token — which makes it usable like Ethereum’s native token.



Different Types of Blockchain Bridge

There are several changes in blockchain bridging. The following are two types of blockchain bridging currently in existence.

- **One way bridge**
  One way bridge allows you to send assets only to the target blockchain, but not to return its native blockchain. For example, wrapped bitcoin allows you to transfer bitcoin as ERC-20 token to Ethereum, but you cannot send ETH back to bitcoin blockchain.
- **Two way bridge**
  The two-way bridge allows you to freely trade assets between different blockchains. You can send ETH to Solana blockchain. Similarly, you can transfer sol to Ethereum blockchain. In addition to the direction in which bridging allows you to freely send and receive assets, the custodian of bridging also changes, or who controls the assets used to create bridging assets.
- **Custodial**
  If a bridge is custodial, this means that only one centralized entity controls the asset. Take bitcoin as an example. Bitcoins in all packages are held by BitGo, a centralized digital asset

trust.

- **Non-custodial**
  Unmanaged or decentralized bridges use smart contracts and algorithms on the blockchain, so users still control their assets.

So, What Makes Blockchain Bridge So Important?

Blockchain bridges are important because they enable users to move and leverage their digital assets in a more efficient and effective manner, as well as scale up to support growth and change.

In order to keep Ethereum up to demand, rollups has been implemented. The mainnet blockchain likeAvalanche has created a network to achieve higher throughput, but at the cost of decentralization.However, blockchain bridges allow limited networks to expand and communicate in the way that they were originally designed.

Blockchain bridge can realize the following functions:

- Digital assets and data can transfer through different chains
- Dapps can benefit from various blockchains, which enhances their capabilities.
- The cooperation between different blockchains allows its users to have more choices.
- Users can enter the new platform and enjoy the benefits of different blockchains.

Blockchain bridging also has many advantages, which is why many people choose to use it, including:

- Lower transaction costs.
- Provide better interest rates for some dapps.
- Have native crypto assets (you can have Bitcoin NFT such as Rare Pepe on the Ethereum blockchain).

While there are many advantages to using bridges, you can expect some disadvantages. This leads many of us to wonder whether blockchain bridging can be used safely.

Is the Blockchain Bridge Safe?

Blockchain technology, especially bridging, is still at an early stage of development, so of course there will be some concerns. The following are the concerns exposed when using blockchain bridging.

- Smart contract hacker
- Errors in the smart contract of blockchain bridge expose users to the risk that the bridge is hacked and funds are stolen. Recently, the popular blockchain game axie infinity, which uses ronin bridge, was hacked, resulting in the theft of $600 million.
- Custodial Risk

Technically, the operator hosting the Custodial blockchain bridge can seize the funds of all its users, or even close the bridge to prevent users from transferring assets.
Generally speaking, blockchain bridge users are at risk if:

- Smart contract has an error.
- The user made a mistake.
- Blockchain is hacked.
- The bridge was blackened.
- The operator has bad intentions.

At this time, it seems not uncommon for bridges to be blackened. This is why you should always educate yourself about the potential risks of using bridges and the specific bridges you are considering. Obviously, blockchain bridging provides a huge opportunity for the market and a promising future for multi chain interaction. But at what cost? Only time will tell us.