1. Discuss the issues with Ethereum 1.0 and how Ethereum 2.0 are trying to address them.

2. Do you think that Ethereum 2.0 will gain adoption? What are some of the obstacles you see for Ethereum 2.0?

Conduct your own additional research beyond the above 2 articles. No right or wrong for the second part. Write between 600 to 1200 words.

Reading 3 by Douglas Tan
(1092 words)

Update on Ethereum 2.0

On 4 Nov, prospective stakers will be able to deposit their 32 Ether into contract via dedicated launchpad and get ready for the launch of Ethereum 2.0 Phase 0 on 1 Dec. However, the contract must collect 16,384 deposit of 32 ETH each, a total of 524,288 ETH or about $200 million, in order that the launch can proceed on 1 Dec. The required sum must be collected at least seven days before the expected launch date of 1 Dec. If it is not, the launch is delayed to seven days after the threshold is reached[1].

The last 25% of the ETH needed to trigger the contract was deposited in four hours of Monday 23 Nov (UTC). The contract has accrued more than 540,000 ETH ($300 million), ensuring the launch of Ethereum 2.0 will proceed on 1 Dec[2].

Goals of Ethereum 2.0

Ethereum 2.0, also known as Eth2 or Serenity, is an upgrade to the Ethereum blockchain. The upgrade aims to enhance efficiency, speed and scalability, security of the Ethereum network.[3] the introduction of eWASM[4] will also attract more programmers thereby expanding the Ethereum community.

1. Efficiency

While Ethereum 1.0 uses a consensus mechanism known as Proof of Work (POW), Ethereum 2.0 will use a Proof of Stake (POS) mechanism. Like other cryptocurrencies, its current POW consensus requires miners to acquire computer hardware processing power to solve complex mathematical puzzles and verify new transactions. This process can be energy-intensive. POS in Ethereum 2.0 is different in that, instead of miners, transaction validators stake crypto (ie Ether) for the right to verify a transaction. These validators are selected to propose a block based on how much crypto they hold, and how long they've held it for. Other validators can then attest that they have seen a block. When there are enough attestations, a block can then be added to the blockchain. Like POW mining, these validators will then be rewarded for successful block proposition. However, unlike POW, POS is far more energy-efficient as it decouples energy-intensive computer processing from the consensus algorithm.

2. Speed and scalability – With Ethereum 1.0, the network can only support around 30 transactions per second. This resulted in delays and congestion. Ethereum 2.0 promises up to 100,000 transactions per second. This increase will be achieved through the implementation of shard chains. The current Ethereum setup has a blockchain consisting of a single chain with consecutive blocks. This is secure but very slow and not efficient. With the introduction of shard chains, this blockchain is split up, enabling transactions to be handled in parallel chains instead of consecutive ones. The entire network can therefore be speed up and scale up easily.

3. Security – Most POS networks have a small set of validators, which can easily group into a centralized system and decreased network security. Ethereum 2.0 requires a minimum of 16,384 validators, making it much more decentralized and hence, secure.

4. eWASM – Ethereum 1.0 uses Ethereum Virtual Machine (EVM) which is an execution environment that runs on all nodes and facilitates smart contracts. Although EVM is widely used, it remains something of an enigma even for people with a high degree of programming skill. To address this, Ethereum 2.0 introduces eWASM, a web assembly language that make it possible to execute Ethereum app code right in web browsers. This will allow programmers to choose from several languages like Rust, C, and C++ to write code to run on the blockchain. eWASM will increase the number of potential programmers for the ecosystem, because it will open the doors to users with no need to learn Solidity, a native Ethereum-only language.

Adoption of Ethereum 2.0

For the start, there will be anticipated push-back of Ethereum 2.0 by the miners who have invested heavily on mining equipment needed by the existing POW Ethereum network. This probably explained the low take-up rate of prospective stakers leading to Phase 0 of Ethereum 2.0. Miners knew that Ethereum 2.0 will completely erase the concept of mining and Miners will be forced to retire once Ethereum 2.0 is fully completed[5]. As such, even though Ethereum 2.0 promises to overcome the limitation in current Ethereum network, the transition is going to be difficult not just technically but also economically, with its biggest challenge being how to manage incentives so everyone else moves their Ether out of the legacy POW chain into the new POS.

Ethereum 2.0 adoption is somewhat inevitable given the potential growth of DeFi demanding more DApps to be implemented on Ethereum network. But at the same time, it is the growing demand of DApps that poise the concerns of Ethereum 2.0 adoption. Simply put, the eventual launch of Ethereum 2.0 is bound to support decentralized finance (DeFi) growth, but it may not be capable of handling the pace at which DeFi is growing. Ethereum 2.0's multi-phase launch approach entails a lot of uncertainty, coupled with unknown challenges in the eventual integration of the existing Ethereum network. It may simply drag the timeline further than expected. A delayed timeline is nothing new with the Ethereum foundation but an outcome which the Ethereum community has already witnessed with the current version[6].

The other reason for adoption of Ethereum 2.0 is the transaction cost. The DeFi boom has congested the current Ethereum network, resulting in the increase of transaction cost. This is

perceived to be another reason for the slowdown in DeFi growth. With Sharding, the transaction fee is anticipated to reduce and facilitate for DeFi increased implementation and innovation. Transaction growth with reduced gas prices, is expected to help DeFi reach the next level comparable to electronic funds transfer giant such as Visa.

Finally, with introduction of eWASM, seasonal programmers with other programming languages such as C and C++ do not need to learn or understand Solidity, a native Ethereum programming language, in order to code Blockchain and Smart Contracts. This flexibility will greatly expand the Ethereum developer community and pace for more DApps to be implemented.

Summary

All the benefits proposed by the 2.0 launch will only be effective once the final stage of Phase 2 arrives, as the shards would be fully operational and include support for smart contracts which DeFi requires. But this launch phase may only be 2 (or more) years away. Even though most DeFi solutions and DApps use Ethereum as their preferred blockchain, there are other blockchain networks such as Cardano, Tezos, Tron and EOS, that could contend with it for a share of the DeFi market[6]. It is a race which Ethereum 2.0 has to compete.

References:

1. Anirudb Tiwari, "*Ethereum 2.0 to boost DeFi but Delayed launch may set the network back*", https://cointelegraph.com/news/ethereum-2-0-to-boost-defi-but-delayed-launch-may-set-the-network-back, Nov 22, 2020.

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3. Rene Millman, "*What is Ethereum 2.0 and Why Does it Matter?*", https://decrypt.co/resources/what-is-ethereum-2-0" , 21 Nov, 2020.

4. Andrej Kovacevic, "*Ethereum 2.0 Includes Major Changes That Could End Bitcoin's Blockchain Dominance*", https://www.computer.org/publications/tech-news/trends/end-bitcoins-blockchain-dominance, not dated.

5. Michael, "*Ethereum 2.0 is coming – Here's what you NEED to know*", "https://boxmining.com/ethereum-2/" , 21 Nov, 2020.

6. Anidrudh Tiwari, "*Ethereum 2.0 to boost DeFi but delayed launch may set the network back*", "https://cointelegraph.com/news/ethereum-2-0-to-boost-defi-but-delayed-launch-may-set-the-network-back", 22 Nov, 2020.