

# BitTorrent-Chain Whitepaper

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# 1 Introduction

With the development of decentralized networks, new business models and organizational structures have gradually emerged, among which smart contract-enabled platforms have attracted a lot of attention and have fully demonstrated their impact on current society and business. However, they still have bottlenecks in performance, scalability and cost-effectiveness. These barriers prevent them from being adopted on a large scale.

BitTorrent-Chain's vision is to provide a high-performance, highly scalable, low-cost solution for blockchain platforms that delivers a superior user experience for decentralized applications without sacrificing decentralization while leveraging the existing developer ecosystem. TRON and Ethereum are chosen as the first public chain platforms to demonstrate the scalability of BitTorrent-Chain. We plan to build support to more blockchains, to allow the immediate transfer, exchange and conversion of digital assets in the future.

## 2 Why BitTorrent-Chain

A variety of decentralized applications, such as decentralized finance, have become core drivers of the TRON network and other smart contract platforms. Meanwhile more types of decentralized applications are being developed in large numbers, but the current blockchain ecosystem is not sufficient to support the demand for large-scale applications. Poor user experience with Dapps, slow block validation, high transaction fees and low scalability are all factors that prevent users from using blockchain applications at scale. The following sections describe how the BitTorrent-Chain will address these issues.

- **Slow Transactions**

Currently, the most significant disadvantages of POW(Proof-of-Work) based blockchain platforms are low transaction processing speed and limited throughput.

BitTorrent-Chain will solve this problem by using a high-throughput blockchain. A set of block producers will be selected. Proof of Stake will be applied to validate blocks, and

proofs of blocks will be periodically sent to TRON main net or other blockchains. This mechanism ensures blocks will be confirmed in an extremely short time.

- **Low Throughput**

A certain time interval is required between block production in current mainstream blockchain platforms to ensure sufficient time for block propagation. In addition, there is a limit on the block size to ensure fast block propagation in the network, which leads to a limit on the number of transactions in a block.

BitTorrent-Chain solves this problem by using a block producer layer, where block producers are able to produce blocks at a very fast rate.

- **Low Scalability**

In the future, BitTorrent-Chain can easily access more public chains while using the same decentralized POS layer to increase scalability.

- **High Transaction Fees**

The BitTorrent-Chain achieves economies of scale by conducting a large number of transactions at the block producer layer, thus reducing costs and ensuring low transaction costs.

## 3 Introduction to BitTorrent-Chain

### 3.1 Architecture

The BitTorrent-Chain is a blockchain application platform with an overall structure divided into three layers.

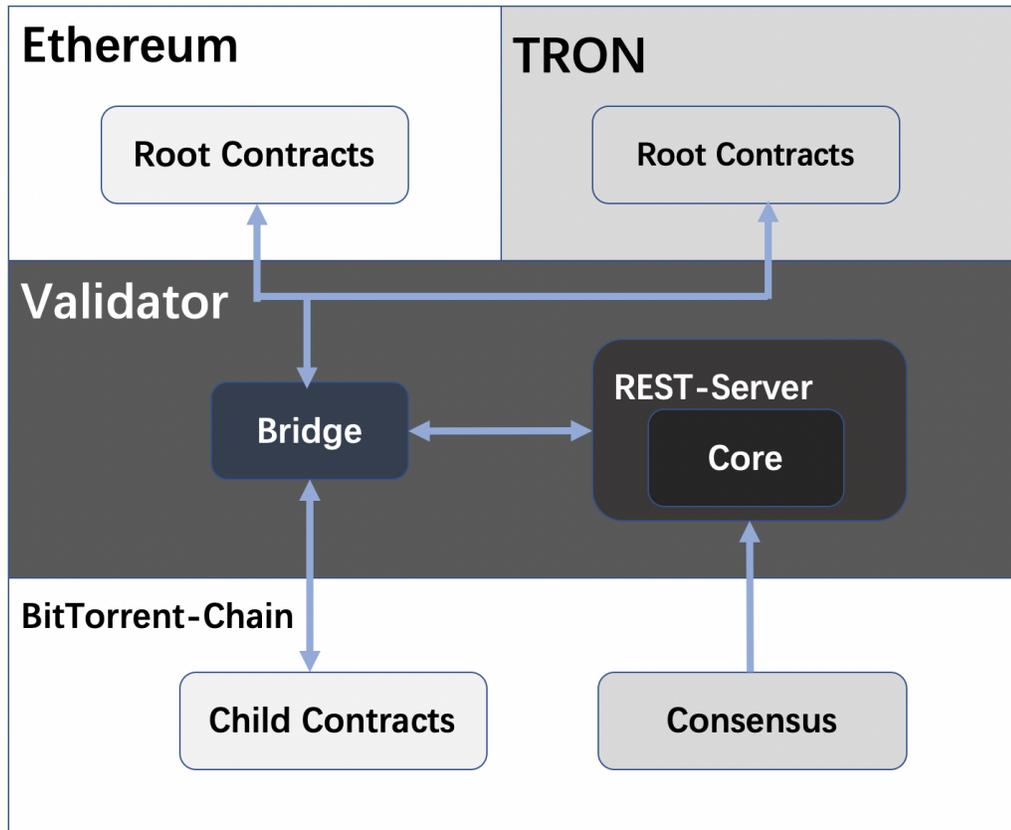
- **Root Contracts layer:** Root contracts on TRON and other blockchain networks will support functions of staking, mapping tokens to BitTorrent-Chain by depositing/withdrawing funds, etc.
- **Validator layer:** Validates BitTorrent-Chain blocks and periodically sends checkpoints to the TRON and other supported blockchain networks.

**Bridge:** Responsible for listening to events on each chain, sending event messages, etc.

Core: Consensus module, including verification of Checkpoint (snapshot of BitTorrent-Chain chain state), consensus of Statesync events & Staking events.

REST-Server: Provides related API services.

- BitTorrent-Chain layer.



### 3.2 Actors

The BitTorrent-Chain ecosystem will have the following participants.

- End-users
- Dapp Developers

Developers can extend their applications based on the BitTorrent-Chain to provide better services to users.

- Validator

A certain number of BitTorrent Token (BTT) will need to be stake to qualify as a Validator. Validators are responsible for validating BitTorrent-Chain blocks and submitting Checkpoints to other blockchain networks such as TRON.

- Block Producer (BitTorrent-Chain)

Block producers are periodically selected from the Validator and are responsible for BitTorrent-Chain's block production.

### 3.3 Core Functions

BitTorrent-Chain is a blockchain application platform with core functions including cross-chain, off-chain extension, etc.

The cross-chain process is as follows.

- Users can deposit crypto assets in the BitTorrent-Chain contract on the main chain (currently supported using TRON & Ethereum)
- After depositing assets into the BitTorrent-Chain contract and receiving confirmation from the main chain, the token will appear on the BitTorrent-Chain Chain.
- Users can transfer tokens to whomever they want faster, with almost negligible transaction fees.
- Users can withdraw tokens to the main chain at any time by creating proof of remaining tokens on the Root contract.

### 3.4 Consensus

The BitTorrent-Chain achieves faster block confirmation times through a PoS mechanism in the Validator layer and a block producer-based mechanism in the BitTorrent-Chain layer. Also, BitTorrent-Chain uses checkpoints and burning proof mechanisms to achieve final validation on the main chain. With this mechanism, the BitTorrent-Chain achieves high-speed asset transfers across chains.

### 3.4.1 Validator

To become a Validator, one needs to stake BitTorrent Tokens (BTT) in the TRON Root contract to become a Validator in the PoS Validator layer, which provides a highly decentralized foundation for the BitTorrent-Chain Chain.

### 3.4.2 Block Producers

Block producers in the BitTorrent-Chain layer are periodically selected from the Validators and are responsible for the aggregation of transactions. The VM in BitTorrent-Chain is compatible with the EVM.

## 4 Usage Scenarios

Developers can easily build all kinds of applications on the BitTorrent-Chain, such as (but not limited to)

- DEX

The BitTorrent-Chain will have all the features of a trading platform: faster and cheaper transactions, and support decentralized exchange for reliable and easy crypto transactions. Decentralized trading will be the future of digital assets, providing better security and solvency than centralized exchanges.

- Defi

Decentralized finance has evolved as one of the core drivers of all major blockchain networks. Developers can build such applications on BitTorrent-Chain, allowing users to experience fast, efficient, and secure Defi applications of all kinds.

- Gaming + NFT

Games will be an important part of the BitTorrent-Chain ecosystem. For example, NFT in-game assets can be bought, sold, and traded in bulk on the BitTorrent-Chain, while developers can also save the game state on the sidechain. Developers and users will have a truly fast, efficient and secure sidechain to build and participate in games.

## 5 Network Economics

- Number of Validators

Setting the number of Validators too high can lead to high incentive costs. The current set number of Validators is 21.

- Validator Rewards

Validator rewards include Checkpoint submission rewards and transaction fees.

- Block Time

BitTorrent-Chain sets a block time of 2 seconds, which means that a block will be produced every 2 seconds.

- Number of Block Producers

If you set too many block producers it will result in more transaction fees. The current set number of block producers is 21.

- Block (block producer) bonus

The fee generated by the transaction will be rewarded to the block producer.

## 6 Development Roadmap

The BitTorrent-Chain team hopes to conduct research and investigation based on various topics and needs raised by the community, including but not limited to

- Support for more other great blockchain networks in the future.
- Transactions that support privacy
- Interoperability across blockchain networks

## 7 Summary

In this paper, we have introduced the various actors in the BitTorrent-Chain ecosystem and their features. Developers can easily build dApps including Defi, games+NFT, let users enjoy services with high speed and low cost. Innovations and breakthroughs of applications have reached their bottlenecks because of the centralization trend of the traditional internet, which may prevent the market from

growing. The BitTorrent-Chain adopts a decentralized mechanism, encouraging developers to seek breakthroughs with the base of our reliable technology and highly autonomous ecology. We believe the BitTorrent-Chain will bring happiness to TRON and other blockchain platforms.