Implement RCC with concurrent PBFT instances in Nexres

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1 PROBLEM STATEMENT

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2 BACKGROUND AND CHALLENGES

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3 MARKET OPPORTUNITY

The blockchain adopts a decentralized distributed accounting method, which provides great security and transparency. The traceability and automated processing of data also enable the blockchain to bring more business benefits. In recent years, blockchain technology and industry have developed rapidly around the world, and its applications have been extended to digital finance, Internet of Things, intelligent manufacturing, supply chain management, digital asset trading and other fields, showing broad application prospects.

In the blockchain world, a transaction is the basic unit that makes up a transaction. Transaction throughput can largely limit or expand the application scenarios of blockchain business. Currently, transaction throughput, is a hot indicator for evaluating performance. The higher the throughput, the wider the scope of application and the larger the user scale that the blockchain can support. Rapid transaction increases customer engagement and satisfaction rates. In order to improve throughput, the industry has put forward an endless stream of optimization solutions, all of which lead to the same goal. RCC implementing in NexRes pushes throughput beyond single-replica limit by better better utilizing available resource, opening the door to the development of new high-throughput resilient database and federated transaction processing systems.

Resilience enables blockchains to reduce the likelihood of disruption and recover faster. In business world, non-stable system will hugely decrease the chances of converting the visitor into a customer and declines customer stickiness. As a consensus-based systems, RCC promises increased resilience against failures, can provide strong support for data provenance, and can enable federated data processing in a heterogeneous environment with many inde-pendent participants. Consequently, consensus-based systems can prevent disruption of service due to software issues or cyber attacks that compromise part of the system, and can aid in improving data quality of data that is managed by many independent parties, potentially reducing the huge societal costs of cyber attacks and bad data.

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4 TIMELINE AND MILESTONES

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5 ACTIVITIES AND TASKS

5.1 Client

Clients are the generators of transaction requests. There are many existing protocols that aim to deal with the single-shard transaction. However, when clients require access to multiple shards, existing BFT protocols are facing performance degradation. The Ring-BFT protocol aims to reach consensus more efficiently when facing cross-shard transactions. In the cross-shard scenario, the client has the following activities:

6 ASSOCIATED RISKS

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7 KEY MILESTONES

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8 TEAM MEMBERSHIP AND ATTESTATION

Dakai Kang, Musheng He, Zizhong Li, Xiaoxing Chen, Piaopiao Long all participated in this project proposal and contributed equally.