SChain

A Scalable Consortium Blockchain Exploiting Intra- and Inter-Block Concurrency

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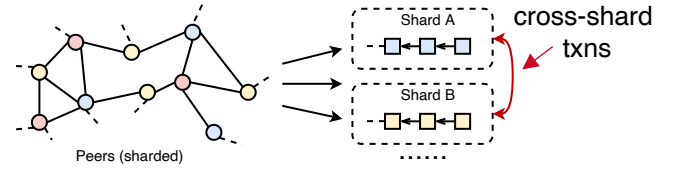
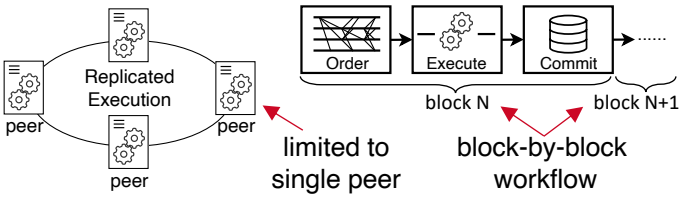
ANTCHAIN

Background and Motivation

- Consortium blockchain needs more transaction processing to support large-scale businesses in enterprise collaborations
- Existing solutions such as sharding[1] and incorporating concurrency[2] introduce new problems



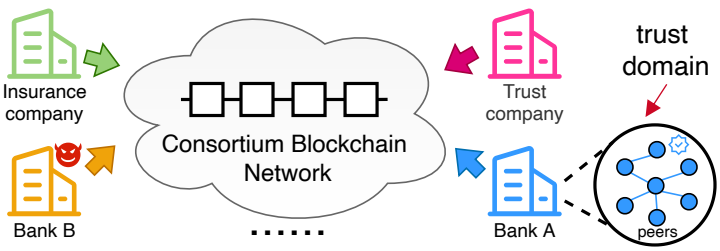
Problem[1]: INEFFICIENT



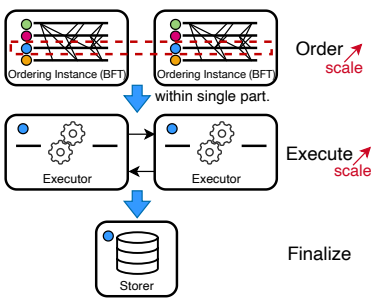
Problem[2]: LIMITED & QUIESCENT

SChain Solution

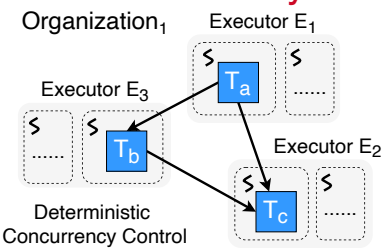
- Scale the consortium blockchain in terms of each participant based on TRUST DOMAIN
- Exploit Intra- and Inter-Block concurrency



Design 1: Scalable Paradigm

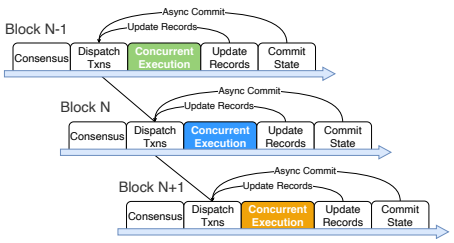


Design 2: Intra-block Concurrency



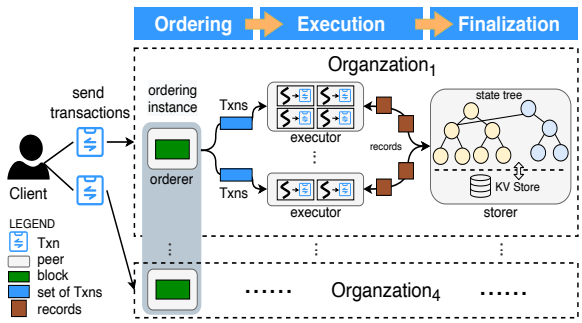
- Parallelly among all executors
- Concurrently within a single executor

Design 3: Inter-block Pipeline



- Non-quiescent workflow
- Resource-efficient pipeline

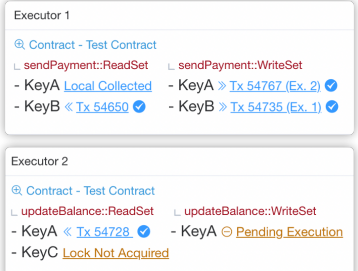
Demonstration Details



Demo Implementation

1) Gain Insight into Intra-Block Concurrency

- distributed concurrent execution



2) Investigate into Inter-Block Concurrency

- transaction streaming pipeline