

# DisLedger® – Distributed Concurrence Ledgers

## Blockchain

- For transparent records
- All data is public on the network
- Example: Aircraft maintenance records. Every part and repair is recorded for the life of the aircraft. Vendors, airlines, and safety regulators all need access to the data. 1-60 minute latency is acceptable.

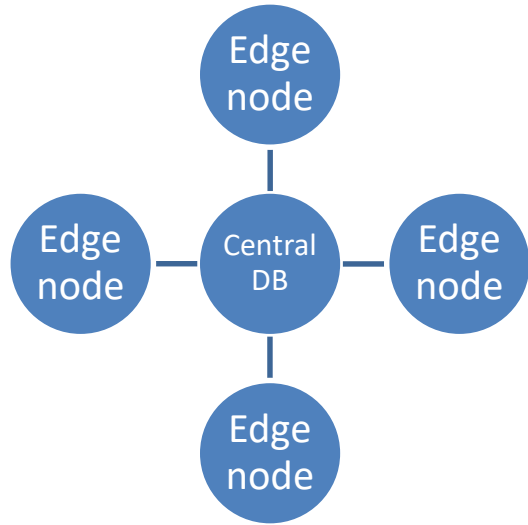
## DisLedger®

- For transaction processing
- Each counterparty has its own ledger so totally private
- Example: Retail payment system. Thousands of transactions per second. Regulations require data to be kept private so account information isn't exposed. Subsecond speed is required.

**There are two types of Distributed Ledger Technology: DisLedger and Blockchain. Blockchain is suited for long term, transparent systems like land title registries. DisLedger is for high volume transactions like capital markets BIS Model 1 DVP, and payments.**

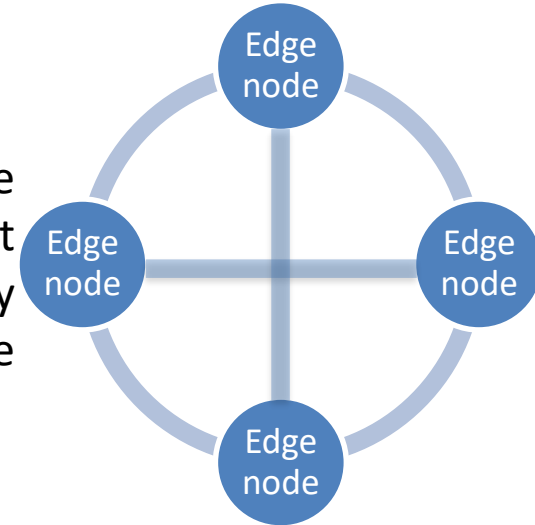
# Architecture Comparison

## Traditional Database



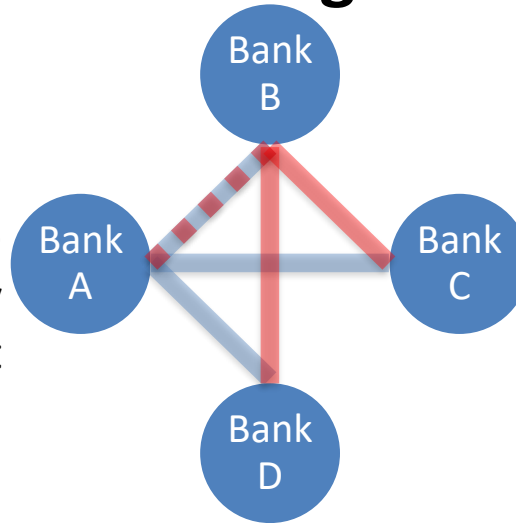
All data is copied to every node  
Massively redundant yet inefficient  
No data privacy  
Slow and does not scale

## Blockchain



## DisLedger

Counterparties share only their data  
No wasted processing/storage  
Total privacy  
Very Fast  
Scales well



# Counterparty Ledgers and Prime Ledger

Prime Ledger A \$100

A:B

\$80

A:C

\$5

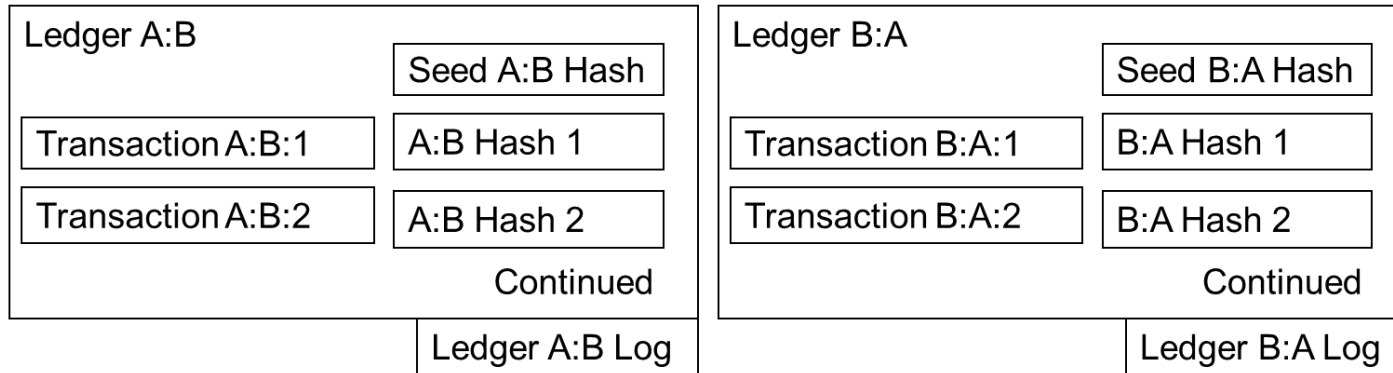
A:D

\$15

... A:n

Each organization has one Prime Ledger which is the aggregation of the assets in all of its Counterparty Ledgers.

# Counterparties Maintain Identical CLs



The Counterparty Ledger that company A holds with company B (Ledger A:B) is identical to the one held by B with A (Ledger B:A). Each party controls their own copy of the ledger.

# Sample Cash-Equity Transactions

A's copy of CL				
Quantity	Asset	Total Value	Currency	Hash
100	GOOGL	15000	USD	E660fa49f46dac958d2be9c7adfc830089ce9e1fe226992d9e7c71034896c93e
101	GOOGL	15000	USD	7781b4ceb1b5d79ee1aaa5ee567538aa5c228397e638a7d8d012c5a4d0f4e361
102	GOOGL	15000	USD	462cd56df6af897b93c4bbbfeddd5ff77e8ed256deba25d5d0b0c4ff2de269a0
103	GOOGL	15000	USD	0be708bbd48f7888caebd229a9a73cda94c148c094af9891861bfd58add0e6b9
104	GOOGL	15000	USD	8cb66046b17c202b22e5c6ff1f49851fc2fd38fb7e71ce51d8ab5e8ccdabd168
105	GOOGL	15000	USD	263057aee831d919a7de9d83b1d5a67a415005a3f94d2b5d14d27a0f0aba1cbd
106	GOOGL	15000	USD	82ed76b192ea1a75f4a5d01b74e28bee2e9e4af99a574c93aa515b067659134c
107	GOOGL	15000	USD	d86d88e9dc1eaf00d2275564736e4ad8f7f2e88db5fd8196aa6ab09507e64b2f
108	GOOGL	15000	USD	0ea52c30c52fc73681565771e7a49023a95d962813183a1d55e59d5d743a26b0
109	GOOGL	15000	USD	22a1365ea50c842720367789a9b3d8f973e90bf52b102fdfee64aa98bdf9245c
110	GOOGL	15000	USD	Baa5190cd12cc269793d1d539c24db9029a7bd39e15fb40600d950703198d46c

**+1,155** **-\$150,000**

A is Credited 1,155 shares GOOGL; Debited \$150,000

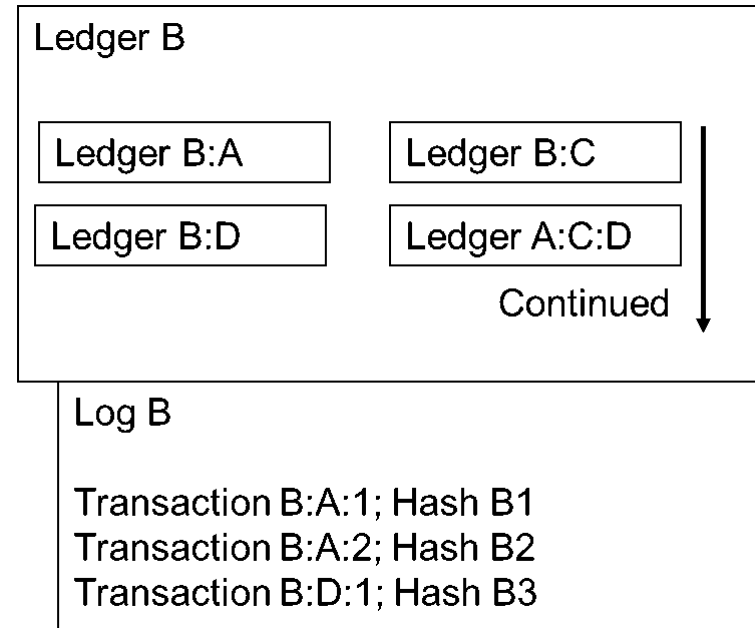
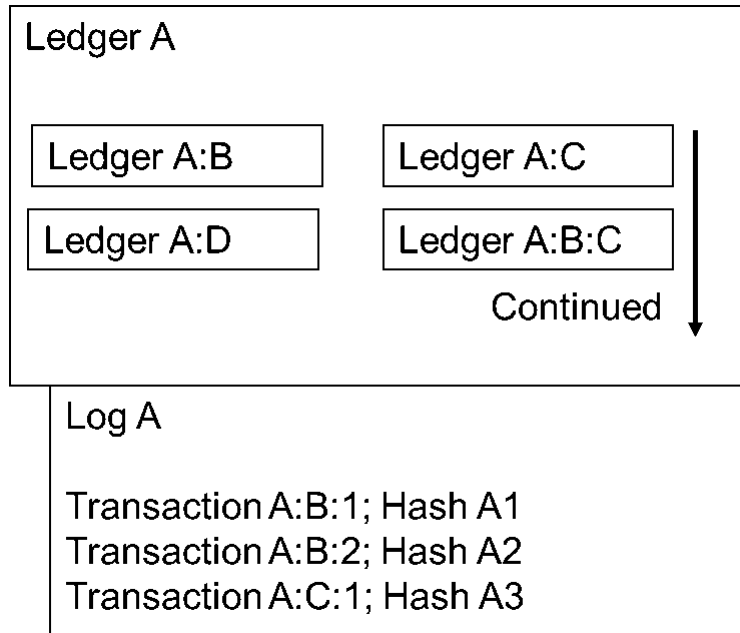
B's copy of CL				
Quantity	Asset	Total Value	Currency	Hash
100	GOOGL	15000	USD	e660fa49f46dac958d2be9c7adfc830089ce9e1fe226992d9e7c71034896c93e
101	GOOGL	15000	USD	7781b4ceb1b5d79ee1aaa5ee567538aa5c228397e638a7d8d012c5a4d0f4e361
102	GOOGL	15000	USD	462cd56df6af897b93c4bbbfeddd5ff77e8ed256deba25d5d0b0c4ff2de269a0
103	GOOGL	15000	USD	0be708bbd48f7888caebd229a9a73cda94c148c094af9891861bfd58add0e6b9
104	GOOGL	15000	USD	8cb66046b17c202b22e5c6ff1f49851fc2fd38fb7e71ce51d8ab5e8ccdabd168
105	GOOGL	15000	USD	263057aee831d919a7de9d83b1d5a67a415005a3f94d2b5d14d27a0f0aba1cbd
106	GOOGL	15000	USD	82ed76b192ea1a75f4a5d01b74e28bee2e9e4af99a574c93aa515b067659134c
107	GOOGL	15000	USD	d86d88e9dc1eaf00d2275564736e4ad8f7f2e88db5fd8196aa6ab09507e64b2f
108	GOOGL	15000	USD	0ea52c30c52fc73681565771e7a49023a95d962813183a1d55e59d5d743a26b0
109	GOOGL	15000	USD	22a1365ea50c842720367789a9b3d8f973e90bf52b102fdfee64aa98bdf9245c
110	GOOGL	15000	USD	baa5190cd12cc269793d1d539c24db9029a7bd39e15fb40600d950703198d46c

**-1,155** **+\$150,000**

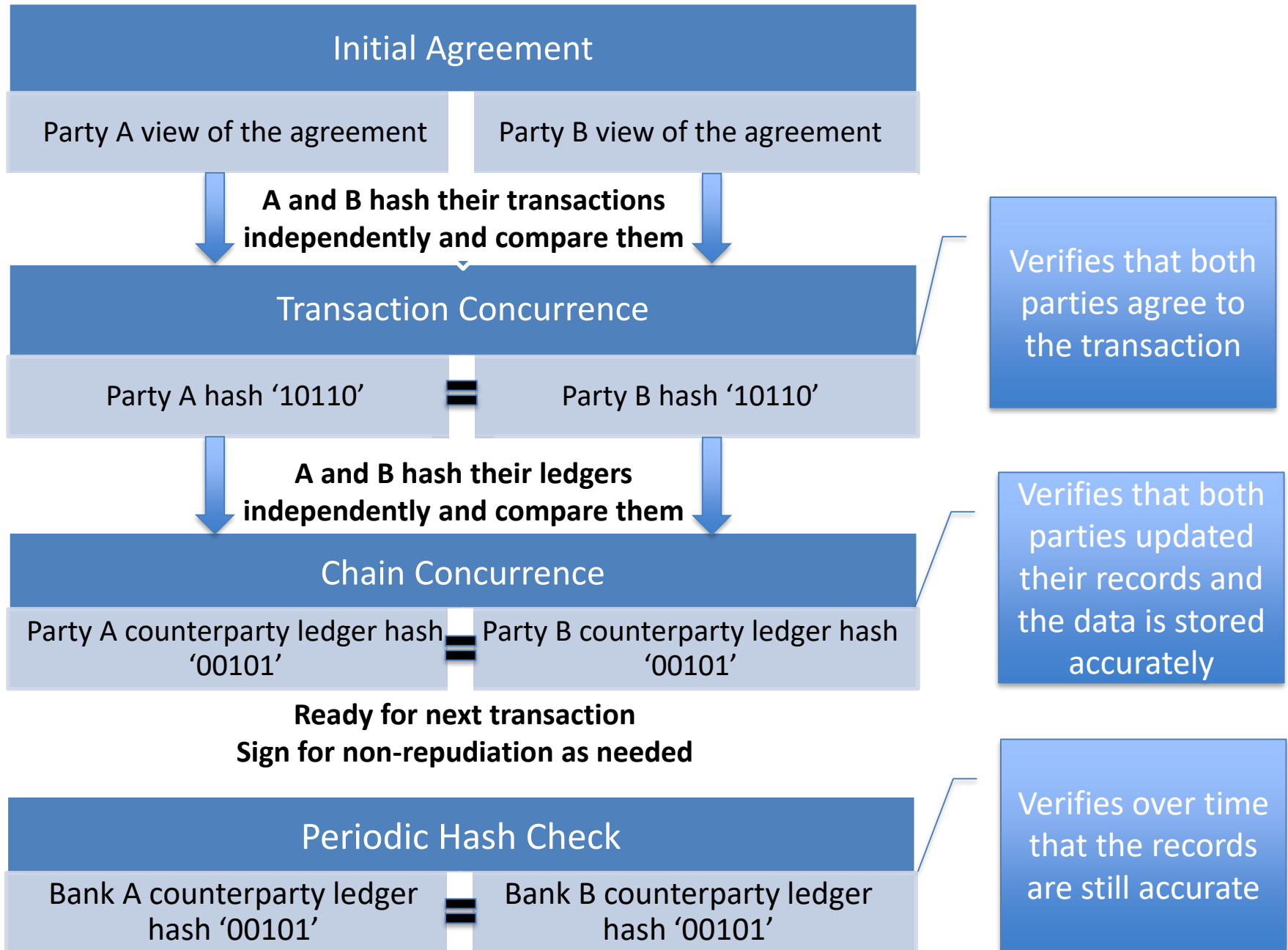
B is Debited 1,155 shares GOOGL; Credited \$150,000

- A's view is Credits & Debits; B's view is Debits & Credits
- Each transaction can update the PL, or updates can be based on elapsed time, time of day, # of transactions, ad hoc, etc) depending on requirements.
- Current, cumulative asset position can always be monitored.

# DisLedger<sup>®</sup> Prime Ledgers



# Process Flowchart



## Initial Agreement

Party A view of the agreement

Party B view of the agreement

**A and B hash their transactions independently and compare them**

## Transaction Concurrence

Party A hash '10110'

=

Party B hash '10110'

**A and B hash their ledgers independently and compare them**

## Chain Concurrence

Party A counterparty ledger hash '00101'

=

Party B counterparty ledger hash '00101'

**Ready for next transaction  
Sign for non-repudiation as needed**

## Periodic Hash Check

Bank A counterparty ledger hash '00101'

=

Bank B counterparty ledger hash '00101'

Verifies that both parties agree to the transaction

Verifies that both parties updated their records and the data is stored accurately

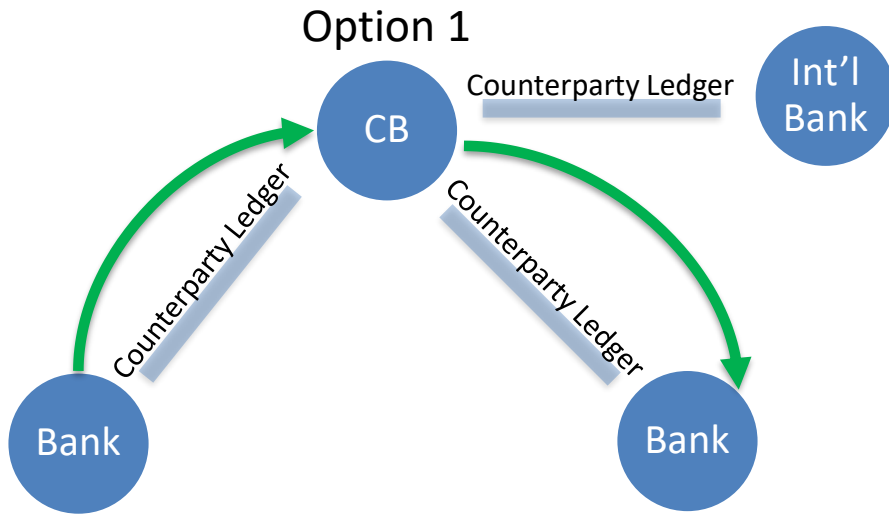
Verifies over time that the records are still accurate

# DisLedger® for Scalable Systems

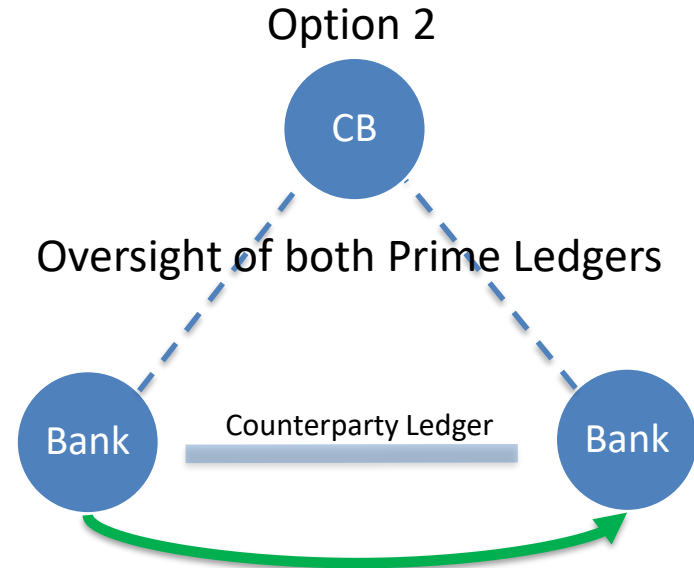
- Scales to hundreds of thousands of transactions per second for payment or capital market settlement, enterprise data sharing, or IOT systems.
- Eliminates the credit/debit card or ACH transaction and ties directly to the bank account, store of value, rewards system, or subsidy system.
- Real-time (milliseconds), 24/7/365, immediate settlement of any currency or cross-currency (FX transactions).
- There is no delay caused by a blockchain consensus network which allows DisLedger to process hundreds of thousands of transactions per second.
- There is no mining, so zero incremental cost per transaction.
- There is no cryptocurrency, so no alt-asset risk (Bitcoin, Ether, XRP, etc.)



# DisLedger<sup>®</sup> - Central Bank Payment Rail



Settle through CB (2 hops)



Settle through CB-managed system to provide reserve balance oversight, yet ensure privacy

DisLedger provides Central Banks a mechanism to support settlement of high volume, low-value reserve transfers and payments. It extends the currently electronic interbank funds transfers to Account-to-Account retail payments. A Central Bank Digital Currency (CBDC) is not required, as the financial institutions settle the transactions using reserves at the CB.

The Originating Bank debits its reserves at the CB and credits the Receiving Bank's reserves, which is currently offered only at the wholesale level. DisLedger's DLT is capable of settling retail (high volume/low value) payments in real-time (milliseconds) as well.

# DisLedger®

Contact:

[info@DisLedger.com](mailto:info@DisLedger.com)

[www.DisLedger.com](http://www.DisLedger.com)