

Cash-in-Transit on Aurigraph

BACKGROUND

Banks and financial institutions need to move currency amongst their Vaults, Chests, Branches and Cash Dispensing Machines (CDMs) while ensuring regulatory compliance with Central Banks about their cash inventory and consequently liquidity position. In the current context, Most Banks have outsourced their Cash-in-Transit to third parties, which brings in additional element of complexity for Reconciliation and Balance confirmation as Banks would not have inventory positions of third parties spread across geographies. Further, due to the highly regulated nature of Banking Industry, penalties for non-compliance and opportunity costs can be significant.

CURRENT STATE OF CASH-IN-TRANSIT PROCESS

Currently, Banks move currencies based on Demand and supply across Vaults, Branches and CDMs within and across geographies. There is a large degree of fluidity as there may not be a fixed pattern, hence, causing certain degree of employee and customer distress. Banks are employing Third-party agencies with armored vans and personnel to move large inventories of cash of various denominations from point-to-point. The Armored vans and their personnel are therefore essential operators in the system and need to report cash positions periodically. Leakages and losses in this operation frequently, which results in higher operational costs such as losses and insurance. It has been a challenge to verify the antecedent of Armored personnel escorting the cash, where a single episode may cause disrepute.

Banks and Cash movement agencies also need to keep track of inventories across multiple vaults, branches and Cash Dispensing Machines as both need to know their respective Cash Balance across their Supply chains. Banks will need to know their inventories from their respective Vaults, Branches, CDMs and the inventories held by one or more Third-party agencies in their respective Chests across geographies. Likewise, Cash-handling agencies need to know their inventories from their respective Vaults, Armored vans and deposits and collections from CDMs and currency deposited back to their vaults at the end of the day across geographies. Often, Cash handling Agencies operate multiple vaults physically segregated chests for different Bank customers from the same venue with shared resources that may require additional monitoring.

Central Banks need visibility of Cash liquidity in the system for compliance and regulatory purposes, across all Banks, their branches vaults and CDMs at frequent internals to ensure that they can moderate Liquidity Ratios and exchange rates.

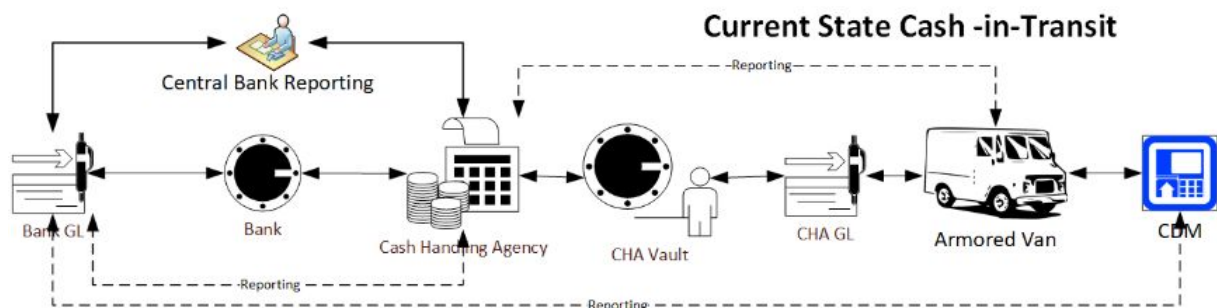


Figure 1 Current Process for Cash-in-Transit

Problem Statement

Central Banks, Banks and Cash handling Agencies receive their cash inventory positions only with a few days' delay causing poor Cash management compliance. Leakages and losses go unreported and are detected only after a period, leading to operational issues. Cash handling agencies end up paying higher insurance premiums to cover their losses as there seems to be little recourse to these operational problems being faced perpetually

DLT Solution

Process improvements using Distributed Ledger Technologies can help in bringing down such operational issues, delayed reporting, losses and Leakages substantially while ensuring distributed and decentralized architecture and reporting making while maintaining the autonomous nature of each business stakeholder. Each stakeholder will be able to retain their existing IT infrastructure and protect past investment while integrating with DLT platforms using APIs. Each Peer-to-Peer Transaction will be recorded in the respective nodes while being posted permanently on a public ledger for immutability and transparency. Each Vault, Van and CDM will need to be assigned a virtual account number to track cash movement across the supply chain. Cash movement of various denominations and their respective bi-directional reconciliation across all stakeholders for Cash handling agencies, Banks and Central Banks can easily reduce significant leakages and losses while improving liquidity across the entire banking industry.

FUTURE STATE WITH DLT

A DLT based solution for building Cash-in-Transit management entails deploying a Node with every stakeholder in the workflow with integration to backend systems, where required to maintain data integrity.

An integrated Identity and Access management system with necessary digital security such as a CA server to deliver PKI will provide basic identity and access infrastructure. Just consider each node as a combination of a Digital Vault and General Ledger for each stakeholder in the system. Decentralized Apps to meet each Stakeholder's requirements and workflow are integrated with respective nodes which may further integrated with their respective existing legacy system through APIs and deployed on user's premises or cloud, as required.

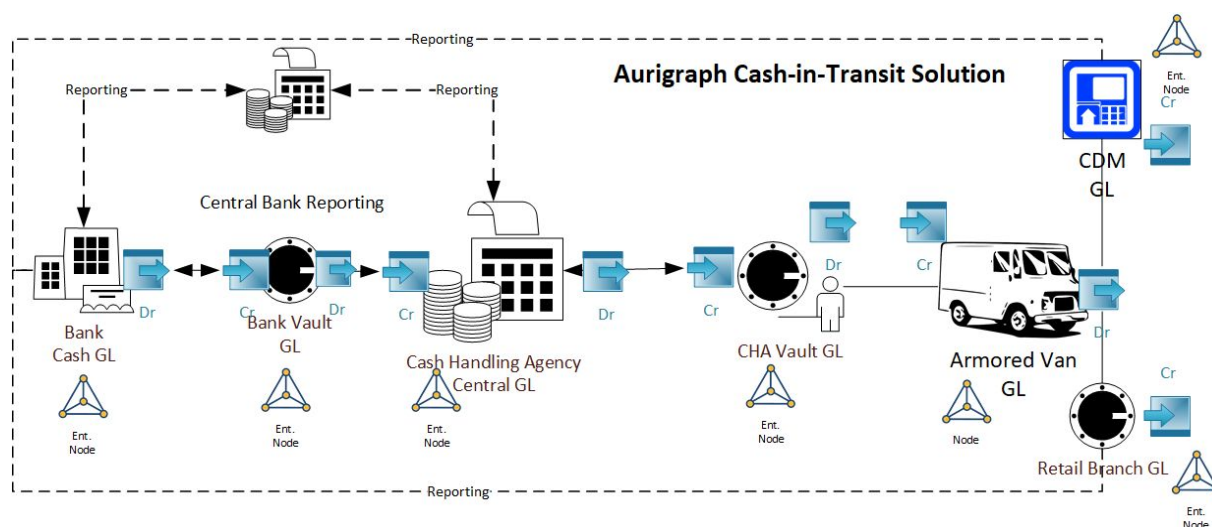


Figure 2 Solution Architecture for Cash-in-Transit on DLT

Central Bank

Dashboard for Global view of all cash movements between any two entities in the eco-system and determine the cash liquidity in real-time against instruments like SLR.

Banks

A Node connector to the Banking system handling Cash inventory management to capture cash movement from its Vaults and update General Ledger and determine the cash liquidity in real-time against compliance.

Branches with Vaults

Branches of Banks possessing Cash Vaults may also be Local Cash repositories which may be moved to other Branches, A Node integrated to the Branch's Cash Ledger will update any cash movement from and to the Branch with its corresponding party, thus providing an immutable Cash ledger

Cash Handling Agency

Cash Handling Agency Central Monitoring System: The CHA will have Dashboard of cash movement across its subsidiaries for real-time tracking between its vaults, vans and CDMs where deposits have been made. Integrate Cash Handling Agency's central monitoring system with a Node for Reporting and updating Banking Customer and Central Bank. The Cash Handling Agency's node will maintain an immutable ledger of cash inventory and all transactions between the Agency, its vaults, vans, and deposits to CDMs in real-time. The Cash Handling Agency has to therefore dynamically reconcile bi-directional inward and outward remittances with Banks, Vaults, Vans and CDMs. It may use this data to report to its banking customers and the central bank in real-time and periodically.

Cash Handling Agency Vault

Geographically dispersed Vaults of Cash Handling Agencies may receive and disburse cash based on customer instructions daily with Branches, Vaults and CDMs across geographies. Cash inventory would, therefore, be constantly dynamic requiring bi-directional reconciliation between the vault, van and the CDM. Vaults will need to reconcile inward and outward remittances with the Agency central systems General Ledger and the Vans. Armored Vans will be collecting cash in different denominations at the start of the day and return the balance and cash deposits collected from CDMs to the Vault for accounting and reconciliation.

Armored Vans

Armored Vans would need to be assigned a virtual account number which is associated with a DLT node to record inward credits from the vaults and outward debits to the CDMs daily. Armored Van supervisors will record cash transactions that will be posted to the respective Van's General Ledger and update all other nodes of the transactions, giving real-time updates to all stakeholders.

Cash Dispensing Machines and Retail Branches

Each CDM and/or Retail Branch will also bear a virtual account number with an associated DLT node to record inward credits from Vans. All inward credits will be likewise reported to the Cash handling Agency, Banks and Central banks to provide a real-time cash inventory. Integrating with CDMs and Retail Branches for Cash dispensing will complete the entire process for Cash-in-Transit Reconciliation and Balance confirmation.

BENEFITS

Aurigraph Cash-in-Transit solution can deliver Real-time balance confirmation to both Banks and Cash handling companies with real-time inventory management and reporting across geographies.

Banks will need to know the Cash inventory in their branches, vaults and ATMs as well as the inventory with Cash handling agencies. Banks will need to report to central banks for Statutory Liquidity Ratio among others. Aurigraph Cash-in-Transit solution can bring down the reporting lag from a 7-14 days to real-time, thereby improving compliance and liquidity, and therefore, profitability.

Cash handling agencies manage the last mile delivery and hence carry the additional responsibility of safe and secure movement of cash amongst Banking customers, Vaults, Armored vans, Branches and ATMs. Cash handling agencies often face leakages due to poor handling and often leaky security measures. Aurigraph Cash-in-Transit solution can bring down the reporting lag from a 1-3 days to real-time, thereby reducing leakages and improving profitability.