LTIMindtree

Letter of Credit Solution Using R3 Corda

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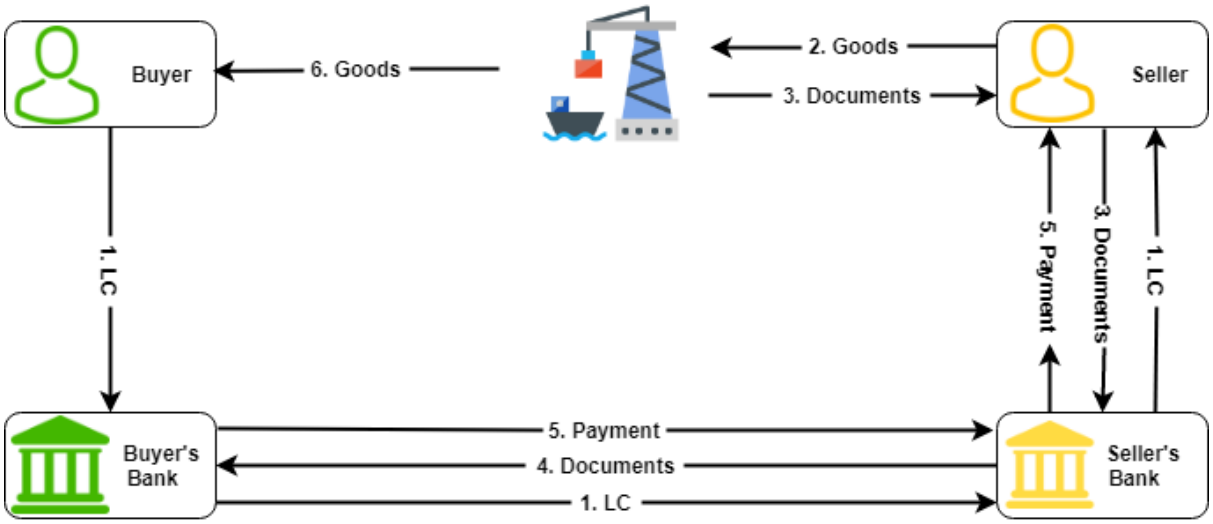
1 Overview - Letter of Credit

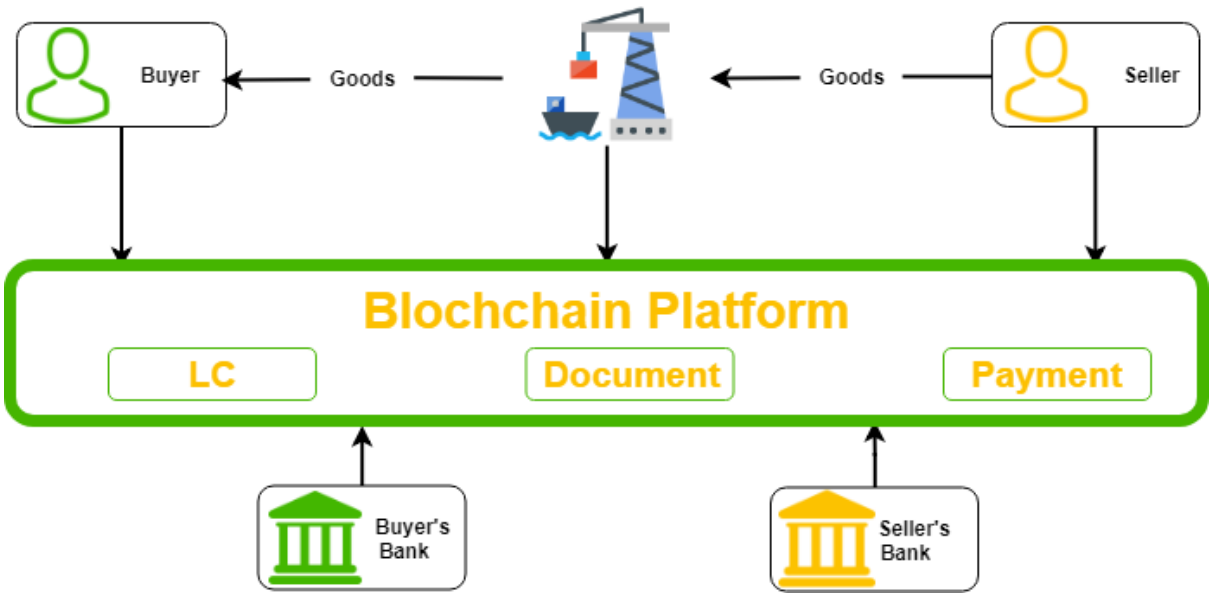
Letter of credit is the cornerstone of international trading, it is essentially a financial contract between a bank, a bank's customer, and a beneficiary. Generally issued by an importer's bank, the letter of credit guarantees the beneficiary will be paid once the conditions of the letter of credit have been met.[1]
It is predominately used in international trade because factors such as distance, differing laws in each country, and difficulty in knowing each party personally.

2 Problems faced in conventional Letter of Credit process



- Trade documents are in form of paper - bills of lading, customs documents, inspection certificates, invoices, warehouse receipts
- High volumes of trade documents are required to verify purchases, payments, deliveries
- Operational and logistic difficulties arise when multiple parties are involved in a transaction (exporter, importer, import-lender, exporter-lender, shipping company, receiving company, financiers, and more).
- Paper and manual data checks severely hamper transparency and accuracy and increases operating costs
- Chances of fraud and litigation due to falsification of paper documents.
- Delays in payment to buyers and suppliers due to the time-consuming process.
- Absence of insight into the movement of goods.
- For financial institutions, these obstructions can lead to denial of bank credit lines to small businesses, affecting global commerce.

3 Letter of Credit (LOC) solution using Blockchain



Key features of blockchain that enable the solution are listed below. More details are provided in [2]

- Blockchain contains single version of truth with respect to entire transaction data.
- Availability of information from multiple parties on Blockchain, provides a real-time and transparent view into the progress of the transaction.
- Reduced counterparty risk: Bills of lading are tracked through Blockchain, eliminating the potential for double spending.
- Smart Contract enables automated settlement and reduced transaction fees.

4 Leveraging R3 Corda features in LOC solution

Key features of R3 Corda that enable the solution are listed below. More details are provided in [3]

- **Permissioned:** All the parties present in the corda network are known to each other and data is shared only between the two transacting parties and is encrypted using transport-layer security (TLS) and confidentiality is maintained.
- **Real-Time:** Corda provides instant transaction finality unlike other blockchains. Information stored can be reviewed and approved in real time, reducing overall time to complete the process.
- **Validity and Uniqueness:** Using Smart Contract and Notary.

5 Demo Setup

- Clone the Github repository using: git clone https://github.com/davidawad/LetterOfCreditBackup.git
- In the LetterofCreditBackup directory, Run the nodes by running ./gradlew buildExecutableJar (osX) or gradlew buildExecutableJar (Windows)

6 Executing the Demo

- In the LetterofCreditBackup directory, Run the node driver using java -jar kotlin-source/build/libs/eloc-demo.jar
- Once all the nodes are started, go to http://localhost:10014/web/loc/.
- Follow the script to complete the demo: https://github.com/corda/LetterOfCredit/blob/release/script.md.[4]

7 Understanding the Demo

Refer to the presentation and video available at:

- https://www.slideshare.net/MarketingTeamr3/supporting-trade-finance-with-letters-of-credit-on-corda
- https://www.youtube.com/watch?v=La6xIDB4a8Q

7.1 States

- In this demo there are the following States:
    - Bill of Lading State
    - Letter of Credit Application State
    - Letter of Credit State
    - Purchase Order State

7.2 Flows

- In this demo there are the following Flows:
  - Create Purchase Order Flow
  - Apply For LoC Flow
  - Approve LoC Flow
  - Create BoL Flow
  - Ship Flow
  - Seller Payment Flow
  - Advisory Payment Flow
  - Issuer Payment Flow

7.3 Contracts

- In this demo there are the following Contracts:
  - Purchase Order Contract
  - Letter Of Credit Application Contract
  - Letter Of Credit Contract
  - Bill Of Lading Contract

8 References

[1] https://www.investopedia.com/terms/l/letterofcredit.asp
[2] https://www.zeeve.io/blog/blockchain-reshaping-trade-finance
[3] https://www.linkedin.com/pulse/blockchain-enabled-letter-credit-hamzeh-alavirad/?articleId=6482936086313074688
[4] https://github.com/davidawad/LetterOfCreditBackup