**Letter of Credit using Corda**

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.[[4]](https://www.investopedia.com/terms/l/letterofcredit.asp)

It is predominately used in international trade because factors such as distance, differing laws in each country, and difficulty in knowing each party personally.

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.

Letter of Credit using Blockchain[[5]](https://www.zeeve.io/blog/blockchain-reshaping-trade-finance/):

* 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.
* Information stored on Blockchain can be reviewed and approved in real time, reducing overall time to complete the process.

Problems solved using R3 Corda[[6]](https://www.linkedin.com/pulse/blockchain-enabled-letter-credit-hamzeh-alavirad/?articleId=6482936086313074688) :

* Permissioned: All the parties present in the corda network are known to each other.
* Secure Peer-to-Peer Communication: Data is shared only between the two transacting parties and is encrypted using transport-layer security (TLS).
* Real-Time: Corda provides instant transaction finality unlike other blockchains.
* Validity and Uniqueness: Using Smart Contract and Notary.

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)

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>.[1]

Understanding the Demo:

* Presentation slides: Supporting trade finance with letters of credit on Corda.[[2]](https://www.slideshare.net/MarketingTeamr3/supporting-trade-finance-with-letters-of-credit-on-corda)
* Letter of Credit CorDapp demo reference video.[[3]](https://www.youtube.com/watch?v=La6xIDB4a8Q)

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

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

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

References:

1. https://github.com/davidawad/LetterOfCreditBackup
2. https://www.slideshare.net/MarketingTeamr3/supporting-trade-finance-with-letters-of-credit-on-corda
3. https://www.youtube.com/watch?v=La6xIDB4a8Q
4. https://www.investopedia.com/terms/l/letterofcredit.asp
5. https://www.zeeve.io/blog/blockchain-reshaping-trade-finance/
6. https://www.linkedin.com/pulse/blockchain-enabled-letter-credit-hamzeh-alavirad/?articleId=6482936086313074688