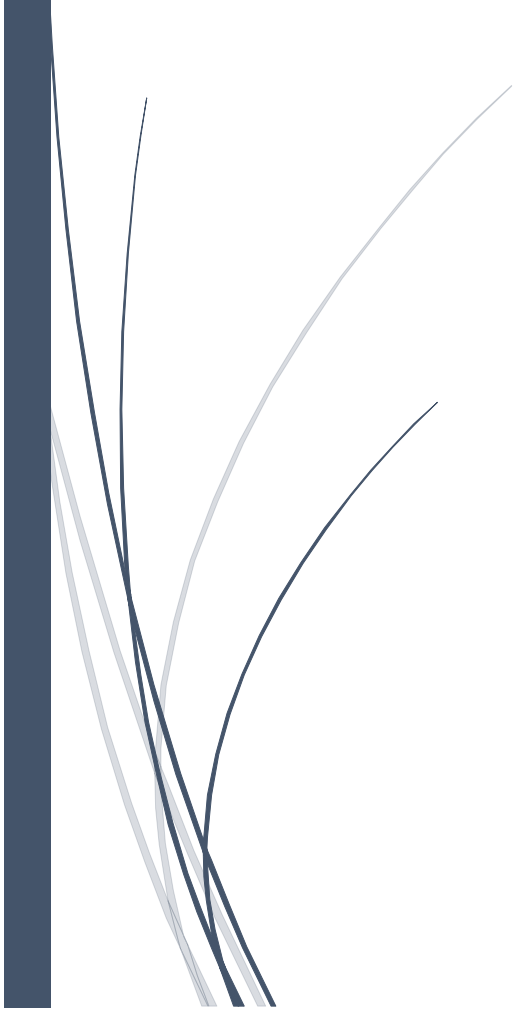
7/15/2023

UDPN PoC #2

User Manual for Implementing the “Travel Rule"



Version 1.0.0

PREPARED BY RED DATE TECHNOLOGY LIMITED

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Document Revisions

Date	Revision	Modifications	Modified by
Jul. 15, 2023	1.0.0	Document creation	Xu Miaomiao

1. Summary

The UDPN (Universal Digital Payment Network) is an inclusive digital infrastructure built to connect all payment-related regulated stablecoin and CDBC (Central Bank Digital Currency) systems as well as provide all businesses equal access to these currencies so that they can connect their business IT systems to UDPN and enjoys the accesses and functionality that UDPN offers.

UDPN is an infrastructure and not a single application. Applications are built on top of UDPN to provide specific functions. Digital currency transfers and swaps are the two most basic services on UDPN. The network’s true potential resides in allowing any Business Node operator to deploy or connect to any smart contracts on UDPN’s permissioned blockchain network to process various business transactions with any other Business Node operator and/or its end customers.

In PoC2, we will demonstrate how the “travel rule” can be easily implemented when two financial institutions use UDPN to facilitate the transfer or swap of digital currencies for their end customers (in UDPN terms, digital currency always means regulated stablecoin or CDBC), even when the digital currencies themselves are anonymous, as in the case of USDC.

The “travel rule” requires “obligations to obtain, hold, and transmit required originator and beneficiary information in order to identify and report suspicious transactions, monitor the availability of information, take freezing actions, and prohibit transactions with designated persons and entities.”

2. Home

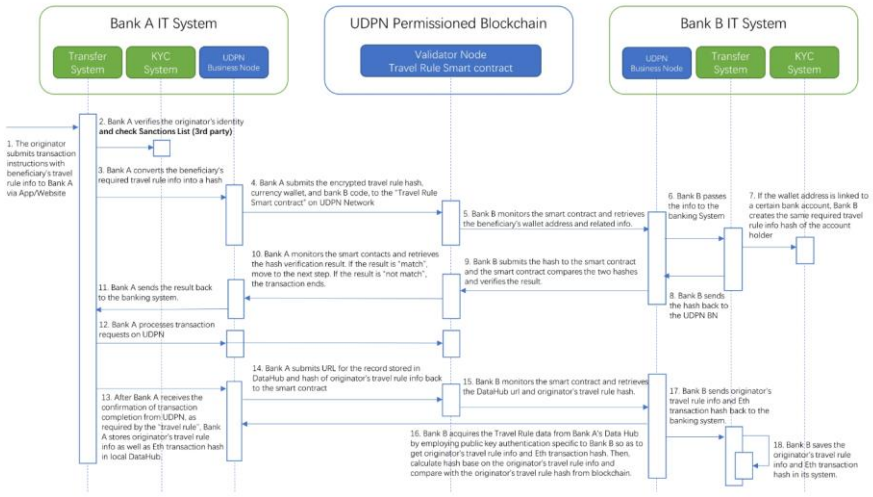
Users can view basic information about PoC2 and the transaction timing diagram below:

UDPN Use Case #2: Implementing the "Travel Rule"

The “Travel Rule” requires that two financial institutions involved in a digital currency transaction (KYC-based or anonymous) have “obligations to obtain, hold, and transmit required originator and beneficiary information in order to identify and report suspicious transactions, monitor the availability of information, take freezing actions". This use case demonstrates how two banks can exchange originator and beneficiary information during a linked anonymous stablecoin transfer or swap when the two parties belong to two different banks on the UDPN network.

The Travel Rule data exchange is fully encrypted and linked with the UDPN transfer or swap transaction. The use case’s smart contract can be deployed by a bank, by a third party, or by the UDPN Alliance as a universal service.

UDPN is an infrastructure and doesn’t provide specific business processes and procedures defined by smart contracts or applications unless the UDPN Alliance is the owner of the smart contracts. The following is the flow chart of the specific process and steps among Bank A’s system, Bank B’s system, and the “Travel Rule” smart contract.



3. Bank A

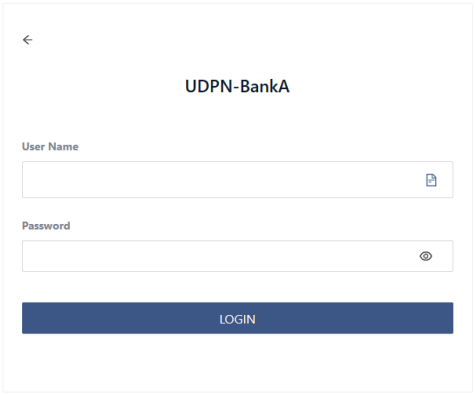
3.1 Client Application

This module is for end-users of Bank A and simulates the behavior of an end-user initiating a transfer transaction.

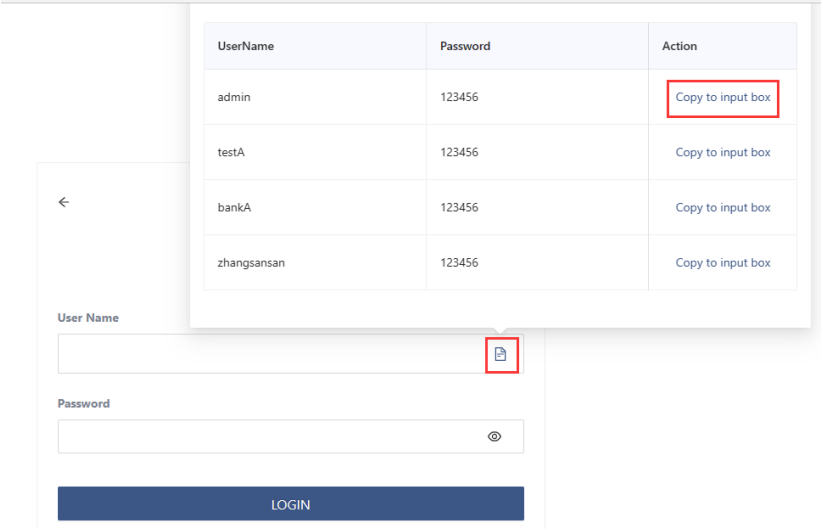
3.1.1 Link Digital Currency Account to UDPN DID

3.1.1.1 Login

When first time entering the “**Link Digital Currency Account to UDPN DID**” page, you need to enter the username and password to log in (the user information can be added in “**Bank A** -> **Admin Application** -> **User Management**” page, you can refer to section 3.2.1 User Management for details on how to achieve this).

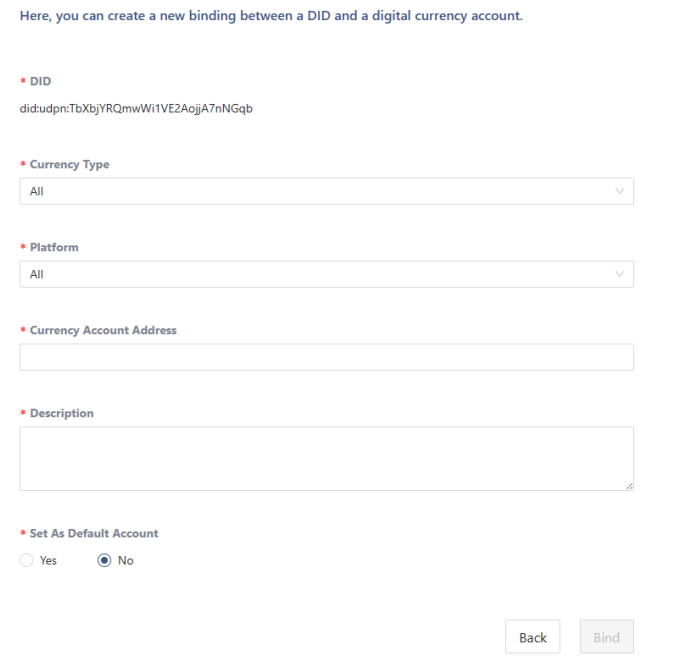


If you already have created users in the system, you can also click on the icon in the "Username" input box when login. Find the username and copy the information into the input box, and then click on the "Login" button.



3.1.1.2 Create a Binding

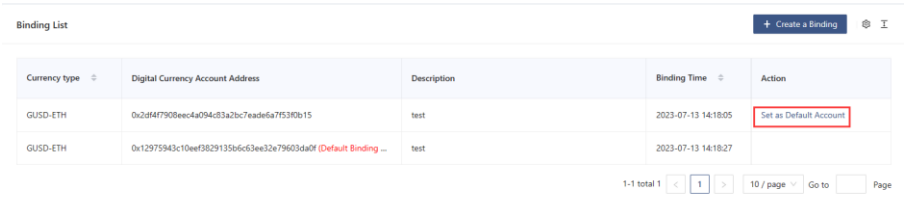
Before trading on the UDPN, your DID information must be bound to your digital currency wallet. Login to “**Link Digital Currency Account to UDPN DID**” page, your DID has been generated by default, click the "**Creating a Binding**" button to enter “**Create**” page:



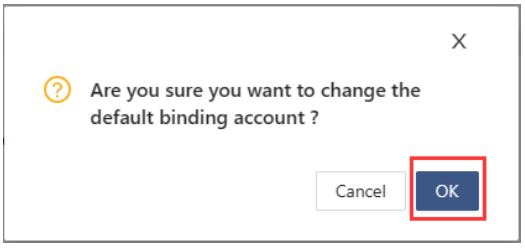
You can select “**Currency Type**” and “**Platform**”, enter the “**Digital Currency Wallet Address**” and the description of that currency, and set whether the entered wallet address as the default wallet. Then, click the "**Bind**" button to complete the binding operation. There can only be one default binding wallet under the same platform and currency type.

3.1.1.3 Set as Default Account

You can reset the default account in "**Link Digital Currency Account to UDPN DID**" page by clicking "**Set as Default Account**" in the Action column.

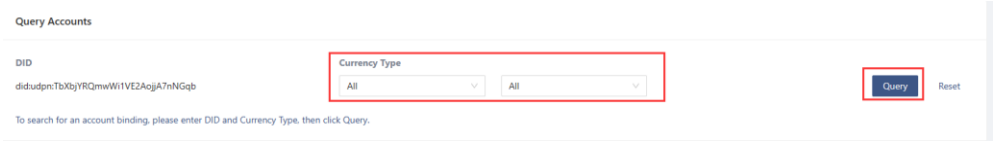


Click "**Confirm**" in the pop-up window to change the default binding wallet. There can only be one default binding wallet under the same platform and currency type.



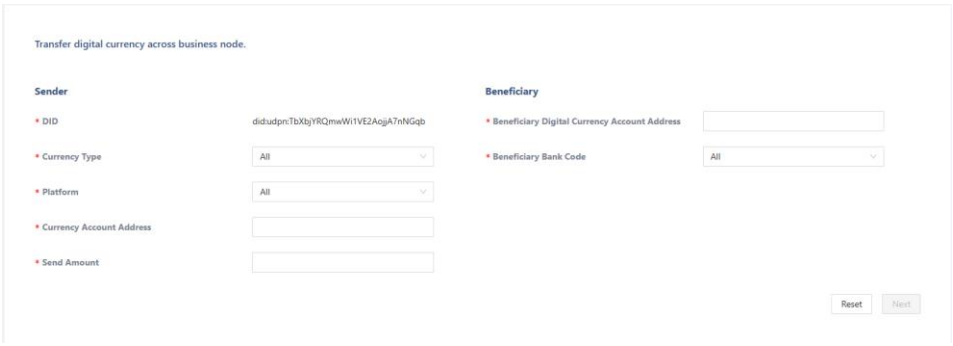
3.1.1.4 Query

You can query all wallet information bound to your DID by selecting different platforms and currencies.

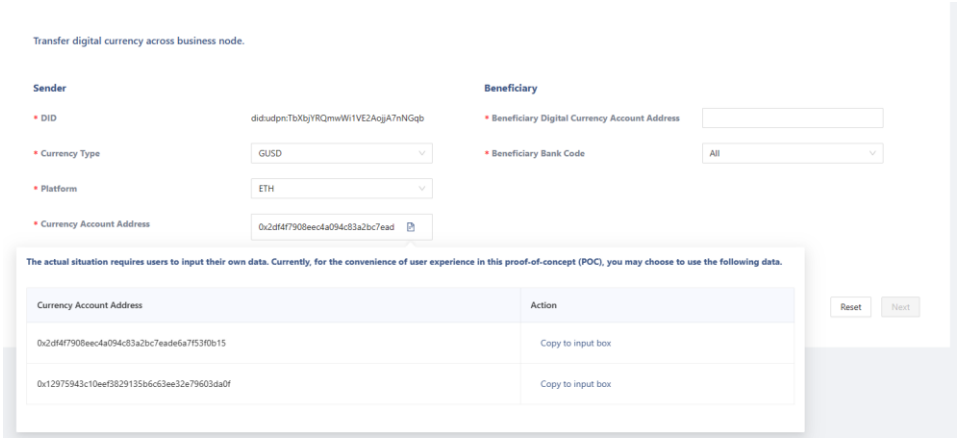


3.1.2 Transfer

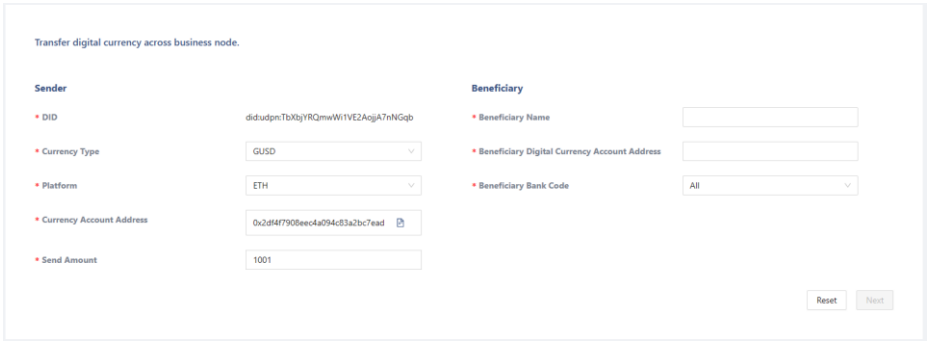
To transfer out digital currencies, you need to select the sender's “**Currency Type**”, “**Platform**”, enter the wallet address that holds digital currencies, and the amount you want to send; also, you need to enter the beneficiary's digital currency wallet address, and select the “**Beneficiary Bank Code**” to complete the transfer transaction.



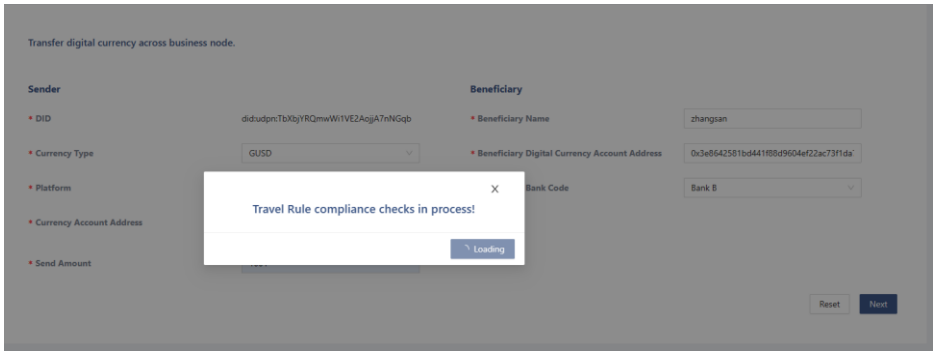
The wallet address you have input in the sender's digital currency wallet address must have sufficient balance to support the completion of the transfer transaction. In this case, instead of entering the wallet address manually, you can copy and paste the recorded wallet address into the input box after selecting the digital currency type and the platform.



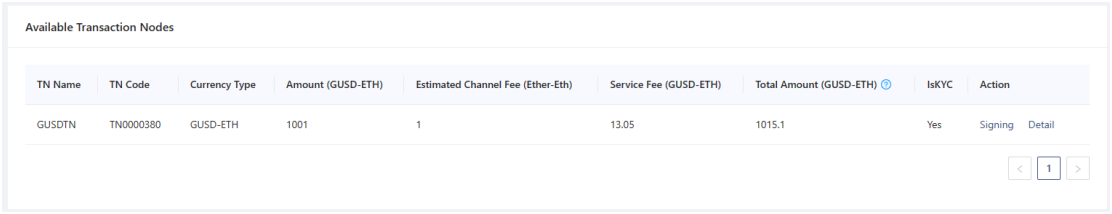
*Note: When the transfer amount is greater than or equal to 1,000 EUR/USD, the system will first verify the “Travel Rule” information before completing the transfer transaction. At this time, the “**Beneficiary Name**” is in need.*



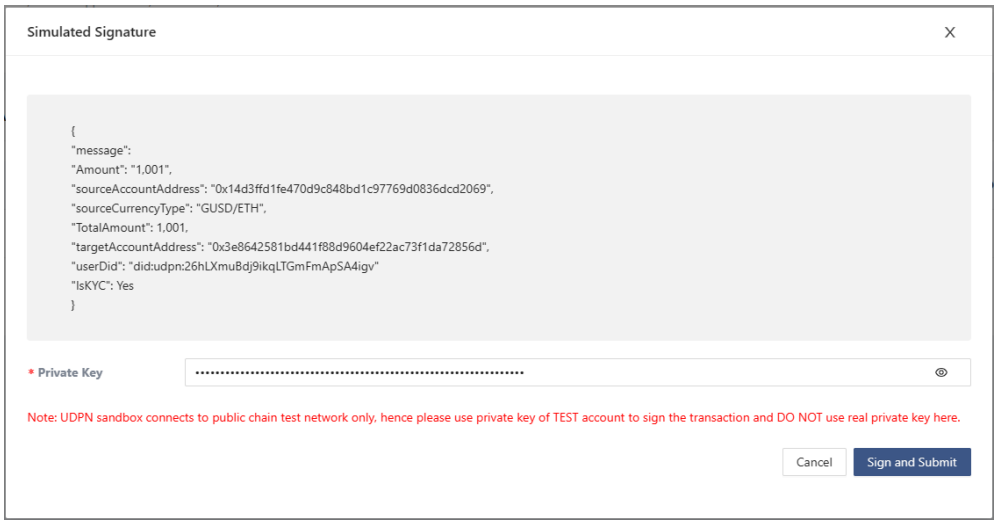
Input beneficiary’s name and wallet address and select the bank code. Click “**Next**” button and the system will verify the Travel Rule information.



After passing the verification (for transfers less than 1,000 EUR/USD, there is no need to verify the Travel Rule information), click on the "Confirm" button and you will be taken to the page where you can select a transaction node (TN) for the transfer transaction:

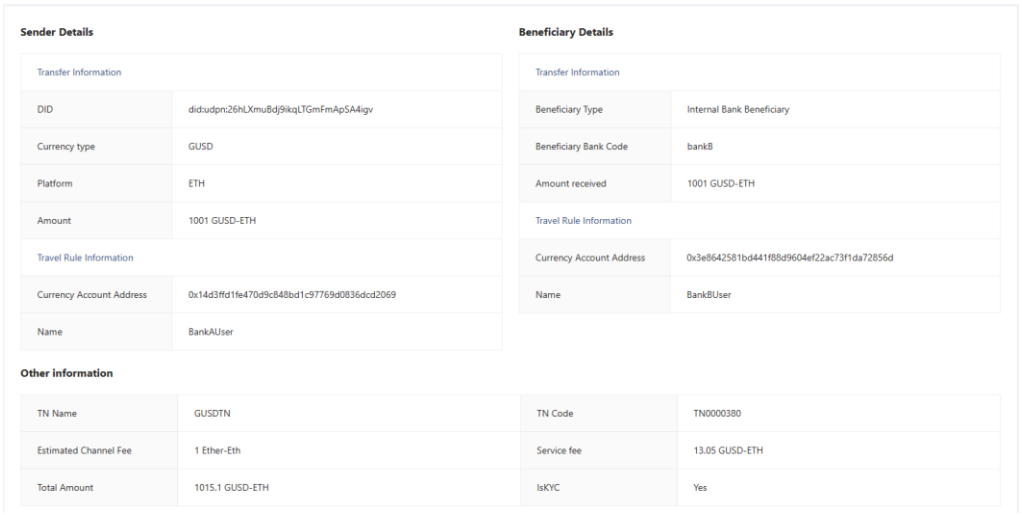


- Sign: When a transfer transaction is executed, it needs to be signed by the initiator first. Click the “**Sign**” button and the system will simulate the signing of the transaction by an end-user.



After inputting the private key string, click "**Sign and Submit**" button to submit the transaction. If the transaction is submitted successfully, you will get a transaction key and you can use it to check the execution status of that transaction in “**Admin Application**”-> “**Send Transaction History**” page.

- Detail: Before executing a transfer transaction, you can view the details of the TNs that may execute this transaction.



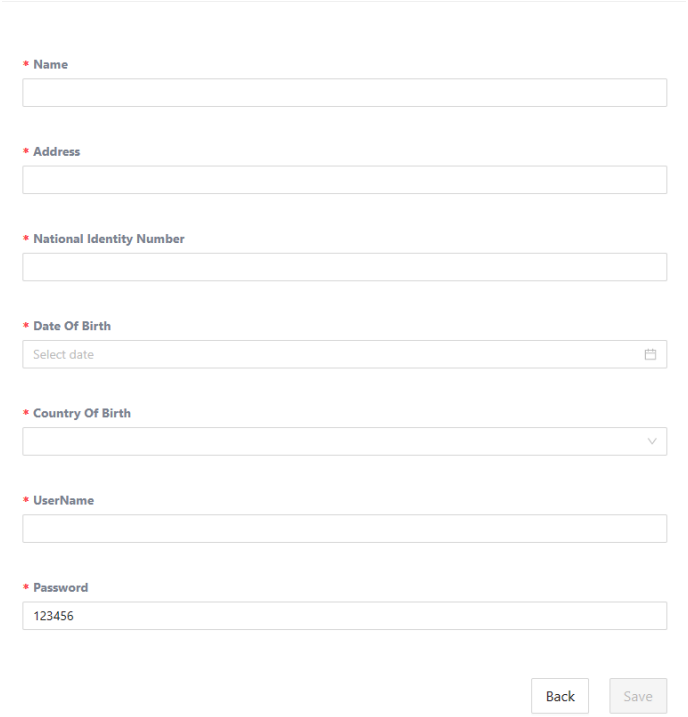
3.2 Admin Application

This module is mainly for bank staff, and it simulates the behavior of managing users and checking historical transactions.

3.2.1 User Management

3.2.1.1 Add a User

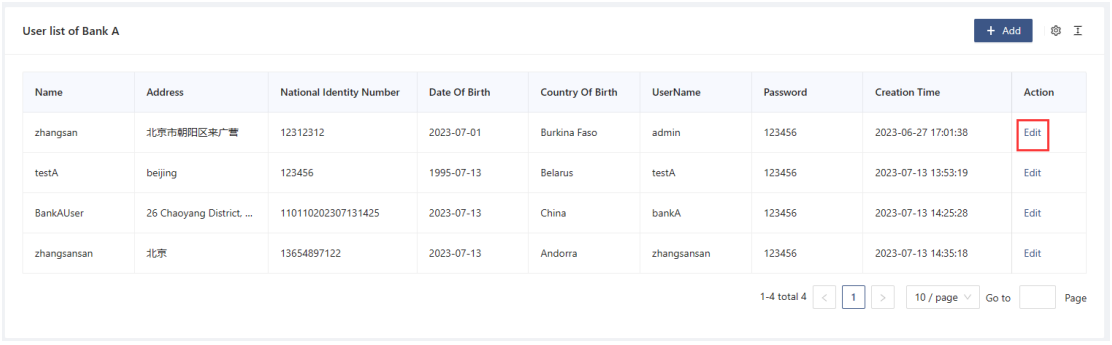
On the "User Management" page, click the "Add" button to add a new user.



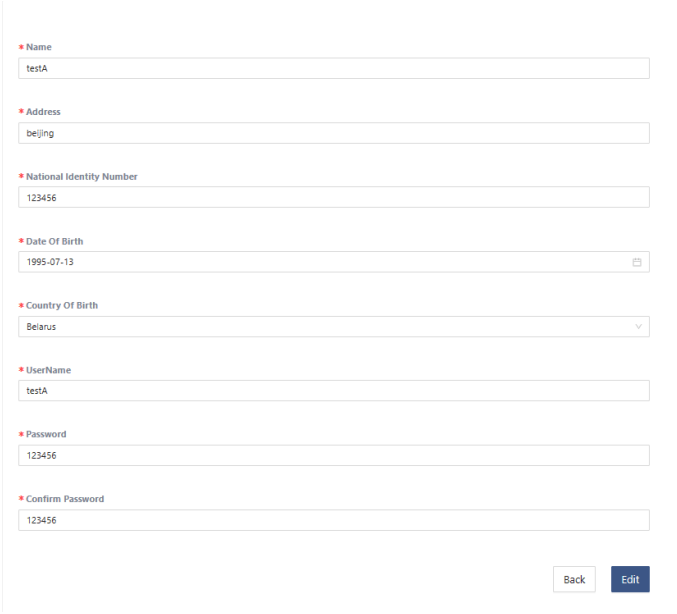
Input the name, address, national identity number, date of birth, country of birth, username and password, and then click the "**Save**" button to create a user.

3.2.1.2 Edit the User

In the list of users on the “**User Management**” page, click the "**Edit**" button in the Action column:



Enter the “**Edit**” page, edit the name, address, national identity number, date of birth, country of birth, username and password, and then click the "**Save**" button to update the user information.

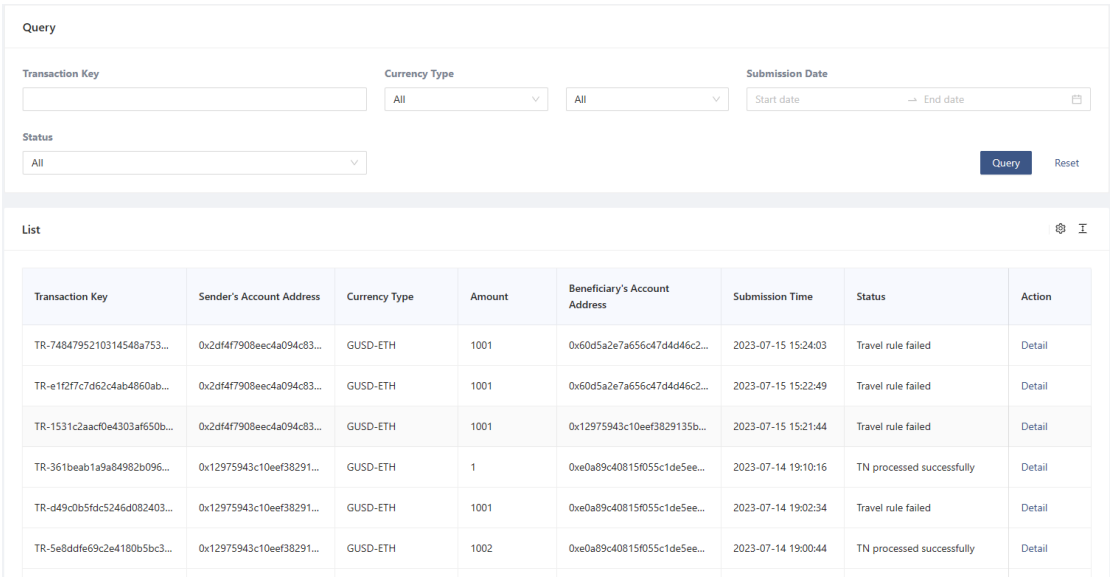


3.2.2 Sent Transaction History

Here you can check all the transfer transaction information initiated by the user of Bank A.

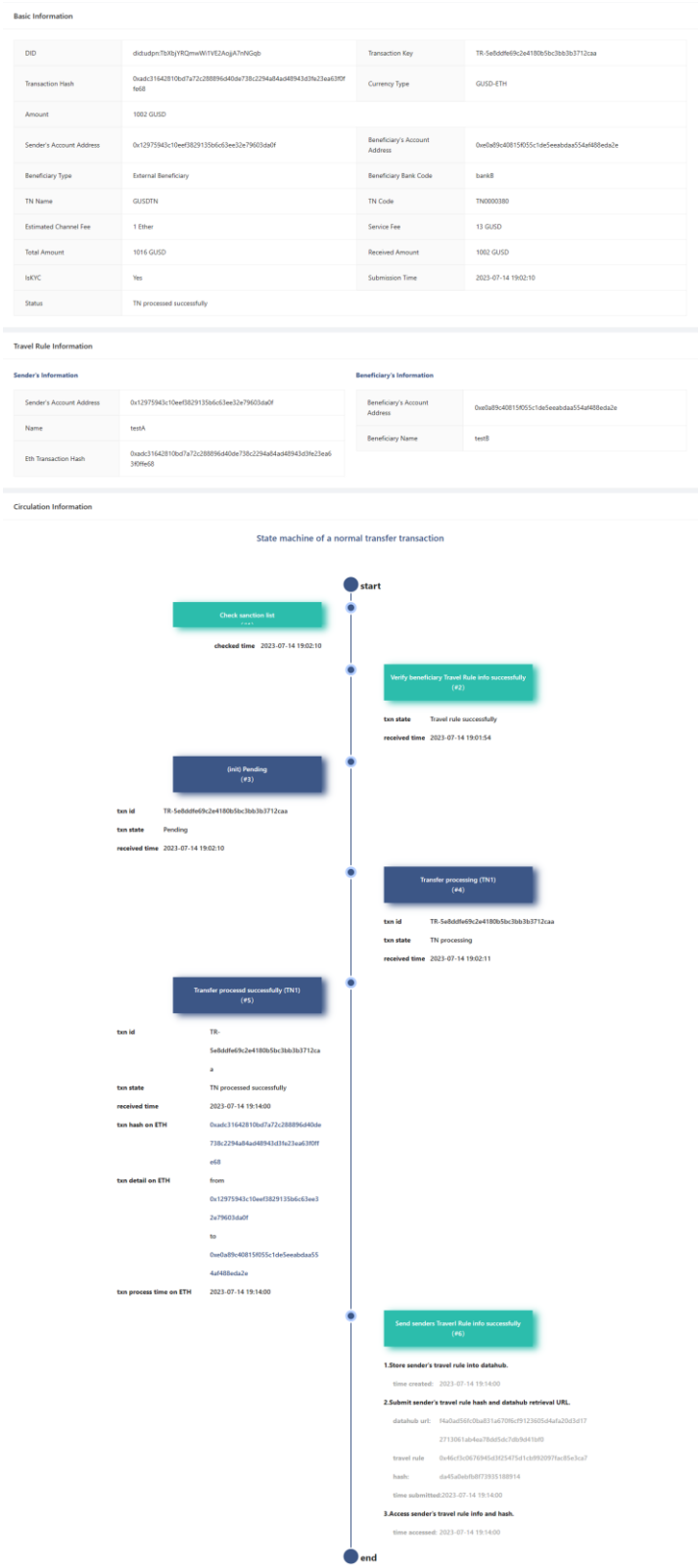
3.2.2.1 Query

You can enter the transaction key, select the currency type, submission date and status, etc., and click the "**Query**" button to query the transaction information.



3.2.2.2 Detail

On the “**Sent Transaction History**” page, click the "**Detail**" button in the Action column to view the transaction details.



Basic Information

DID	didiudpn:TbXbjYRQmwWi1VE2AojA7nNGqb	Transaction Key	TR-5e8ddfe69c2e4180b5bc3bb3b3712caa
Transaction Hash	0xadc31642810bd7a72c288896d40de738c2294a84ad48943d3fe23ea63f0ffe68	Currency Type	GUSD-ETH
Amount	1002 GUSD		
Sender's Account Address	0x12975943c10eef3829135b6c63ee32e79603da0f	Beneficiary's Account Address	0xe0a89c40815f055c1de5eeabdaa554af488eda2e
Beneficiary Type	External Beneficiary	Beneficiary Bank Code	bankB
TN Name	GUSDTN	TN Code	TN0000380
Estimated Channel Fee	1 Ether	Service Fee	13 GUSD
Total Amount	1016 GUSD	Received Amount	1002 GUSD
IsKYC	Yes	Submission Time	2023-07-14 19:02:10
Status	TN processed successfully		

Travel Rule Information

Sender's Information

Sender's Account Address	0x12975943c10eef3829135b6c63ee32e79603da0f
Name	testA
Eth Transaction Hash	0xadc31642810bd7a72c288896d40de738c2294a84ad48943d3fe23ea63f0ffe68

Beneficiary's Information

Beneficiary's Account Address	0xe0a89c40815f055c1de5eeabdaa554af488eda2e
Beneficiary Name	testB

Circulation Information

State machine of a normal transfer transaction

start

Check sanction list

checked time 2023-07-14 19:02:10

Verify beneficiary Travel Rule info successfully (#2)

txn state Travel rule successfully

received time 2023-07-14 19:01:54

(init) Pending (#3)

txn id TR-5e8ddfe69c2e4180b5bc3bb3b3712caa

txn state Pending

received time 2023-07-14 19:02:10

Transfer processing (TN1) (#4)

txn id TR-5e8ddfe69c2e4180b5bc3bb3b3712caa

txn state TN processing

received time 2023-07-14 19:02:11

Transfer processd successfully (TN1) (#5)

txn id TR-5e8ddfe69c2e4180b5bc3bb3b3712caa

txn state TN processed successfully

received time 2023-07-14 19:14:00

txn hash on ETH 0xadc31642810bd7a72c288896d40de738c2294a84ad48943d3fe23ea63f0ffe68

txn detail on ETH from 0x12975943c10eef3829135b6c63ee32e79603da0f to 0xe0a89c40815f055c1de5eeabdaa554af488eda2e

txn process time on ETH 2023-07-14 19:14:00

Send senders Travel Rule info successfully (#6)

1.Store sender's travel rule into datahub.

time created: 2023-07-14 19:14:00

2.Submit sender's travel rule hash and datahub retrieval URL.

datahub url: f4a0ad5fcf0ba831a670f6cf9123605d4afa20d3d172713061ab4ea78dd5dc7db9d410bf0

travel rule hash: 0x46cf3c0676945d3f25475d1cbf892097facd5e3ca7da45a0ebfbdff739351889f4

time submitted: 2023-07-14 19:14:00

3.Access sender's travel rule info and hash.

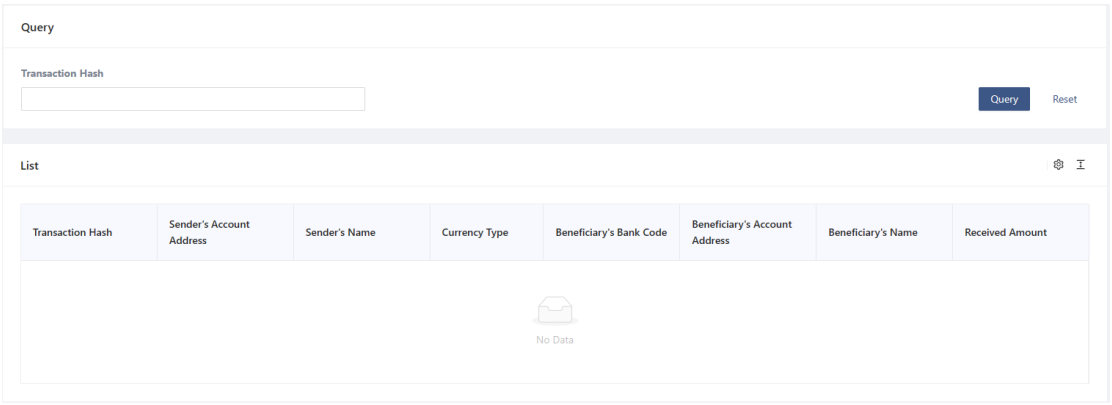
time accessed: 2023-07-14 19:14:00

end

3.2.3 Received Transaction History

Here you can query all transaction information when the user of Bank A is the beneficiary of the transfer transaction.

Input the transaction hash and click the "**Query**" button to query the transaction information.



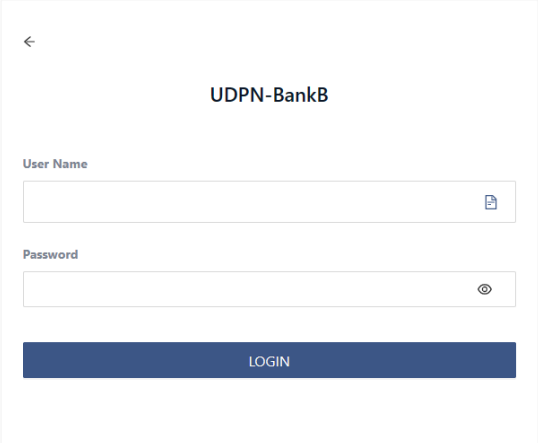
4. Bank B

4.1 Client Application

4.1.1 Link Digital Currency Account to UDPN DID

4.1.1.1 Login

When first time entering the “**Link Digital Currency Account to UDPN DID**” page, you need to enter the username and password to log in (the user information can be added in “**Bank B** -> **Admin Application** -> **User Management**” page, you can refer to section 4.2.1 User Management for details on how to achieve this).



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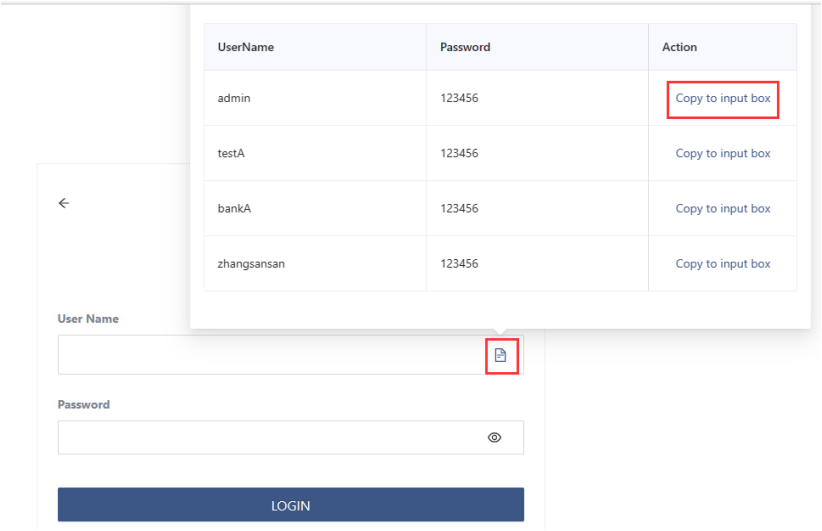

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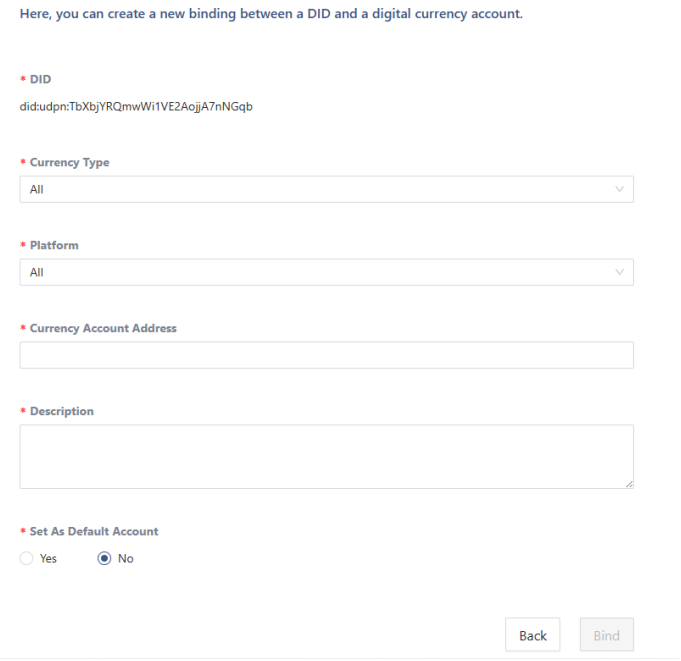

You can select “**Currency Type**” and “**Platform**”, enter the “**Digital Currency Wallet Address**” and the description of that currency, and set whether the entered wallet address as the default wallet. Then, click the "**Bind**" button to complete the binding operation. There can only be one default binding wallet under the same platform and currency type.

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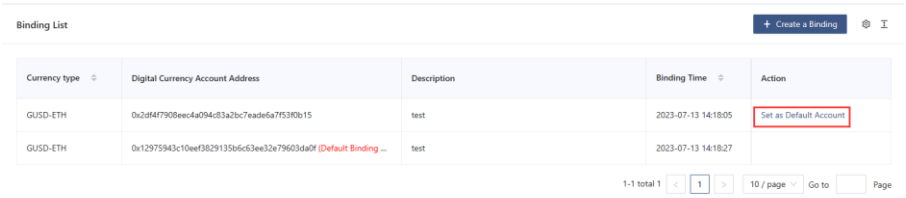

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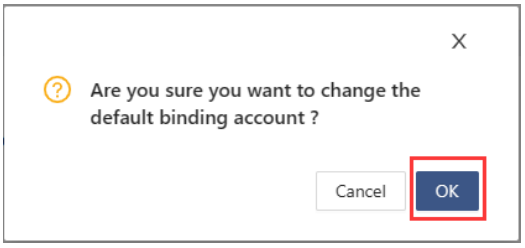

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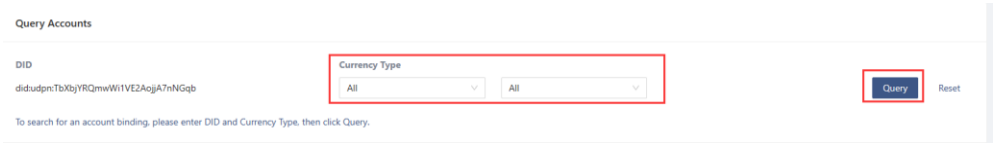

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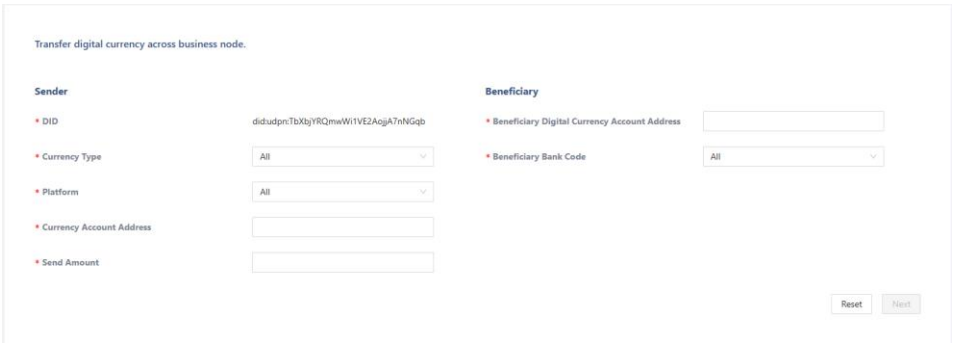
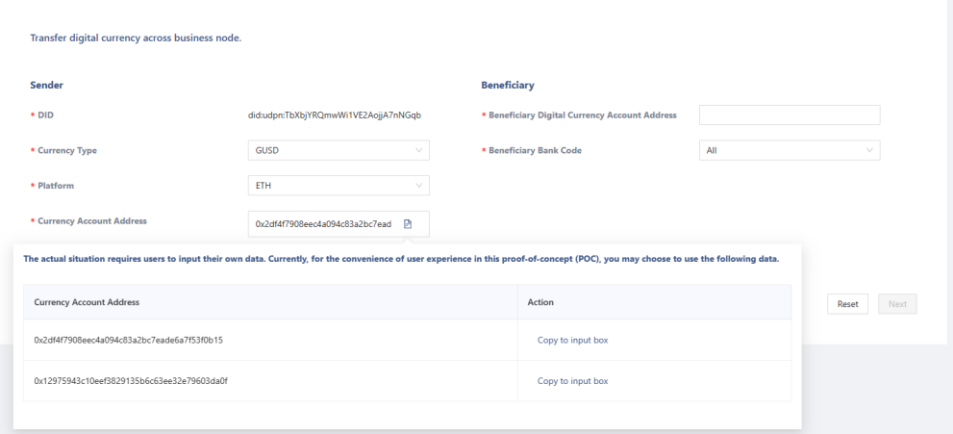
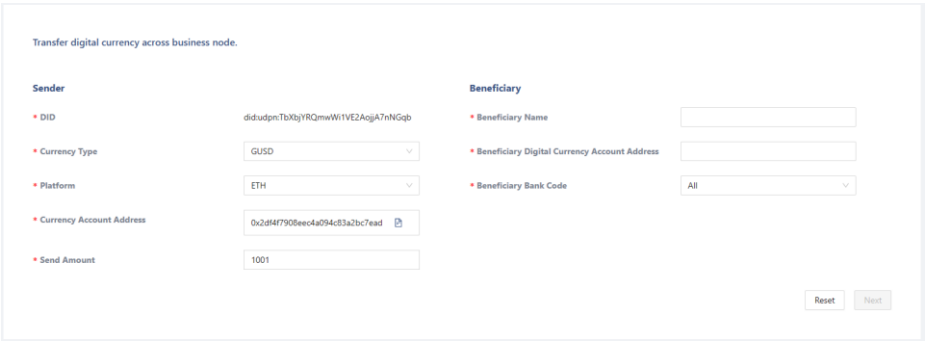


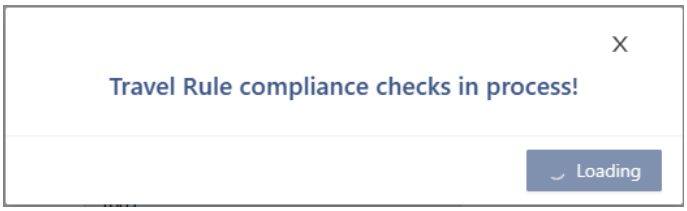
The wallet address you have input in the sender's digital currency wallet address must have sufficient balance to support the completion of the transfer transaction. In this case, instead of entering the wallet address manually, you can copy and paste the recorded wallet address into the input box after selecting the digital currency type and the platform.



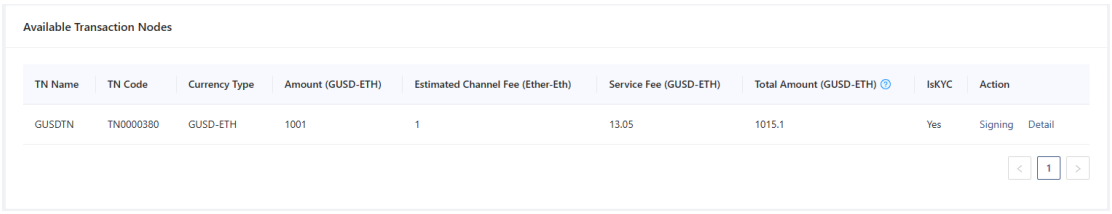
*Note: When the transfer amount is greater than or equal to 1,000 EUR/USD, the system will first verify the “Travel Rule” information before completing the transfer transaction. At this time, the “**Beneficiary Name**” is in need.*



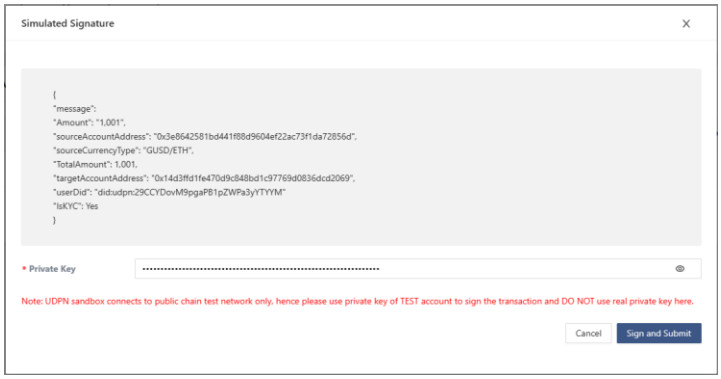
Input beneficiary’s name and wallet address and select the bank code. Click “**Next**” button and the system will verify the Travel Rule information.



After passing the verification (for transfers less than 1,000 EUR/USD, there is no need to verify the Travel Rule information), click on the "Confirm" button and you will be taken to the page where you can select a transaction node (TN) for the transfer transaction:

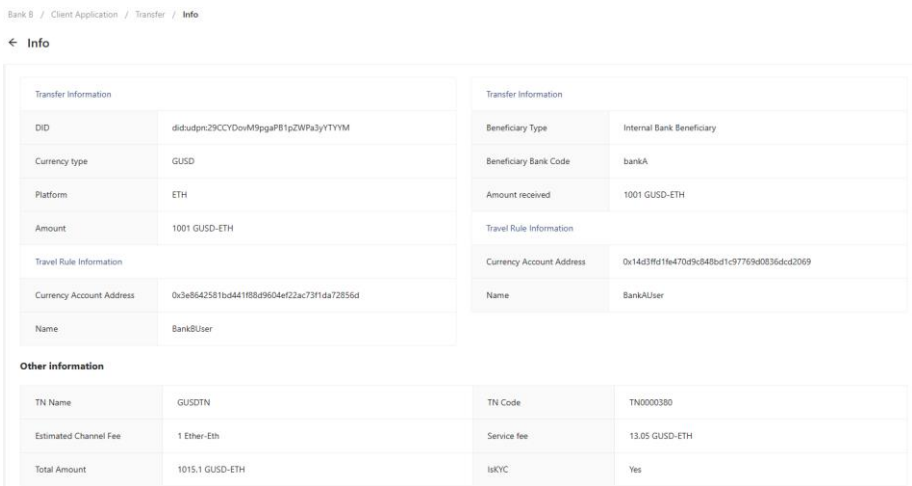


- Sign: When a transfer transaction is executed, it needs to be signed by the initiator first. Click the “**Sign**” button and the system will simulate the signing of the transaction by an end-user.



After inputting the private key string, click "**Sign and Submit**" button to submit the transaction. If the transaction is submitted successfully, you will get a transaction key and you can use it to check the execution status of that transaction in “**Admin Application**”-> “**Send Transaction History**” page.

- Detail: Before executing a transfer transaction, you can view the details of the TNs that may execute this transaction.



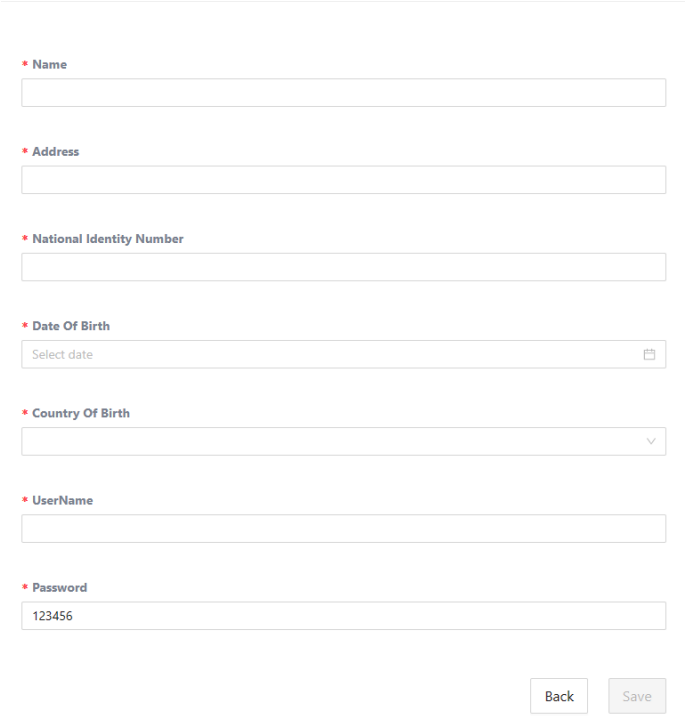
4.2 Admin Application

This module is mainly for bank staff, and it simulates the behavior of managing users and checking historical transactions.

4.2.1 User Management

4.2.1.1 Add a User

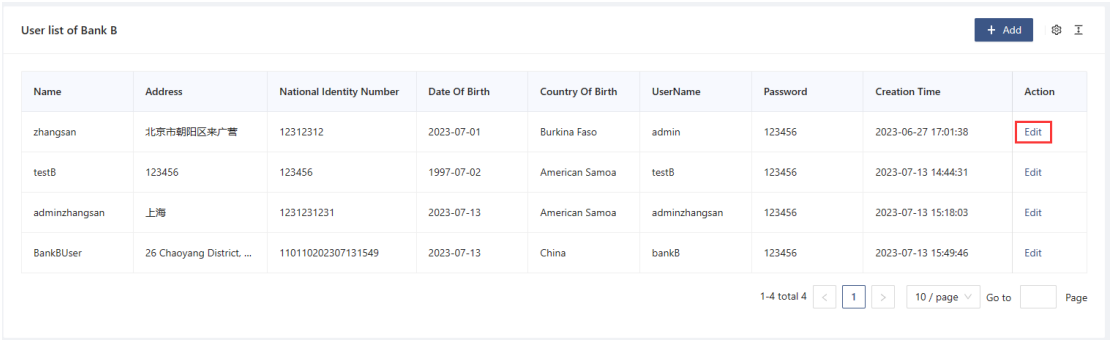
On the "User Management" page, click the "Add" button to add a new user.



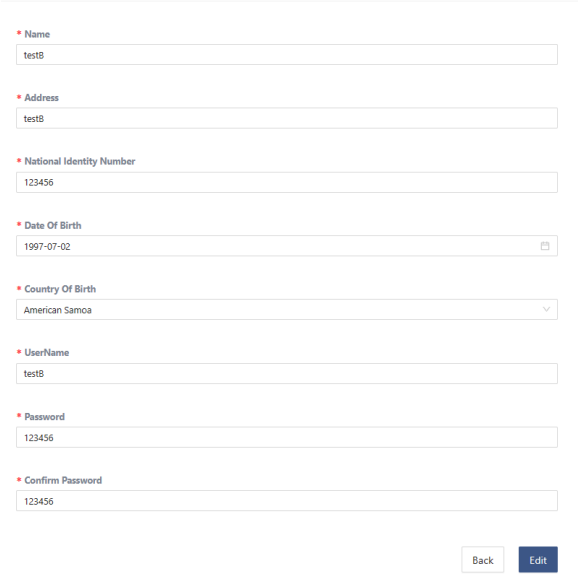
Input the name, address, national identity number, date of birth, country of birth, username and password, and then click the "**Save**" button to create a user.

4.2.1.2 Edit the User

In the list of users on the “**User Management**” page, click the "**Edit**" button in the Action column:



Enter the “**Edit**” page, edit the name, address, national identity number, date of birth, country of birth, username and password, and then click the "**Save**" button to update the user information.

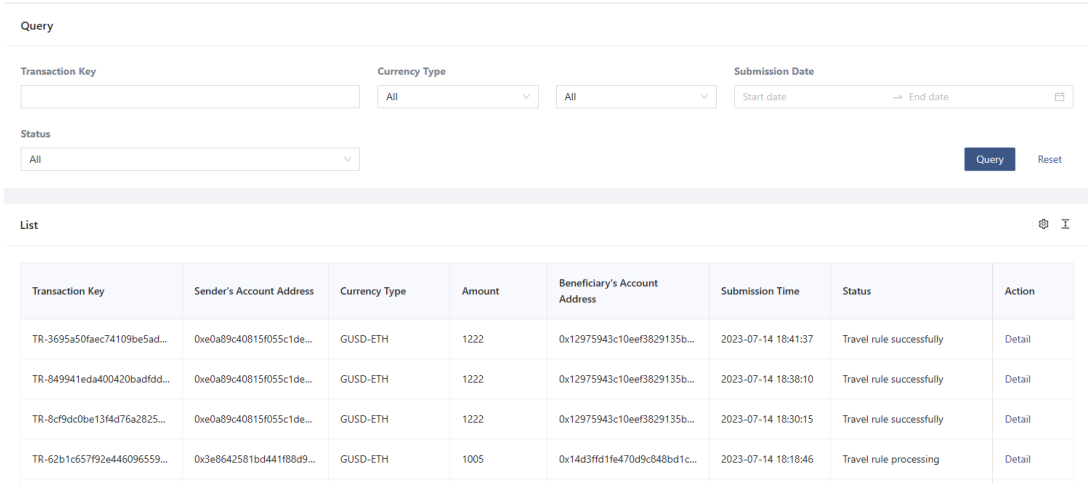


4.2.2 Sent Transaction History

Here you can check all the transfer transaction information initiated by the user of Bank B.

4.2.2.1 Query

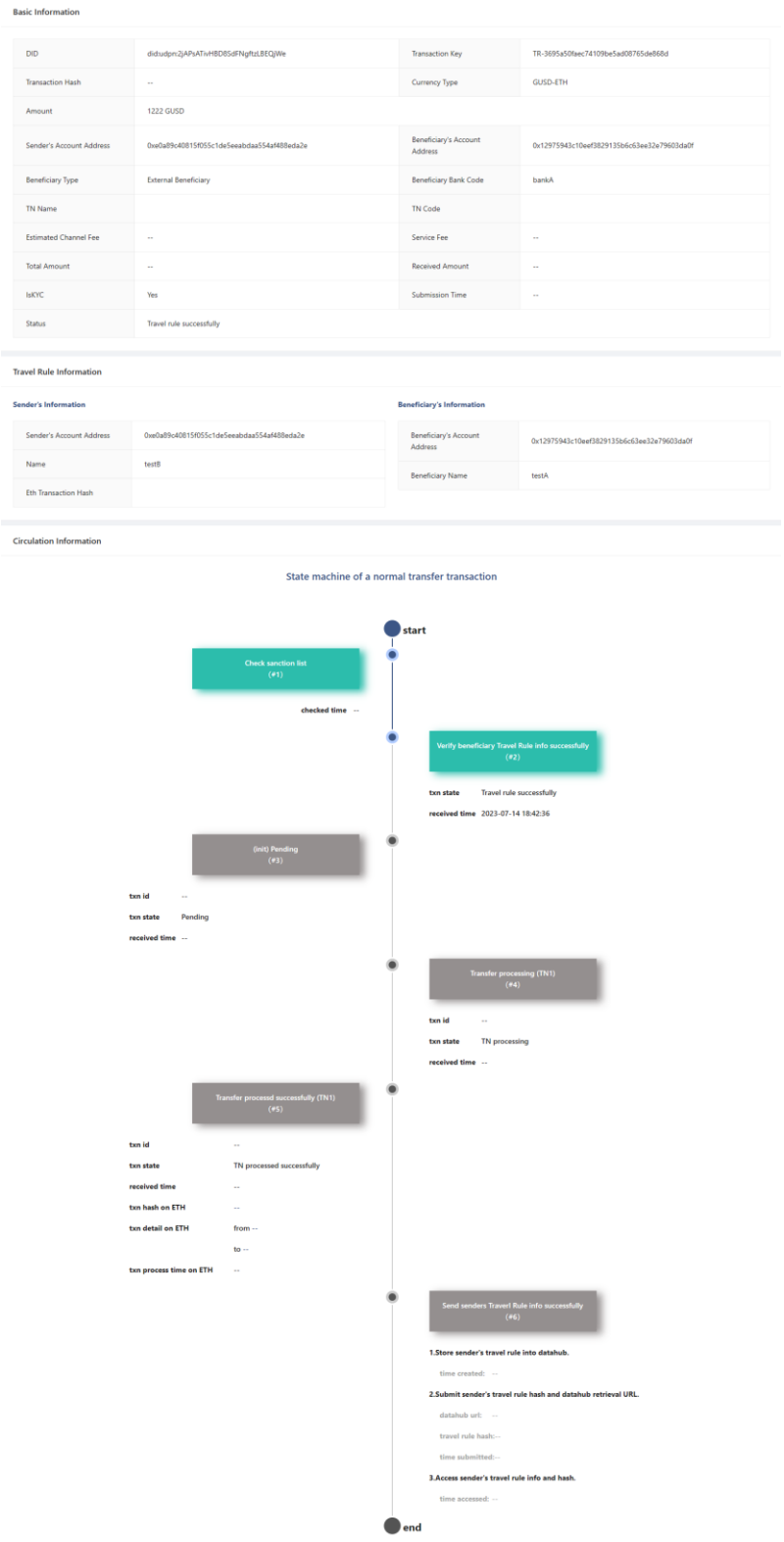
You can enter the transaction key, select the currency type, submission date and status, etc., and click the "**Query**" button to query the transaction information.



Transaction Key	Sender's Account Address	Currency Type	Amount	Beneficiary's Account Address	Submission Time	Status	Action
TR-3695a50faec74109be5ad...	0xe0a89c40815f055c1de...	GUSD-ETH	1222	0x12975943c10eef3829135b...	2023-07-14 18:41:37	Travel rule successfully	Detail
TR-849941eda400420badfdd...	0xe0a89c40815f055c1de...	GUSD-ETH	1222	0x12975943c10eef3829135b...	2023-07-14 18:38:10	Travel rule successfully	Detail
TR-8cf9dc0be13f4d76a2825...	0xe0a89c40815f055c1de...	GUSD-ETH	1222	0x12975943c10eef3829135b...	2023-07-14 18:30:15	Travel rule successfully	Detail
TR-62b1c657f92e446096559...	0x3e8642581bd441f88d9...	GUSD-ETH	1005	0x14d3ffd1fe470d9c848bd1c...	2023-07-14 18:18:46	Travel rule processing	Detail

4.2.2.2 Detail

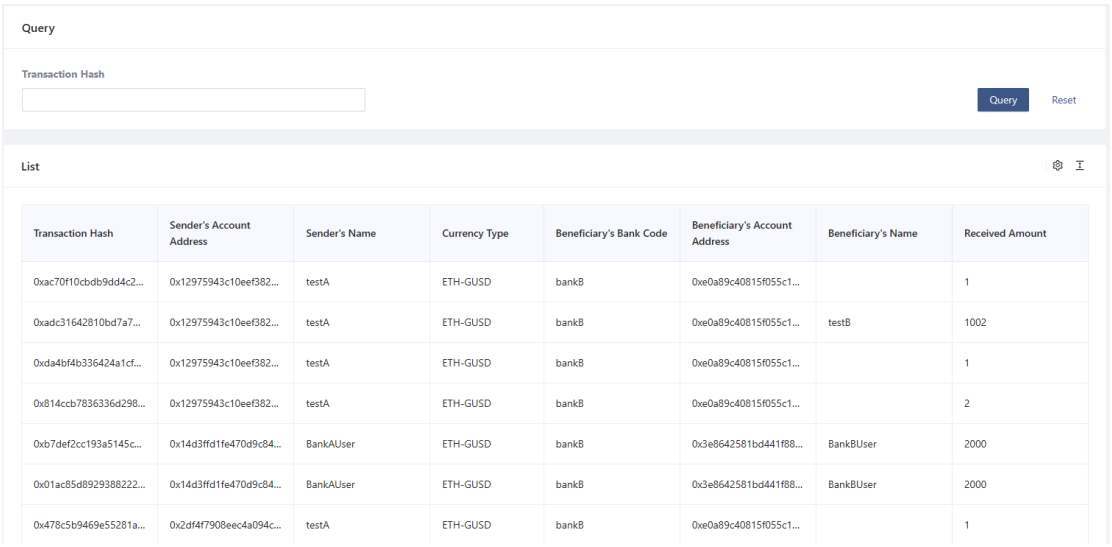
On the “**Sent Transaction History**” page, click the "**Detail**" button in the Action column to view the transaction details.


Basic Information
DID
didudpn:2jAPkATnHBD8SdFNgftzLBEQjWe
Transaction Key
TR-3695a50faec74109be5ad08765de868d
Transaction Hash
--
Currency Type
GUSD-ETH
Amount
1222 GUSD
Sender's Account Address
0xe0a89c40815f055c1de5eeabdaa554af488eda2e
Beneficiary's Account Address
0x12975943c10eef3829135b6c63ee32e79603da0f
Beneficiary Type
External Beneficiary
Beneficiary Bank Code
bankA
TN Name
TN Code
Estimated Channel Fee
--
Service Fee
--
Total Amount
--
Received Amount
--
IsKYC
Yes
Submission Time
--
Status
Travel rule successfully
Travel Rule Information
Sender's Information
Sender's Account Address
0xe0a89c40815f055c1de5eeabdaa554af488eda2e
Name
testB
Eth Transaction Hash
Beneficiary's Information
Beneficiary's Account Address
0x12975943c10eef3829135b6c63ee32e79603da0f
Beneficiary Name
testA
Circulation Information
State machine of a normal transfer transaction
start
Check sanction list
(#1)
checked time --
Verify beneficiary Travel Rule info successfully
(#2)
txn state Travel rule successfully
received time 2023-07-14 18:42:36
(init) Pending
(#3)
txn id --
txn state Pending
received time --
Transfer processing (TN1)
(#4)
txn id --
txn state TN processing
received time --
Transfer proceed successfully (TN1)
(#5)
txn id --
txn state TN processed successfully
received time --
txn hash on ETH --
txn detail on ETH from --
to --
txn process time on ETH --
Send senders Travel Rule info successfully
(#6)
1.Store sender's travel rule into datahub.
time created: --
2.Submit sender's travel rule hash and datahub retrieval URL.
datahub url: --
travel rule hash:--
time submitted:--
3.Access sender's travel rule info and hash.
time accessed: --
end

4.2.3 Received Transaction History

Here you can query all transaction information when the user of Bank B is the beneficiary of the transfer transaction.

Input the transaction hash and click the "**Query**" button to query the transaction information.



Transaction Hash	Sender's Account Address	Sender's Name	Currency Type	Beneficiary's Bank Code	Beneficiary's Account Address	Beneficiary's Name	Received Amount
0xac70f10cbdb9dd4c2...	0x12975943c10eef382...	testA	ETH-GUSD	bankB	0xe0a89c40815f055c1...		1
0xadc31642810bd7a7...	0x12975943c10eef382...	testA	ETH-GUSD	bankB	0xe0a89c40815f055c1...	testB	1002
0xda4bf4b336424a1cf...	0x12975943c10eef382...	testA	ETH-GUSD	bankB	0xe0a89c40815f055c1...		1
0x814ccb7836336d298...	0x12975943c10eef382...	testA	ETH-GUSD	bankB	0xe0a89c40815f055c1...		2
0xb7def2cc193a5145c...	0x14d3ffd1fe470d9c84...	BankAUser	ETH-GUSD	bankB	0x3e8642581bd441f88...	BankBUser	2000
0x01ac85d8929388222...	0x14d3ffd1fe470d9c84...	BankAUser	ETH-GUSD	bankB	0x3e8642581bd441f88...	BankBUser	2000
0x478c5b9469e55281a...	0x2df4f7908eec4a094c...	testA	ETH-GUSD	bankB	0xe0a89c40815f055c1...		1

5. Validator Node

The Validator Nodes are at the heart of the UDPN. Any transaction on the UDPN will be validated by a cluster of Validator Nodes which are connected with all the other stakeholders via a secure and encrypted connection. The Validator Nodes store the full set of transaction data on the UDPN.

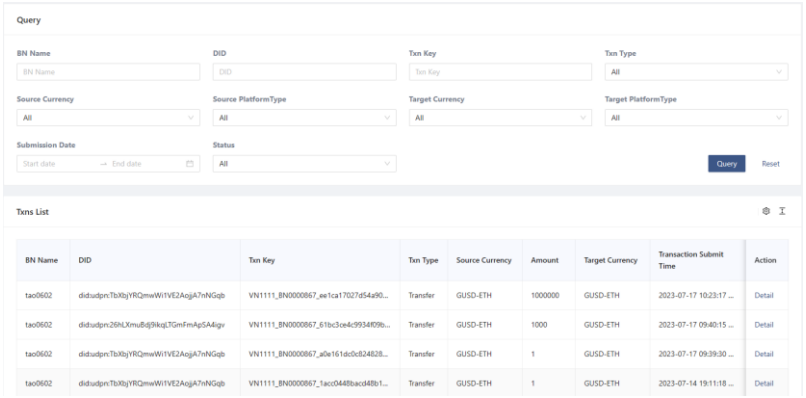
Each transaction submitted from the Business Nodes will be randomly assigned to certain Validator Nodes to validate. All transactions are validated and written to the peer of Validator Node which reads, endorses, and writes transactions to the distributed ledger Blockchain ledger. The Validator Nodes are connected to the Business and Transaction Nodes through secure APIs.

The validator nodes module in the PoC2 shows the transactions submitted by all business nodes.

5.1 Transaction History

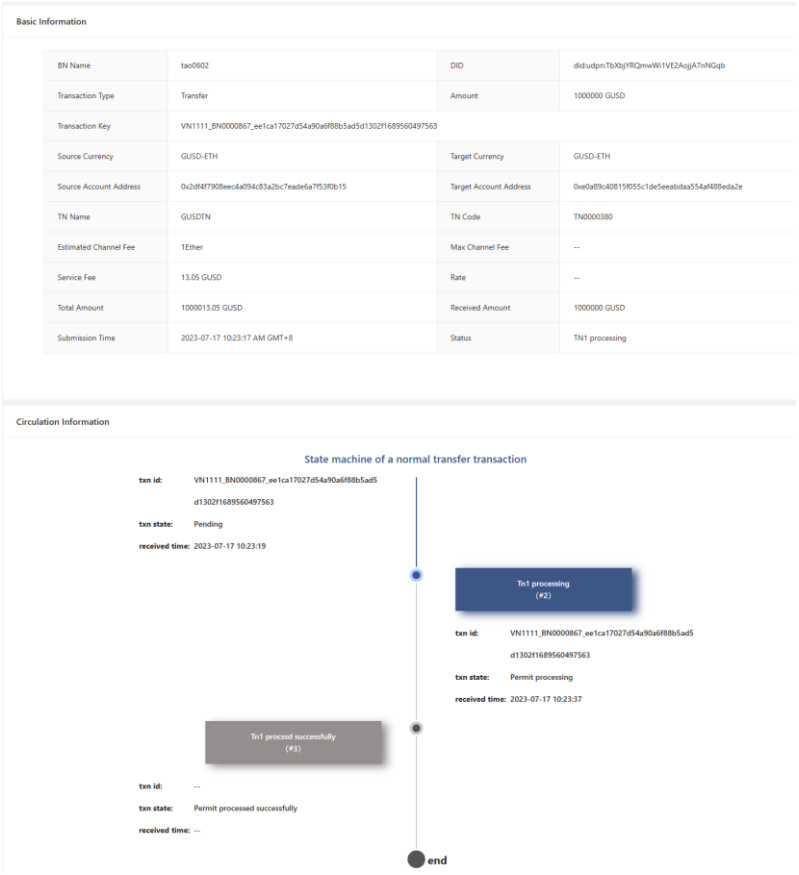
5.1.1 Query Transactions

Users can query the transaction by entering BN name, DID and transaction key, or selecting transaction type, source currency, target currency, submit date and status.



5.1.2 Transaction Details

This page is used to display detailed information about the transaction, including basic information and circulation information.


Basic Information
BN Name
tao0602
DID
didiudpn:TbXbjYRQmwWi1VE2AojjA7nNGqb
Transaction Type
Transfer
Amount
1000000 GUSD
Transaction Key
VN1111_BN0000867_ee1ca17027d54a90a6f88b5ad5d1302f1689560497563
Source Currency
GUSD-ETH
Target Currency
GUSD-ETH
Source Account Address
0x2df4f7908eec4a094c83a2bc7eade6a7f53f0b15
Target Account Address
0xe0a89c40815f055c1de5eeabdaa554af488eda2e
TN Name
GUSDTN
TN Code
TN0000380
Estimated Channel Fee
1Ether
Max Channel Fee
--
Service Fee
13.05 GUSD
Rate
--
Total Amount
1000013.05 GUSD
Received Amount
1000000 GUSD
Submission Time
2023-07-17 10:23:17 AM GMT+8
Status
TN1 processing
Circulation Information
State machine of a normal transfer transaction
txn id:
VN1111_BN0000867_ee1ca17027d54a90a6f88b5ad5
d1302f1689560497563
txn state:
Pending
received time:
2023-07-17 10:23:19
Tn1 processing
(#2)
txn id:
VN1111_BN0000867_ee1ca17027d54a90a6f88b5ad5
d1302f1689560497563
txn state:
Permit processing
received time:
2023-07-17 10:23:37
Tn1 procssd successfully
(#3)
txn id:
--
txn state:
Permit processed successfully
received time:
--
end