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| MB ReWrite: High Level Design Document |
| EPIC 3- Fund Transfer |
|  |

# Version history

# Revision History

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Reviewer** | **Approver** | **Comments** |
| **0.1** | 16 June 2022 | Ovais | Chandramouli | Prasad Hebbar | Draft Version |

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# Introduction

## Scope of the document

This document outlines the high-level functional design of funds transfer i.e. beneficiary registration and TPT functionality. It highlights/refers the high-level flows / Use cases in registration process, design of components, along with the rationale for the same. It serves as an input to the low-level design documents that would further elaborate on the application design.

## Intended Audience

* + - *Backend Development Team*
    - *Architecture Team*
    - *Quality Team*

## System overview

The Funds Transfer system provides backend APIs for beneficiary management and for TPT functionality including IMPS, NEFT, RTGS and IFT. The system also integrates with Admin module, SOA, OBP and provides a wrapper for these integrations.

The system will be developed using Golang, Kafka, Aerospike and will leverage the GCP cloud service for hosting and deployment.

# System Design

## Application Design

### Process Flow

#### Fund Transfer

Graphical user interface, application

Description automatically generated

Fund Transfer process details

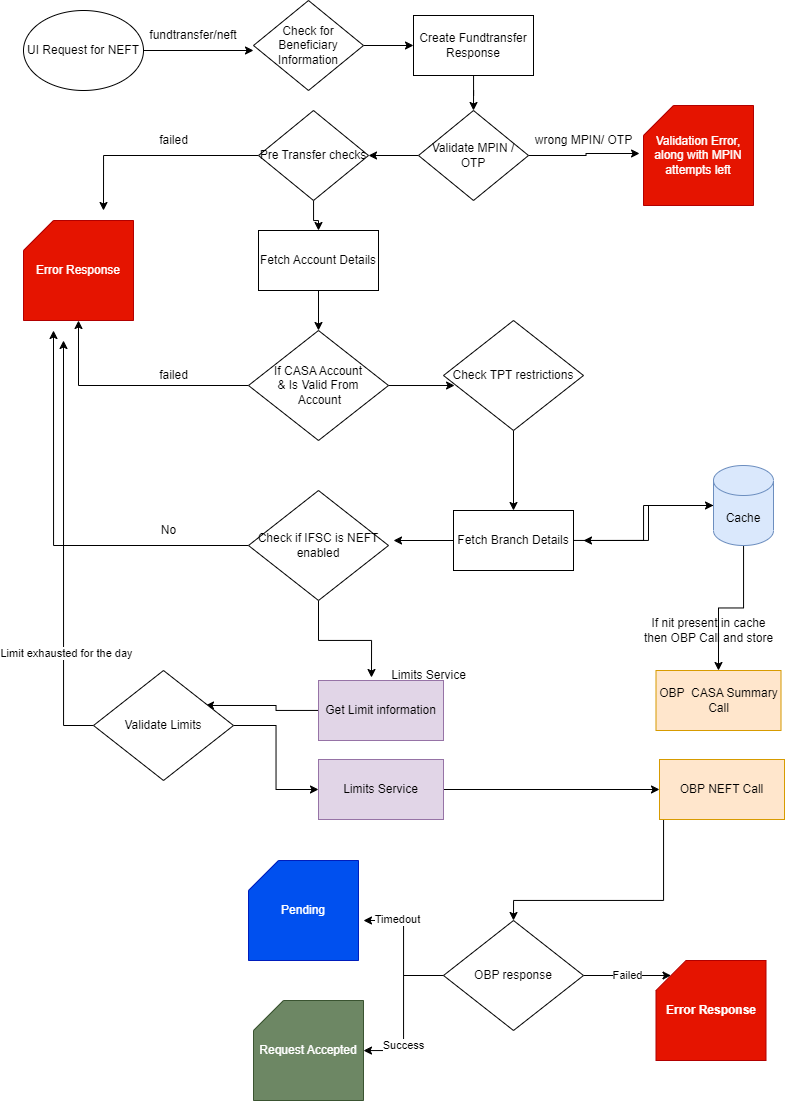
|  |  |
| --- | --- |
| Serial | Description |
| 1 | Fund Transfer request is accepted from the FE in encrypted format Data object |
| 2 | Following validations are performed,  MPIN  Account Status  Customer relationship with the account  in case of IMPS, check for participants member & blacklisting of IFSC |
| 2a | In case account information is missing then enquiry call is made to the OBP and results are stored in the local cache |
| 3 | Transaction details are stored in the local cache |
| 4 | Limits HOLD call is made, (for non Self transfer only) |
| 4a | In case of non-OTT, beneficiary call is validated |
| 5 | Fund Transfer call is being requested to the OBP for NEFT/ IMPS / RTGS / IFT / Self |
| 6 | In case of error, RELEASE limits call is requested\*.  In case of successful, CONFIRM limits call will be requested by a background scheduler. |
| 7 | Transaction details are updated in the local cache |

\*In case of timeout from OBP, relevant information is passed to the UI but the limit system will be updated by the background scheduler.

### Information Flow

***Sequence Diagram:***

NEFT Fund transfer



## OBP API Discovery:

## <https://confluence.hdfcbank.com/display/MBR/NEFT+-+API+Discovery>

## Components Design

* *This section will capture the elaborative details of each component depicted in sequence diagram*
* *This will also highlight importance/use of component*

## Key Design Considerations

This section will capture the list of key design consideration and the reason for taking considerations:

## API Catalogue

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| System | API |  | | Corresponding OBP / SOA / Bene Limits |
| beneficairy | /validateHDFCaccount |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/PartnerAccountInquiryRest/InquirePartnerAccountDetails |
|  | /addpayee |  | | Beneficiary system |
|  | /updatepayee |  | | Beneficiary system |
|  | /deletepayee |  | | Beneficiary system |
|  | /favourites |  | | Beneficiary system |
|  | /getpayees |  | | Beneficiary system |
|  |  |  | |  |  |
|  |  |  | |  |
| tptmanager | /getbanks |  | | Cache |
|  | /searchbranches |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/FinancialInstitutionInquiry |
|  | /searchifsc |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/FinancialInstitutionInquiry |
|  | /limitsinfo |  | | config / limits system |
|  |  |  | |  |
|  |  |  | |  |
| fundtransfer | /imps |  | | [/com.ofss.fc.cz.hdfc.obp.webservice/IMPSPaymentTxnRestWrapper/doIMPSpaymentTxn](http://com.ofss.fc.cz/) |
|  | /imps |  | | <https://10.226.163.41:5142/IMPS/ProxyServices/PS_IMPSTransaction> |
|  | /neft |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/NEFTPayment |
|  | /neftsi |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/PaymentStandingInstructions |
|  | /selfsi |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/StandingInstructionsForOwnAccounts |
|  | /iftsi |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/StandingInstructions |
|  | /rtgs |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/RTGSPayment |
|  | /ift |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/FundsTransferMiscRestWrapper/miscFundTransfer |
|  | /self |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/FundsTransferOwnAccount |
|  | /tptcharges |  | | config / admin module |
|  | /tptcharge/{charge} |  | | config / admin module |
|  |  |  | |  |
|  |  |  | |  |
| customer | /getcustomerbalancesbycustid | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/casaSummarySpi | |
|  |  |  | |  |
|  | Generate OTP |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/GenerateOneTimePasswordRest/doGenerateOTPRest |
|  | Verify OTP |  | | https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/VerifyOneTimePasswordRest/doVerifyOTPRest |
|  |  |  | |  |
|  | Transaction History |  | | <https://10.226.163.7:9444/com.ofss.fc.cz.hdfc.obp.webservice/FundsExchangeInquiryApplicationServiceSpi> |

# Data Design

## Data Models

Fund Transfer Request

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
| 1 | TransactionID |  | string | Y |  |
| 2 | From Account No |  | string | Y |  |
| 3 | Hash User Id |  | string | Y |  |
| 4 | To Account No |  | string | Y |  |
| 5 | To IFSC |  | string | Y |  |
| 6 | To Name |  | string | Y |  |
| 7 | Amount |  | float | Y |  |
| 8 | BeneficiaryID |  |  |  |  |
| 9 | Remarks |  | string | N |  |
| 10 | SenderCommunicationModeValue |  | string | N |  |
| 11 | SenderCommunicationMode |  | string | Y |  |
| 12 | OTT |  | string | N |  |
| 13 | Mpin |  | string | N |  |
| 14 | OtpRefNo |  | string | N |  |
| 15 | OTPToken |  | string | N |  |

FundTransferSuccessResponse

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
|  | ToAccountNumber |  | string |  |  |
|  | PaidToName |  | string |  |  |
|  | FromAccountNumber |  | string |  |  |
|  | HDFCTransactionID |  | string |  |  |
|  | ReferenceNumber |  | string |  |  |
|  | Amount |  | float |  |  |
|  | TransferType |  | string |  |  |
|  | ValidationMethod |  | string |  |  |
|  | Status |  | string |  |  |
|  | ErrorMessage |  | string |  |  |
|  | TransactionTime |  | string |  |  |
|  | SLIToken |  | string |  |  |
|  | MpinAttemptsLeft |  | string |  |  |

Schedule Transfer

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
| 1 | ScheduleID |  | string | Y |  |
| 2 | **IsRecurring** |  | bool | Y |  |
| 3 | **StartDate** |  | datetime | Y |  |
| 4 | **EndDate** |  | datetime | N |  |
| 5 | **Frequency** |  | int | N |  |
| 6 | **Interval** |  | int | N |  |

TPT Option

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
| 1. | Option |  | string |  |  |
| 2. | Charges |  | float |  |  |

BanksList

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
| 1 | name |  | string | Y |  |
| 2 | ifscstart |  | string | Y |  |
| 3 | icon |  | string | Y |  |
| 4 | genericifscCode |  | string | Y |  |

Branches

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
| 1 | id |  | string |  |  |
| 2 | ifscCode |  | string |  |  |
| 3 | name |  | string |  |  |
| 4 | address |  | string |  |  |
| 5 | bankId |  | string |  |  |

Transaction Details

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Field Name** | **Description** | **Type** | **Mandatory** | **Remarks** |
| 1 | hdfc\_ref\_no |  | string |  |  |
| 2 | transfer\_method |  | string | Y |  |
| 3 | created\_at |  | datetime | Y |  |
| 4 | updated\_at |  | datetime | Y |  |
| 5 | ext\_ref\_no |  | string |  |  |
| 6 | error |  | string | Y |  |
| 7 | status |  | string | Y |  |
| 8 | hashed\_user\_id |  | string |  |  |
| 9 | from\_acc\_no |  | string | Y |  |
| 10 | to\_ifsc |  | string |  |  |
| 11 | to\_acc\_no |  | string | Y |  |
| 12 | amount |  | float | Y |  |
| 13 | limits\_status |  | string |  |  |

## Data Access Mechanism

There will be a high level technical design consideration which will cover framework for data access mechanism i.e. ORM implementation details etc. In this section, any customization specific to module (for which this document is prepared) will be covered.

## Data Retention Policies

* + *This Section will capture policies related to data purging/data archiving*
  + *This will also capture specific tables for which data will be purged/archived*

## Data Migration

* + *This section will capture the data migration strategy*
  + *We know that data migration is big activity so the strategy may get capture in separate document. If it is being captured in separate document, we need to give the reference of same document.*

# Interfaces

This section will capture the high level details of other Interfaces which are interacting with our application in scope.

# State and Session Management

There will be separate high level technical design document which will cover framework for state and session management. In this section, any customization specific to module (for which this document is prepared) will be covered.

# Caching

There will be separate high level technical design document which will cover framework for caching. In this section, any customization specific to module (for which this document is prepared) will be covered.

# Non Functional Requirements

* *This section will capture non-functional aspects of system*
* *This section will capture Security aspects and Performance aspects of the system*

## Performance Aspects

This section will capture the performance aspects of the application in scope

# References

This section will list down the documents which has been refereed while creating this document

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Document Name** | **Version** | **Date** |
|  |  |  |  |
|  |  |  |  |

# Appendices

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# Appendix 1. Comments Matrix

Since there is no formal tool finalized currently for logging comments on various document deliverables, Comments Matrix is being put here to ensure comments are being tracked and resolved. Once a formal tool is identified, this process might change for future deliverables.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **IRD Review Comments** | **Date Raised** | **Vendor Remarks** |
| **1** |  |  |  |
| **2** |  |  |  |