School Fee Payments Interface Specification Low Level Design Document

**EIDIKOSYSTEMS INTEGRATORS**



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Contents

[1 Introduction 5](#_Toc50118118)

[1.1 General Description 5](#_Toc50118119)

[2 Purpose 5](#_Toc50118120)

[3 Scope 5](#_Toc50118121)

[3.1 In Scope 5](#_Toc50118122)

[4 Channels Involved 5](#_Toc50118123)

[5 Interface Dependencies 6](#_Toc50118124)

[5.1 External Dependencies 6](#_Toc50118125)

[5.2 Internal Dependencies 6](#_Toc50118126)

[6 Business Process Summary 7](#_Toc50118127)

[6.1 Process Overview 7](#_Toc50118128)

[Figure: 1 Process flow Approach for SchoolFeePayment. 7](#_Toc50118129)

[6.1.1 School Fee Payment Steps 7](#_Toc50118130)

[7 IIB Implementation Process Flow 8](#_Toc50118131)

[7.1 School Fee Payment Successful Request Response Flow 8](#_Toc50118132)

[7.1.1 Process Diagram 8](#_Toc50118133)

[7.1.2 Process Flow Steps 8](#_Toc50118134)

[7.2 Retry Process workflow 9](#_Toc50118135)

[7.2.1 Process Flow Diagram 9](#_Toc50118136)

[7.2.2 Process Flow steps 9](#_Toc50118137)

[7.3 Raw\_Audit Process Flow: 10](#_Toc50118138)

[7.3.1 Process Flow Diagram: 10](#_Toc50118139)

[7.3.2 Process Flow Steps: 10](#_Toc50118140)

[7.4 HTTP Router Process Flow 11](#_Toc50118141)

[7.4.1 Incoming Router Process Flow Diagram: 11](#_Toc50118142)

[7.4.2 Process Flow Steps: 11](#_Toc50118143)

[7.4.3 STEWARDBANK ESB TRANSACTION DETAILS 12](#_Toc50118144)

[7.4.4 Outgoing Router Process Flow Diagram 13](#_Toc50118145)

[7.4.5 Process Flow Steps: 13](#_Toc50118146)

[7.5 Error\_Audit Process Flow 13](#_Toc50118147)

[7.5.1 Process Flow Diagram: 13](#_Toc50118148)

[7.5.2 Process Flow Steps: 14](#_Toc50118149)

[8 Interface Definitions 15](#_Toc50118150)

[8.1 Request Message Definition 15](#_Toc50118151)

[8.1.1 Channel Request Message Structure /Schema 15](#_Toc50118152)

[8.1.2 Channel Request Message Details 15](#_Toc50118153)

[8.1.3 Channel Sample Source Messages 16](#_Toc50118154)

[8.1.4 T24 Request Message Structure /Schema 16](#_Toc50118155)

[8.1.5 T24 Response Message Details 17](#_Toc50118156)

[8.2 Response Message Definition 17](#_Toc50118157)

[8.2.1 T24Response Message Structure/Schema 17](#_Toc50118158)

[8.2.2 T24 Response Message Details 17](#_Toc50118159)

[8.2.3 T24 Sample Response Messages 18](#_Toc50118160)

[8.2.4 Channel Response Message Details 19](#_Toc50118161)

[8.2.5 Channel Sample Response Messages 20](#_Toc50118162)

[8.2.6 Channel Error Response Message 21](#_Toc50118163)

[8.2.7 Data Base Error Response Codes 22](#_Toc50118164)

[9 Logging Mechanism 23](#_Toc50118165)

[9.1 Insert into Raw\_Audit\_Table 23](#_Toc50118166)

[9.2 Insert into Error\_Audit\_Table 24](#_Toc50118167)

[9.3 File Based Logging 25](#_Toc50118168)

[9.3.1 Log4j 25](#_Toc50118169)

**Approval**

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**Revision History**

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# Introduction

## General Description

This Interface Design document outlines the integration requirements for the School Fee Payment***(Request and Response)***interface used as banking operations. It summarizes the business processes, which use this interface. It also covers error handling and exception scenarios.

# Purpose

The purpose of this document is to capture events that trigger the interface, main steps within the interface and the integration architecture. This document is intended for use by the developers of the applications identified, the integration development team, and by the test organizations responsible for the testing of these applications.

# Scope

## In Scope

This document focuseson outlining the interface design for the School Fee Payment***(Request and Response)***interface. Central to this document are the following:

* Overview of the business process that drives the need for the interface
* Proposed integration approach
* Trigger events and business dependencies on this interface
* Sequence /Flow Chart diagram of the interface
* Error handling and exception scenarios
* Validation and backup requirements

# Channels Involved

The following table lists School Fee Payment channel

|  |  |
| --- | --- |
| **Item #** | **Channel Name** |
| 1 | \*236# |

# Interface Dependencies

## External Dependencies

The following table lists interface specific External requirements.

|  |  |
| --- | --- |
| **Item #** | **External Requirements** |
| 1 | Steward Database – (SQLDB) |
| 2 | Core Banking System(Temenos-T24) |

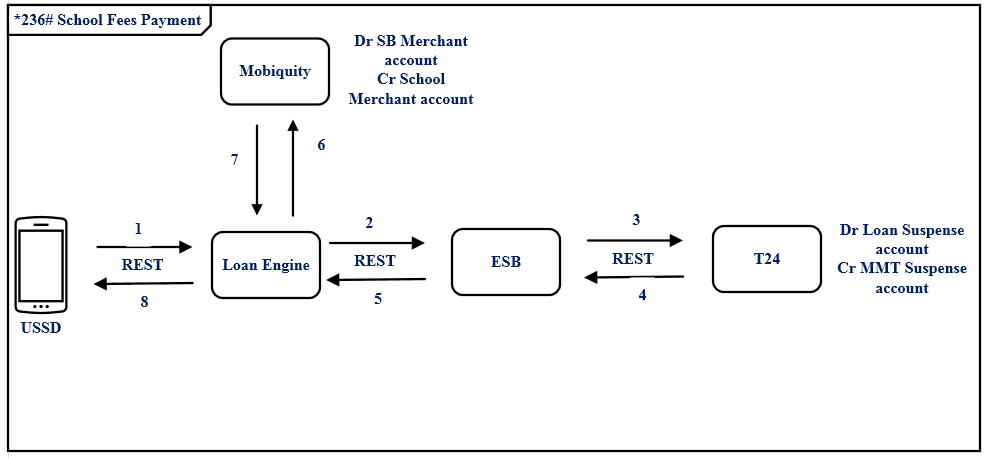
## Internal Dependencies

The following table lists interface specific internal requirements.

|  |  |
| --- | --- |
| **Item #** | **Internal Requirements** |
| 1 | HTTP Router Interface |
| 2 | HTTP Retry Interface |
| 3 | DB Logging App |
|  |  |

# Business Process Summary

## Process Overview



### Figure: 1 Process flow Approach for SchoolFeePayment.

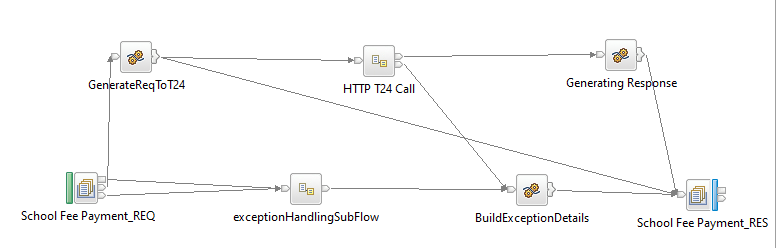
### School Fee Payment Steps

|  |  |
| --- | --- |
| **S. No** | **Activities** |
| 1 | ESB receives the request from channel. |
| 2 | Request channel is the http request accepts the request from the channel |
| 3 | ESB frames the Request URL According to the T24 requires and send to the T24. |
| 4 | T24 will Respond back to the ESB with Response |
| 5 | The same T24 Response, ESB will send back to the channel. |
| 6 | On Successful call of T24 Response will be placed in the RAW\_LOG\_SB\_REQ to log the response in Database (RAW\_AUDIT\_LOGGING). |
| 7 | On Unsuccessful call of T24 Response will be placed in the ERROR\_LOG\_SB\_REQ to log the response in Database (ERR\_AUDIT\_LOGGING). |

# IIB Implementation Process Flow

## School Fee Payment Successful Request Response Flow

### Process Diagram



**Figure: 2 School Fee Payment Flow**

### Process Flow Steps

|  |  |
| --- | --- |
| **S. No** | **Activities** |
| 1. | ESB receives the request from the channel using the HTTP Router Application based on procesingcode & channel trigs the Business Application (SchoolFeePaymentFlow) using Business Queue (SFP\_SB\_HTTP\_REQ)  i.e Request from channel. |
| 2 | Initial request and response are logged in the RAW\_LOG\_SB\_REQ and is insert in Data base (RAW\_AUDIT\_LOGGING). |
| 3 | After logging of request ESB frames the Request URL to T24 server  i.e T24 server. |
| 4 | After Framing the T24 Request is logged in RAW\_LOG\_SB\_REQ and is insert in Data Base |
| 5 | If the T24 call is successful, then JSON response will be generated. |
| 6 | T24 Response in JSON Format is logged in RAW\_LOG\_SB\_REQ and insert in Data Base (RAW\_AUDIT\_LOGGING) |
| 7 | After the Response is generated by T24 call same response is sending back to Channel with the help of HTTP Router Application. Here ESB frames the Channel Response(T24 Response). |
| 8 | T24 Response is logged in RAW\_LOG\_SB\_REQ and is insert in Database (RAW\_AUDIT\_LOGGING). |
| 9 | On Unsuccessful calls of T24 Request and Response will be placed in the ERROR\_LOG\_SB\_REQ to log the request in Database (ERR\_AUDIT\_LOGGING). |

## Retry Process workflow

### Process Flow Diagram



**Figure: 3 HTTP Retry for SchoolFeePayment**

### Process Flow steps

|  |  |
| --- | --- |
| **S. No** | **Activities** |
| 1 | HTTP Retry call is used to call the backend service for multiple times |
| 2 | On Successful call of backend service, response will be generated and send back to Business Application For further process |
| 3 | On Unsuccessful call of backend service it Retry for 3 times and sends error message to Business Application for further Process |

## Raw\_Audit Process Flow:

### Process Flow Diagram:



**Figure: 4 Raw\_Audit\_Logging Flow**

### Process Flow Steps:

|  |  |
| --- | --- |
| **S. No** | **Activities** |
|  | The RAW\_AUDIT locks the input Request and Response |
|  | After the query is executed the record is inserted into the Database. |
|  | Final Response is inserted into the Database and then Response is logged into the RAW\_LOG\_SB\_REQ. |

## HTTP Router Process Flow

### Incoming Router Process Flow Diagram:



**Figure: 5 Incoming Router Flow**

### Process Flow Steps:

|  |  |
| --- | --- |
| **S. No** | IIB receives the request from channel. |
|  | ESB receives the request from channel. |
|  | Request channel is the http request accepts the request from the channel |
|  | The request message is placed in the RAW\_LOG\_SB\_REQ to log the request in Database (RAW\_AUDIT\_LOGGING) |
|  | According to the Channel Request message fields such as channel and processing code it picks the queue name of the business flow from STWB\_ESB\_TRAN\_DETAILS table and propagates it to the business flow. |
|  | It validates the processingCode, Channel and domain of input from STWB\_ESB\_TRAN\_DETAILS if it fails to validate the error response is logged in the logs and in Database (ERROR\_AUDIT\_LOG) |
|  | After the validation Request message is passed through ESB. If the queue name presents in MQ manager the ESB business flow triggers otherwise the error response is sent to the front end as Unable to open queue. |
|  | If it is success or failure response will store them in RAW\_AUDIT\_LOG table or ERROR\_AUDIT\_LOG and logging into log file. |
|  | The request from channel is sent to ESB CurrencyConverter Flow |

### STEWARDBANK ESB TRANSACTION DETAILS

**Table Name: STWB\_ESB\_TRAN\_DETAILS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item #** | **DB Field Name** | **Field Description** | **Data Type** | **Length** | **Mandatory(Yes/No)** | **Comments** |
| 1 | PROC\_CODE | Processing Code | Varchar | 20 | Y | From input request |
| 2 | REQ\_QUEUE | TCPIP Request Queue | Varchar | 20 | N | This Request Queue Name field is used for ISO Related Application |
| 3 | RES\_QUEUE | TCPIP Response Queue | Varchar | 20 | N | This Response Queue Name field is used for ISO Related Application |
| 4 | HTTP\_REQ | HTTP Request Queue | Varchar | 20 | Y | This Request Queue Name field is used for REST Related Application |
| 5 | HTTP\_RES | HTTP Response Queue | Varchar | 20 | Y | This Response Queue Name field is used for REST Related Application |
| 6 | CHANNEL | Channel | Varchar | 20 | Y | Channel Name |
| 7 | MSGDOMAIN | Message Domain | Varchar | 20 | Y | Request Message Format |

### Outgoing Router Process Flow Diagram



**Figure: 6 Outgoing Router Flow**

### Process Flow Steps:

|  |  |
| --- | --- |
| **S. No** | **Activities** |
|  | The Outgoing Http Res brings the Channel Response |
|  | Channel Response will be logged in RAW\_LOG\_SB\_REQ and insert in Data Base. |
|  | Finally Channel Response will be send to the Front End. |

## Error\_Audit Process Flow

### Process Flow Diagram:



**Figure: 7 Exception Subflow**



**Figure: 8 Error\_Audit\_Logging Flow**

### Process Flow Steps:

|  |  |
| --- | --- |
| **S. No** | **Activities** |
|  | The ERROR\_AUDIT\_Q locks the input Request. |
|  | After the query is executed the record is inserted into the Data Base. |
|  | Final Response is inserted into the Database and then Response is logged into the ERR\_LOG\_SB\_REQ. |

# Interface Definitions

## Request Message Definition

### Channel Request Message Structure /Schema

**Request Type:** HTTP

**Request Format:** JSON

**Request URL:** <http://IPAddress:Port/v1/stewardBank/>

### Channel Request Message Details

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item #** | **Tag Name/ Field Name** | **Data Type** | **Mandatory(Yes/No)** | **Comments** |
| 1 | processingCode | String | Y | Processing Code |
| 2 | creditAccountNumber | String | Y | Credit Card Number |
| 3 | debitAccountNumber | String | Y | Debit Card Number |
| 4 | debitAmount | String | Y | Amount to Debit |
| 5 | mobileNumber | String | Y | Mobile Number |
| 6 | debitCurrency | String | Y | Debit Currency |
| 7 | transactionType | String | Y | Type of Transaction |
| 8 | debitReference | String | Y | Debit Reference |
| 9 | paymentDetails | String | Y | Details of Payments |
| 10 | Channel | String | Y | Channel Name |
| 11 | Biller | String | Y | Biller |

### Channel Sample Source Messages

|  |
| --- |
| {  "processingCode":"180000",  "creditAccountNumber":"1000000163",  "debitAccountNumber":"1000000578",  "debitAmount":"89.09",  "mobileNumber":"9126324299",  "debitCurrency":"ZWL",  "transactionType":"26324299",  "debitReference":"BusinessCurrent",  "paymentDetails":"AUTWLD",  "channel":"\*236#",  "biller":"Implementation"  } |

### T24 Request Message Structure /Schema

**Request Type:** HTTP

**Request Format:** JSON

**RequestURL:**

http://192.168.1.233:8080/stwbc/api/v1.0.0/stwb/payment/schoolFees/{debitAccount}/{debitCurrency}/{transactionAmount}/{executionDate}/{customer}

### T24 Response Message Details

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item #** | **Tag Name/ Field Name** | **Data Type** | **Mandatory(Yes/No)** | **Comments** |
| 1 | debitAccount | String | Y | Debit Account |
| 2 | debitCurrency | String | Y | Debit Currency |
| 3 | transactionAmount | String | Y | Transaction Amount |
| 3 | executionDate | String | Y | Date of Execution |
| 2 | customer | String | Y | Customer |

## Response Message Definition

### T24Response Message Structure/Schema

**Response Type:** JSON

### T24 Response Message Details

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item #** | **Tag Name/Field Name** | **Data Type** | **Mandatory(Yes/No)** | **Comments** |
| 1 | Header | String | Y | Header Tag |
| 2 | transactionStatus | String | Y | Transaction Status |
| 3 | Audit | String | Y | Audit |
| 4 | T24\_time | String | Y | T24 Time |
| 5 | parse\_time | TimeStamp | Y | Parse Time |
| 6 | responseParse\_time | TimeStamp | Y | Response Parse Time |
| 7 | requestParse\_time | TimeStamp | Y | Request Parse Time |
| 8 | versionNumber | String | Y | Version Number |
| 9 | Id | String | Y | Id |
| 10 | Status | String | Y | Status |
| 11 | Body |  | Y | Body Tag |
| 12 | chargeBearer | String | Y | Bearer Charge |
| 13 | orderingCustomerId | String | Y | Ordering Customer Id |
| 14 | debitCurrency | String | Y | Debit Currency |
| 15 | transactionAmount | Integer | Y | Transaction Amount |
| 16 | endToEndReference | String | Y | End to End Reference |
| 17 | executionDate | TimeStamp | Y | Execution Date |
| 18 | debitAccountId | String | Y | Debit Account Id |
| 19 | orderingCustomerName | String | Y | Ordering Customer Name |
| 20 | creditAccountId | String | Y | Credit Account Id |
| 21 | paymentCurrency | String | Y | Payment Currency |
| 22 | paymentOrderProductId | String | Y | Payment Order Product Id |

### T24 Sample Response Messages

|  |
| --- |
| {  "header": {  "transactionStatus": "Live",  "audit": {  "T24\_time": 320,  "parse\_time": 1,  "responseParse\_time": 2,  "requestParse\_time": 2,  "versionNumber": "1"  },  "id": "PI2022803SW1QC4Z",  "status": "success"  },  "body": {  "chargeBearer": "OUR",  "orderingCustomerId": "100142",  "debitCurrency": "ZWL",  "transactionAmount": 89.09,  "endToEndReference": "NOTPROVIDED",  "executionDate": "20200818",  "debitAccountId": "1000000578",  "orderingCustomerName": "BusinessCurrent",  "creditAccountId": "ZWL1409200010004",  "paymentCurrency": "ZWL",  "paymentOrderProductId": "SCHOOLFEES"  }  } |

### Channel Response Message Details

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item #** | **Tag Name/Field Name** | **Data Type** | **Mandatory(Yes/No)** | **Comments** |
| 1 | SchoolFeePayment | String | Y | Main Tag |
| 2 | Header | String | Y | Header Tag |
| 3 | Channel | String | Y | Channel Name |
| 4 | processingCode | String | Y | Processing Code |
| 9 | transactionStatus | String | Y | Transaction Status |
| 10 | Audit | String | Y | Audit |
| 11 | T24\_time | String | Y | T24 Time |
| 12 | parse\_time | TimeStamp | Y | Parse Time |
| 13 | responseParse\_time | TimeStamp | Y | Response Parse Time |
| 14 | requestParse\_time | TimeStamp | Y | Request Parse Time |
| 15 | versionNumber | String | Y | Version Number |
| 16 | Id | String | Y | Id |
| 17 | Status | String | Y | Status |
| 18 | Body |  | Y | Body Tag |
| 19 | chargeBearer | String | Y | Bearer Charge |
| 20 | orderingCustomerId | String | Y | Ordering Customer Id |
| 21 | debitCurrency | String | Y | Debit Currency |
| 22 | transactionAmount | Integer | Y | Transaction Amount |
| 23 | endToEndReference | String | Y | End to End Reference |
| 24 | executionDate | TimeStamp | Y | Execution Date |
| 24 | debitAccountId | String | Y | Debit Account Id |
| 25 | orderingCustomerName | String | Y | Ordering Customer Name |
| 26 | creditAccountId | String | Y | Credit Account Id |
| 27 | paymentCurrency | String | Y | Payment Currency |
| 28 | paymentOrderProductId | String | Y | Payment Order Product Id |

### Channel Sample Response Messages

|  |
| --- |
| {  "SchoolFeePayment": {  "header": {  "channel": "\*236#",  "processingCode": "180000",  "responseCode": "200"  "transactionStatus": "Live",  "audit": {  "T24\_time": 472,  "parse\_time": 2,  "responseParse\_time": 2,  "requestParse\_time": 2,  "versionNumber": "1"  },  "id": "PI202270XYCNN8GQ",  "status": "success"  },  "body": {  "chargeBearer": "OUR",  "orderingCustomerId": "100142",  "debitCurrency": "ZWL",  "transactionAmount": 89.09,  "endToEndReference": "NOTPROVIDED",  "executionDate": "20200814",  "debitAccountId": "1000000578",  "orderingCustomerName": "BusinessCurrent",  "creditAccountId": "ZWL1409200010004",  "paymentCurrency": "ZWL",  "paymentOrderProductId": "SCHOOLFEES"  }  }  } |

# 

### Channel Error Response Message

**Error Response:**

{

"SchoolFeePayment": {

"header": {

"channel": "\*236#",

"processingCode": "400000",

"status": "FAILED",

"responseCode": "999"

},

"body": {

"source": "ESB",

"applicationName": "StewardBankSchoolFeePaymentApp",

"applicationErrorCode": " Error code displays here ",

"message": " Error message displays here "

}

}

}

### Data Base Error Response Codes

001 = "Fatal Exception";

002 = "Recoverable Exception";

003 = "Configuration Exception";

004 = "Security Exception";

005 = "Parser Exception";

006 = "Conversion Exception";

007 = "Data Base Exception";

008 = "User Exception";

009 = "Cast Exception";

010 = "Message Exception";

011 = "SQL Exception";

012 = "Socket Exception";

013 = "Socket Timeout Exception";

014 = "Unknown Exception";

015 = "Failure";

# Logging Mechanism

## Insert into Raw\_Audit\_Table

**Table Name: RAW\_AUDIT\_TABLE**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item #** | **DB Field Name** | **Field Description** | **Data Type** | **Length** | **Mandatory(Yes/No)** | **Comments** |
| 1 | MSGID | MessageID | Varchar | 100 | Y | From input request |
| 2 | LOGGING\_TIME | Logging Time | TimeStamp | 6 | Y | Name |
| 3 | MESSAGE | Message(Request/Response) | Clob | - | Y | Request from channel |
| 4 | MESSAGETYPE | Type of Message(Request/Response) | Varchar | 100 | Y | Type of message either Request or Response |
| 5 | APPNAME | Application Name | Varchar | 100 | Y | Name of the Application |
| 6 | BROKER | Broker Name | Varchar | 100 | Y | Broker Name |
| 7 | TIME\_LOCAL\_TRANSACTION | Transaction Time | Varchar | 20 | Y | Time of the Transaction |
| 8 | DATE\_LOCAL\_TRANSACTION | Transaction Date | Varchar | 20 | Y | Date of the Transaction |
| 9 | RETRIEVAL\_REFERENCE\_N | Retrieval Reference Number | Varchar | 20 | Y |  |

## Insert into Error\_Audit\_Table

**Table Name: ERROR\_AUDIT\_TABLE**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item #** | **DB Field Name** | **Field Description** | **Data Type** | **Length** | **Mandatory(Yes/No)** | **Comments** |
| 1 | MSGID | MessageID | Varchar | 50 | Y | From input request |
| 2 | LOGGING\_TIME | Application Name | Timestamp | 50 | Y | Time of the logging |
| 3 | MESSAGE | Message Type(Request/Response) | Clob | 50 | Y | Request of the Message |
| 4 | MESSAGETYPE | Message Type | Varchar | 50 | Y | Type of message either Request or Response |
| 5 | APPNAME | Application Name | Varchar | 4000 | Y | Name of the Application |
| 6 | BROKER | Broker Name | Varchar | - | Y | Name of the Broker |
| 7 | ERRORDESCRIPTION | Exception | Clob | 4000 | Y | Exception Information |
| 8 | TIME\_LOCAL\_TRANSACTION | Transaction Time | Varchar | 20 | Y | Time of the Transaction |
| 9 | DATE\_LOCAL\_TRANSACTION | Transaction Date | Varchar | 20 | Y | Date of the Transaction |
| 10 | RETRIEVAL\_REFERENCE\_NUMBER | Retrieval Reference Number | Varchar | 20 | Y | Retrieval Reference Number |
| 11 | BORKER\_ERROR\_CODE | Broker Error Code | Varchar |  | Y | Error code generate by Broker |
| 12 | USER\_DEFINE\_ERROR\_CODE | User Defined Error Code | Varchar |  | Y | User Defined Code |

## File Based Logging

### Log4j

As part of auditing the request we have to use Log4j mechanism in the application to log the request in the file.

File Path: To be specified, while deploying the application