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IIT- MPP Test Lab

Scope & Coverage

Scope Of Testing

- Adherence to the proposed message formats by
  - MPP
  - Bank

Coverage

- AUT – MPP
  - Processes / Message flows
    - As Beneficiary MPP in Pull Process
    - As Beneficiary MPP in Push Process
    - As Customer MPP in Pull Process
    - As Customer MPP in Push Process
    - As MPP for both in Pull Process
    - As MPP for both in Push Process

- AUT – Bank
  - Processes / Message flows
    - As Beneficiary Bank
    - As Customer Bank

* AUT – Application Under Test

Exclusions

- Performance Testing
- Security Testing

Message Structure / Format

- Compliant with ISO 8583:2003

Message Flow functionality

- As Proposed

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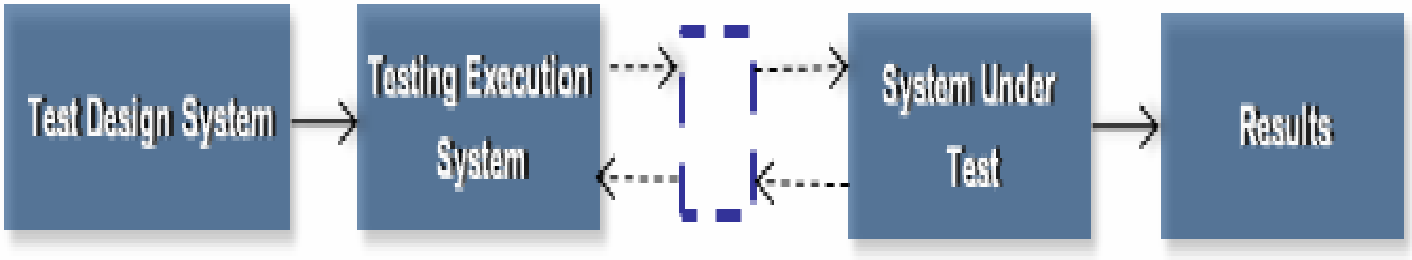
Test Design Approach

Solution Architecture



Objective

- To test adherence to the Interoperability Standards for Mobile Payments

Illustration

- **Pull Process – Testing Beneficiary MPP**

  The flow of operations in the Pull process is outlined below.

  The focus is specifically on transactions where the MPP under test (as Beneficiary MPP) is involved either as a sender or receiver of message.

Action	Remark	Sender	Receiver
1. Beneficiary opens the MPP application on the hand held device and sends a message containing the phone number of the Customer and the amount of money that is expected.	Step 1	Beneficiary	Beneficiary MPP
2. The message is processed by the Beneficiary's MPP and a broadcast message is sent to all other MPPs to find the default MPPs Id corresponding to the given Customer's mobile phone number.	Step 2	Beneficiary MPP	Customer MPP
3. Customer's MPP which possesses the default bank account number, corresponding to the phone number, replies with the details of Customer's MPP.	Step 3	Customer MPP	Beneficiary MPP
4. Beneficiary's MPP sends the Customer's MPP a request for payment containing Beneficiary's account information and name.	Step 4	Beneficiary MPP	Customer MPP

5. Customer's MPP queries the Customer's Bank for account balance information.	Skipped	Customer MPP	Customer Bank
6. Customer's Bank informs the Customer's MPP of the account balance.	Skipped	Customer Bank	Customer MPP
7. Customer's MPP informs the Customer about the payment request.	Skipped	Customer MPP	Customer
8. Customer authorises the payment with the pin number and a digital signature.	Skipped	Customer	Customer MPP
9. If the Customer has accepted the transaction, Customer's MPP informs the Customer's Bank about the transfer of funds.	Skipped	Customer MPP	Customer Bank
10. Customer's Bank sends an acknowledgement to the Customer's MPP before it initiates the funds transfer.	Skipped	Customer Bank	Customer MPP
11. Customer's MPP sends the Customer's response to Beneficiary's MPP.	Step 5	Customer MPP	Beneficiary MPP
12. Beneficiary's MPP notifies the Beneficiary.	Step 6	Beneficiary MPP	Beneficiary
13. Customer's MPP on receiving the acknowledgment queries the Customer's Bank about the status of the transaction every MPP_QUERYING_FREQUENCY time units.	Skipped	Customer MPP	Customer Bank
14. Customer's Bank sends a pending status if the transaction has not been completed.	Skipped	Customer Bank	Customer MPP
15. Customer's Bank initiates fund transfer to Beneficiary's Bank.	Skipped	Customer Bank	Beneficiary Bank
16. Customer's MPP again sends a query message to know the status of the transaction.	Skipped	Customer MPP	Beneficiary Bank
17. Customer's Bank sends a message of completion.	Skipped	Customer Bank	Customer MPP

Design of Inputs at each stage: The Drivers:

1	**Beneficiary Request**	MsgFormat	Customer Phone	AmountRequired		
		Ok	Valid	Positive		
		NotOk	Invalid	Zero or Negative		
			Unregistered			
	Rules	Fail	Customer Phone	Invalid		
		Fail	Customer Phone	Unregistered		
		Fail	AmountRequired	Zero		
		Fail	AmountRequired	Negative		
		Fail	MsgFormat	NotOk		
2	**Beneficiary MPP Broadcast**	CustomerStatus	MsgFormat			
		Ok	Ok			
		NotOk	NotOk			
	Rules	Fail	CustomerStatus	NotOk		
		Fail	MsgFormat	NotOk		
3	**Customer MPP Response**	MsgFormat	MyCustomer	Response		
		Ok	Yes	Yes		
		NotOk	No	No		
	Rules	Fail	MsgFormat	NotOk		
		Fail	MyCustomer	No	Response	Yes

Design of Inputs at each stage: The Drivers:

4	**Benefiary MPP Requests Transfer**	MsgFormat	SendDetails			
		Ok	Yes			
		NotOk				
	Rules	Fail	MsgFormat	NotOk		
5	**Customer MPP Response**	MsgFormat	CustomerOK			
		Ok	Yes			
		NotOk	No			
	Rules	Fail	MsgFormat	NotOk		
6	**Beneficiary MPP notifies Beneficiary**	MsgFormat				
		Ok				
		NotOk				
	Rules	Fail	MsgFormat	NotOk		

Input combinations to be Tested:

BeneficaryRequest						
Id	BREQ_1	BREQ_2	BREQ_3	BREQ_4	BREQ_5	BREQ_6
Rule being tested	AmountRequired is Negative	AmountRequired is Zero	Customer Phone Invalid	Customer Phone Unregistered	Message Format1 Error	
AmountRequired	Negative	Zero	Positive	Positive	Positive	Positive
CustomerPhone	Valid	Valid	Invalid	Unregistered	Valid	Valid
MsgFormat1	OK	OK	OK	OK	Not OK	OK
Status	Fail	Fail	Fail	Fail	Fail	Pass
Scenario Ref	BMPP_1	BMPP_10	BMPP_11	BMPP_12	BMPP_13	BMPP_2;BMPP_3;BMPP_4;BMPP_5;BMPP_6;BMPP_7;BMPP_8;BMPP_9

BeneficiaryMPPBroadcast			
Id	BCAST_1	BCAST_2	BCAST_3
Rule being tested	Customer Status Not OK	Message Format2 Error	
CustomerStatus	Not OK	OK	OK
MsgFormat2	OK	Not OK	OK
Status	Fail	Fail	Pass
Scenario Ref	BMPP_2	BMPP_9	BMPP_1;BMPP_3;BMPP_4;BMPP_5;BMPP_6;BMPP_7;BMPP_8

Input combinations to be Tested: (Contd.)

CustomerMPPResponse				
Id	CMPPRESP_1	CMPPRESP_2	CMPPRESP_3	CMPPRESP_4
Rule being tested	Message Format3 Error	Responding to Not MyCustomer		
MsgFormat3	Not OK	OK	OK	OK
MyCustomer	Yes	No	Yes	No
Response	No	Yes	Yes	No
Status	Fail	Fail	Pass	Pass
Scenario Ref	BMPP_3	BMPP_8	BMPP_2;BMPP_4;BMPP_6	BMPP_5;BMPP_7
BeneficaryMPPTfrRequest				
Id	BTFRREQ_1	BTFRREQ_2		
Rule being tested	Message Format4 Error			
MsgFormat4	Not OK	OK		
SendDetails	Yes	Yes		
Status	Fail	Pass		
Scenario Ref	BMPP_4	BMPP_3;BMPP_5;BMPP_6;BMPP_7		

Input combinations to be Tested: (Contd.)

CustomerMPPFinalReponse			
Id	CMPPREP_1	CMPPREP_2	CMPPREP_3
Rule being tested	Message Format5 Error		
CustomerOK	Yes	Yes	No
MsgFormat5	Not OK	OK	OK
Status	Fail	Pass	Pass
Scenario Ref	BMPP_5	BMPP_4;BMPP_6	BMPP_7

BeneficaryMPPNotifyBeneficary			
Id	BNOTIFY_1	BNOTIFY_2	
Rule being tested	Message Format6 Error		
MsgFormat6	Not OK	OK	
Status	Fail	Pass	
Scenario Ref	BMPP_6	BMPP_5;BMPP_7	

Input Sequence Definition:

Slno	Link Rule	Final Status	From Transaction	To Transaction
1	Group1 : Transaction: BeneficaryRequest - In Sequence - Earlier failure: BeneficaryRequest	Fail	BeneficaryRequest Status: Fail	BeneficiaryMPPBroadcast Status: Pass
2	Group1 : Transaction: BeneficiaryMPPBroadcast - In Sequence - Earlier failure: BeneficiaryMPPBroadcast	Fail	BeneficiaryMPPBroadcast Status: Fail	CustomerMPPResponse Status: Pass
3	Group1 : Transaction: CustomerMPPResponse - In Sequence - Earlier failure: CustomerMPPResponse	Fail	CustomerMPPResponse Status: Fail	BeneficaryMPPTfrRequest Status: Pass
4	Group1 : Transaction: BeneficaryMPPTfrRequest - In Sequence - Earlier failure: BeneficaryMPPTfrRequest	Fail	BeneficaryMPPTfrRequest Status: Fail	CustomerMPPFinalReponse Status: Pass
5	Group1 : Transaction: CustomerMPPFinalReponse - In Sequence - Earlier failure: CustomerMPPFinalReponse	Fail	CustomerMPPFinalReponse Status: Fail	BeneficaryMPPNotifyBeneficary Status: Pass

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Sample Scenarios

Scenario Description	Group1: Transaction: BeneficaryRequest - In Sequence - Earlier failure: BeneficaryRequest
Scenario Status	Fail
Scenario Id	BMPP_1
BeneficaryRequest	
Condition Id	BREQ_1
Transaction Id	BREQ_1_USE_1
Business Rule being Tested	AmountRequired is Negative
Condition Status	Fail
BeneficiaryMPPBroadcast	
Condition Id	BCAST_3
Transaction Id	BCAST_3_USE_1
Business Rule being Tested	BeneficiaryMPPBroadcast: CustomerStatus = OK, MsgFormat2 = OK
Condition Status	Pass

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Sample Scenarios

Scenario Description	Group1: Transaction: BeneficiaryMPPBroadcast - In Sequence - Earlier failure: BeneficiaryMPPBroadcast
Scenario Status	Fail
Scenario Id	BMPP_2
BeneficaryRequest	
Condition Id	BREQ_6
Transaction Id	BREQ_6_USE_1
Business Rule being Tested	BeneficaryRequest: AmountRequired = Positive, CustomerPhone = Valid, MsgFormat1 = OK
Condition Status	Pass
BeneficiaryMPPBroadcast	
Condition Id	BCAST_1
Transaction Id	BCAST_1_USE_1
Business Rule being Tested	Customer Status Not OK
Condition Status	Fail
CustomerMPPResponse	
Condition Id	CMPPRESP_3
Transaction Id	CMPPRESP_3_USE_1
Business Rule being Tested	CustomerMPPResponse: MsgFormat3 = OK, MyCustomer = Yes, Response = Yes
Condition Status	Pass

Sample Scenarios

Scenario Description	Group1: Transaction: CustomerMPPResponse - In Sequence - Earlier failure: CustomerMPPResponse
Scenario Status	Fail
Scenario Id	BMPP_3
BeneficaryRequest	
Condition Id	BREQ_6
Transaction Id	BREQ_6_USE_2
Business Rule being Tested	BeneficaryRequest: AmountRequired = Positive, CustomerPhone = Valid, MsgFormat1 = OK
Condition Status	Pass
BeneficiaryMPPBroadcast	
Condition Id	BCAST_3
Transaction Id	BCAST_3_USE_2
Business Rule being Tested	BeneficiaryMPPBroadcast: CustomerStatus = OK, MsgFormat2 = OK
Condition Status	Pass
CustomerMPPResponse	
Condition Id	CMPPRESP_1
Transaction Id	CMPPRESP_1_USE_1
Business Rule being Tested	Message Format3 Error
Condition Status	Fail
BeneficaryMPPTfrRequest	
Condition Id	BTFRREQ_2
Transaction Id	BTFRREQ_2_USE_1
Business Rule being Tested	BeneficaryMPPTfrRequest: MsgFormat4 = OK, SendDetails = Yes
Condition Status	Pass

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Sample Scenarios

Scenario Description	Group1: Transaction: BeneficaryMPPTfrRequest - In Sequence - Earlier failure: BeneficaryMPPTfrRequest
Scenario Status	Fail
Scenario Id	BMPP_4
BeneficaryRequest	
Condition Id	BREQ_6
Transaction Id	BREQ_6_USE_3
Business Rule being Tested	BeneficaryRequest: AmountRequired = Positive, CustomerPhone = Valid, MsgFormat1 = OK
Condition Status	Pass
BeneficiaryMPPBroadcast	
Condition Id	BCAST_3
Transaction Id	BCAST_3_USE_3
Business Rule being Tested	BeneficiaryMPPBroadcast: CustomerStatus = OK, MsgFormat2 = OK
Condition Status	Pass
CustomerMPPResponse	
Condition Id	CMPPRESP_3
Transaction Id	CMPPRESP_3_USE_2
Business Rule being Tested	CustomerMPPResponse: MsgFormat3 = OK, MyCustomer = Yes, Response = Yes
Condition Status	Pass
BeneficaryMPPTfrRequest	
Condition Id	BTFRREQ_1
Transaction Id	BTFRREQ_1_USE_1
Business Rule being Tested	Message Format4 Error
Condition Status	Fail
CustomerMPPFinalReponse	
Condition Id	CMPPREP_2
Transaction Id	CMPPREP_2_USE_1
Business Rule being Tested	CustomerMPPFinalReponse: CustomerOK = Yes, MsgFormat5 = OK
Condition Status	Pass

Sample Scenarios

Scenario Description	Group1: Transaction: CustomerMPPFinalReponse - In Sequence - Earlier failure: CustomerMPPFinalReponse
Scenario Status	Fail
Scenario Id	BMPP_5
BeneficaryRequest	
Condition Id	BREQ_6
Transaction Id	BREQ_6_USE_4
Business Rule being Tested	BeneficaryRequest: AmountRequired = Positive, CustomerPhone = Valid, MsgFormat1 = OK
Condition Status	Pass
BeneficiaryMPPBroadcast	
Condition Id	BCAST_3
Transaction Id	BCAST_3_USE_4
Business Rule being Tested	BeneficiaryMPPBroadcast: CustomerStatus = OK, MsgFormat2 = OK
Condition Status	Pass
CustomerMPPResponse	
Condition Id	CMPPRESP_4
Transaction Id	CMPPRESP_4_USE_1
Business Rule being Tested	CustomerMPPResponse: MyCustomer = No, Response = No
Condition Status	Pass
BeneficaryMPPTfrRequest	
Condition Id	BTFRREQ_2
Transaction Id	BTFRREQ_2_USE_2
Business Rule being Tested	BeneficaryMPPTfrRequest: MsgFormat4 = OK, SendDetails = Yes
Condition Status	Pass
CustomerMPPFinalReponse	
Condition Id	CMPPREP_1
Transaction Id	CMPPREP_1_USE_1
Business Rule being Tested	Message Format5 Error
Condition Status	Fail
BeneficaryMPPNotifyBeneficary	
Condition Id	BNOTIFY_2
Transaction Id	BNOTIFY_2_USE_1
Business Rule being Tested	BeneficaryMPPNotifyBeneficary: MsgFormat6 = OK
Condition Status	Pass

Message Conversion

Each input forming part of Scenario needs to be converted into corresponding ISO:8583 message format.

The messages pertaining to the AUT are expected results while the other messages are to be fired by the test lab on behalf of the other entities involved.

Attribute	Value	Substitution
Customer Phone	Valid and Registered	9840012345 (number that is registered)
	Valid and Unregistered	9841013579 (number not registered)
	Invalid	984009876 (invalid number)
Amount Required	Positive	100
	Zero or Negative	0, -1
MsgFormat	OK	Customer Phone followed by Amount Required
	NotOK	Amount Required followed by Customer Phone

Beneficiary Request

ID	Customer Phone	Amount Required
BREQ_1	9840012345	-1
BREQ_2	9840012345	0
BREQ_3	984009876	100
BREQ_4	9841013579	100
BREQ_5	100	9840012345
BREQ_6	9840012345	100

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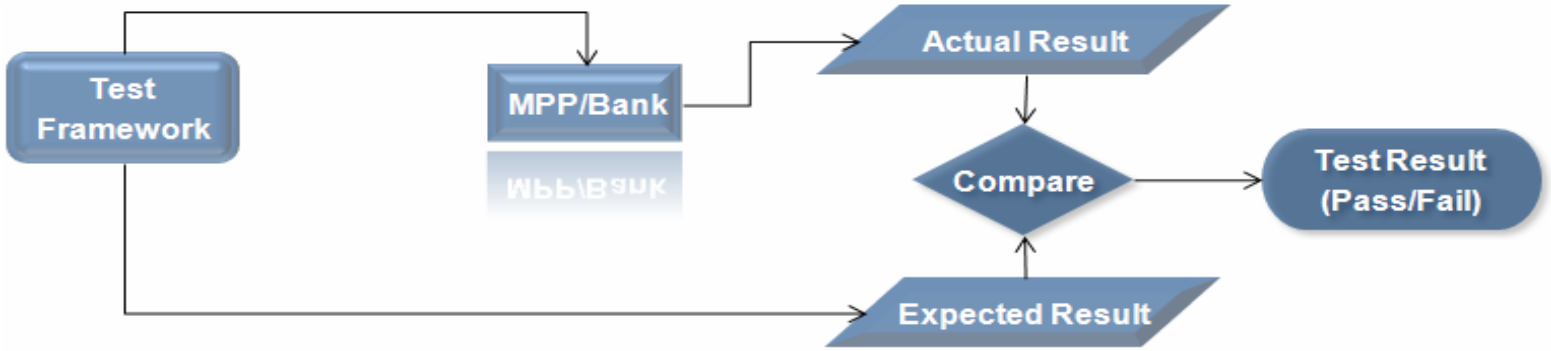
Test Execution Approach

Test Execution Framework Flow Diagram



Test Execution Framework consists of the following entities :

- Listener Engine
- Firing Engine
- Network Data Validator
- ISO 8583 Compliance Validator
- Report Engine
- SUT(System Under Test)

Test Execution- Component Layer Diagram