



PROJECT NAME: M-PESA G2	
DOCUMENT NAME: DEVELOPERS GUIDE- PAYBILL VALIDATION AND CONFIRMATION	VERSION: 0.3
COMPANY/DIVISION: PRODUCT AND SERVICE DEVELOPMENT	DATE: 3 RD AUGUST 2015

Developers Guide


PayBill Validation and Confirmation Version 0.3

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1 Document Control


1.1 Document History

VERSION	STATUS	DATE	CHANGE SUMMARY	OWNER/AUTHOR
0.1	Draft	2014-10-07	First Draft	Wambugu Clement
0.2	Draft	2015-02-28	Added Buygoods definition and Broker account details	Eneth Kubai
0.3	Draft	2015-08-03	Added the response codes for Validation response	Eneth Kubai

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1.2 Stakeholder & Review Panel


NAME	ROLE
Mark Mumo	SFC BA
Eneth Kubai	SFC BA
Wambugu Clement	SFC BA

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3 Overview


3.1.1 Background

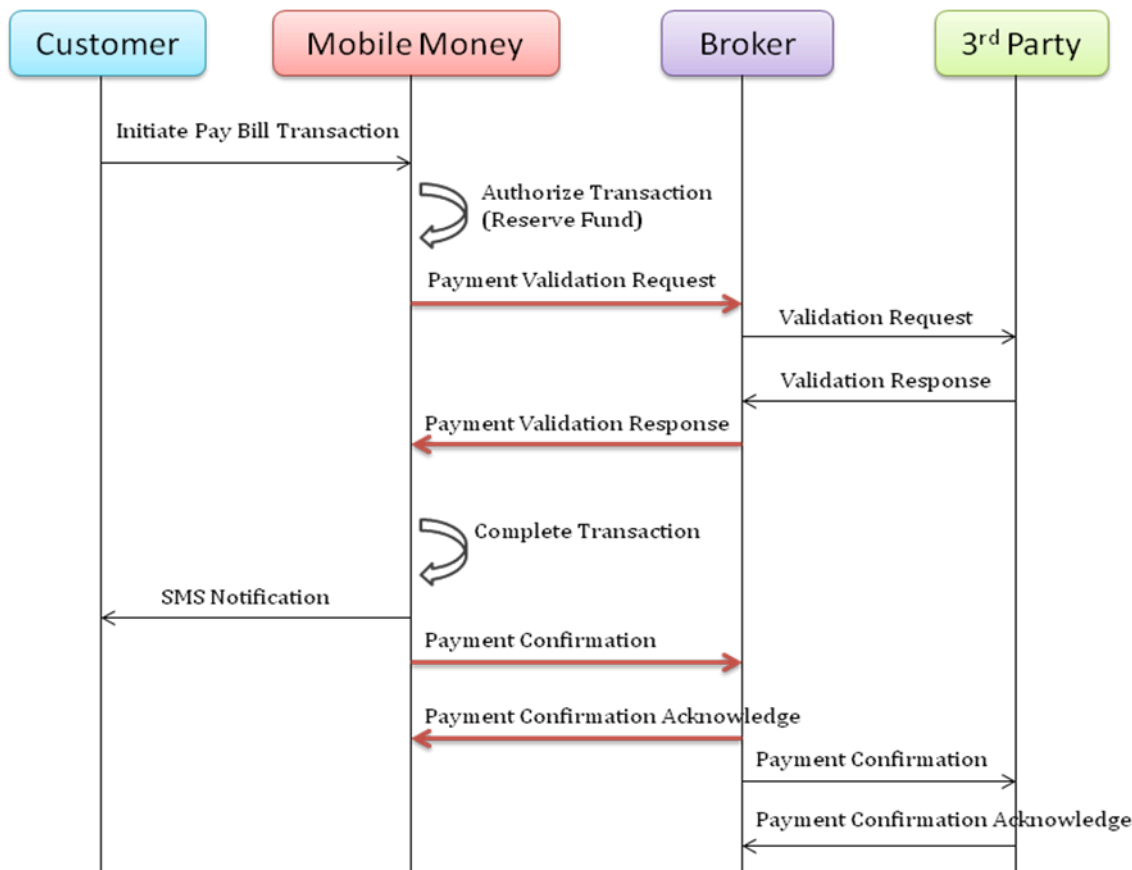
When a customer initiates a Pay Bill service, the system will firstly authorize the transaction (reserve funds) and then sends a validation message to the bill issuer or merchant origination via API. The transaction will only be successful when the third party validation is passed, otherwise it will be cancelled or be kept in “Authorized” status.

When the transaction is successfully completed in the Mobile Money system, another confirmation message will also be sent to the third parties for real-time reconciliation. The confirmation request will be sent for both Buy goods and Paybill transactions.

3.1.2 Service Flow

The service flow for this interface shall be as follows

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3.1.2.1 PayBill Transaction Validation and Confirmation

A customer PayBill transaction can be initiated via STK or API channel. The transaction request will be sent the M-Pesa system for processing.


After the M-Pesa system authorizes the transaction, an external transaction validation request will be sent to 3rd Party system via Broker. The external transaction validation is optional.

If the correct response (the Result Code parameter from the third party value is 0) is received from the Broker, the Mobile Money system will complete the corresponding payment transaction. The transaction status will be changed to 'Completed'.


If error response is replied by the Broker (the Result Code parameter from the third party value is not 0), the Mobile Money system will cancel the corresponding payment transaction. The transaction status will be changed to 'Cancelled'.

The third party shall be registered in the broker, and must provide a callback URL for the Confirmation and the Validation and a default response when they are unreachable for the validation. This interface is described in the RegisterURL interface specification below.

After the validation, the M-Pesa system will complete the transaction. When the transaction is completed, besides SMS notifications will be sent to the Customer, a transaction confirmation message will also be sent to the Third Party system via Broker. The Third party system will capture the transactions from the confirmation message.

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The confirmation message has no effect in the processing of the transaction.

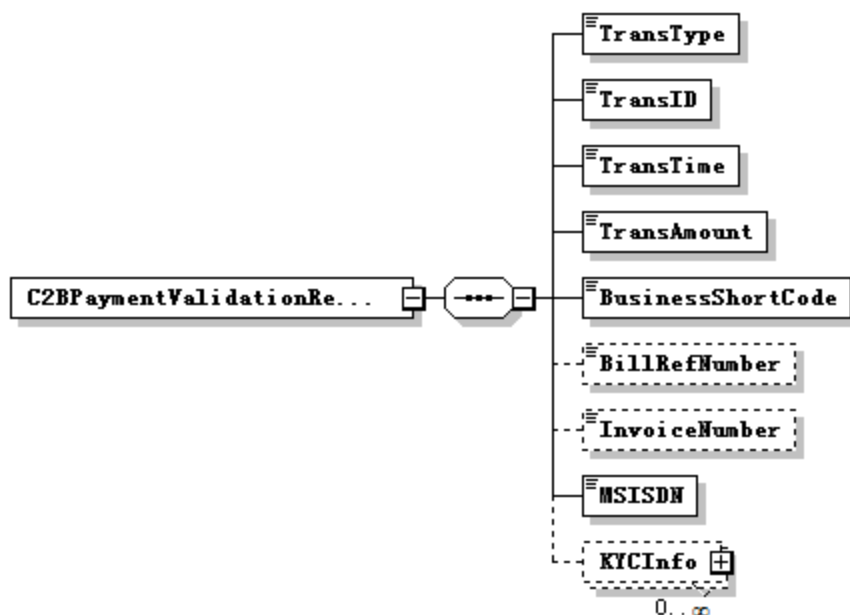
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4 Interface Specification


4.1 PayBill Transaction Validation and Confirmation

4.1.1 PayBill Transaction Validation Request from M-Pesa to Broker

The detail of C2BPaymentValidationRequest message from M-Pesa to Broker describes as following:



SN	Field Name	Type	Example value	Optional	Description
1	TransType	String	PayBill	No	The Transaction Type name of the BuyGoods transaction.
2	TransID	String	1234560000007031	No	The unique identifier of the payment transaction that is generated by M-Pesa system.
3	TransTime	String	YYYYMMDDhh	No	The date and time when customer initiates a Buy Goods transaction.


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			mmss		
			20140227082020		
4	TransAmount	String	123.00	No	The amount of the transaction. Two decimals fixed point number. Fixed Currency Type: KES e.g. 123.00 stands for: 123.00 Ksh
5	BusinessShortCode	String	12345	No	The organization short code of the Merchant in the M-Pesa system
6	BillRefNumber	String	TX1001	Yes	This field is not applicable for Buy Goods transactions. It will always be blank.
7	InvoiceNumber	String	X334343	Yes	Invoice Number as Entered by Identity This field is reserved. It will always be blank in current delivery.
8	MSISDN	String	254722703614	No	The customer's MSISDN, which is with country code prefix.
	KYCInfo				The customer's KYC information, maybe multiple KYC info.
9	KYCName	String	[Personal Details][First Name]	Yes	This KYC indicates the customer's first name
10	KYCValue	String	Hoiyor	Yes	The value of KYC field
11	KYCName	String	[Personal Details][Middle Name]	Yes	This KYC indicates the customer's middle name
12	KYCValue	String	G	Yes	The value of KYC field
13	KYCName	String	[Personal Details][Last Name]	Yes	This KYC indicates the customer's last name
14	KYCValue	String	Chen	Yes	The value of KYC field

Only the KYC fields of the customer name are fixed used here. That is, [Personal Detail][First Name], [Personal Detail][Middle Name] and [Personal Detail][Last Name].

Sample of SOAP message:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:c2b="http://cps.huawei.com/cpsinterface/c2bpayment">
  <soapenv:Header/>
  <soapenv:Body>
    <c2b:C2BPaymentValidationRequest>
      <TransactionType>PayBill</TransactionType>
      <TransID>123456000007031</TransID>
      <TransTime>20140227082020</TransTime>
      <TransAmount>123.00</TransAmount>
      <BusinessShortCode>12345</BusinessShortCode>
    </c2b:C2BPaymentValidationRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

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```

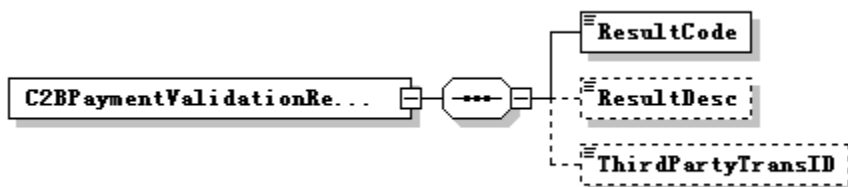
<BillRefNumber></BillRefNumber>
<InvoiceNumber></InvoiceNumber>
<MSISDN>254722703614</MSISDN>
<KYCInfo>
  <KYCName>[Personal Details][First Name]</KYCName>
  <KYCValue>Hoiyor</KYCValue>
</KYCInfo>
<KYCInfo>
  <KYCName>[Personal Details][Middle Name]</KYCName>
  <KYCValue>G</KYCValue>
</KYCInfo>
<KYCInfo>
  <KYCName>[Personal Details][Last Name]</KYCName>
  <KYCValue>Chen</KYCValue>
</KYCInfo>
</c2b:C2BPaymentValidationRequest>
</soapenv:Body>
</soapenv:Envelope>

```


Please refer to the CBPIInterface_C2BPaymentValidationAndConfirmation.wsdl file in section “5 Annex” for detail.

4.1.2 PayBill Transaction Validation Result from Broker to M-Pesa

The detail of C2BPaymentValidationResult message from Broker to M-Pesa describes as following:



SN	Field Name	Type	Example Value	Optional	Description
1	ResultCode	string	0	No	The result code of the authorization. 0 for success, others are error code.
2	ResultDesc	String	“Service processing successful”	Yes	Error message when error occurs.
3	ThirdPartyTransID	String	123456000 0088888	Yes	The unique identifier of the payment transaction that is generated by the third party This field is reserved. The M-Pesa system can accept the validation result with this field, but the system will not process the field in current delivery.

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The M-Pesa system regards the ResultCode 0 as success. Other result code are;

ResultCode	ResultDesc
C2B00011	Invalid MSISDN
C2B00012	Invalid Account number
C2B00013	Invalid Amount
C2B00014	Invalid KYC details
C2B00015	Invalid Shortcode
C2B00016	Other Error


Sample of SOAP message:

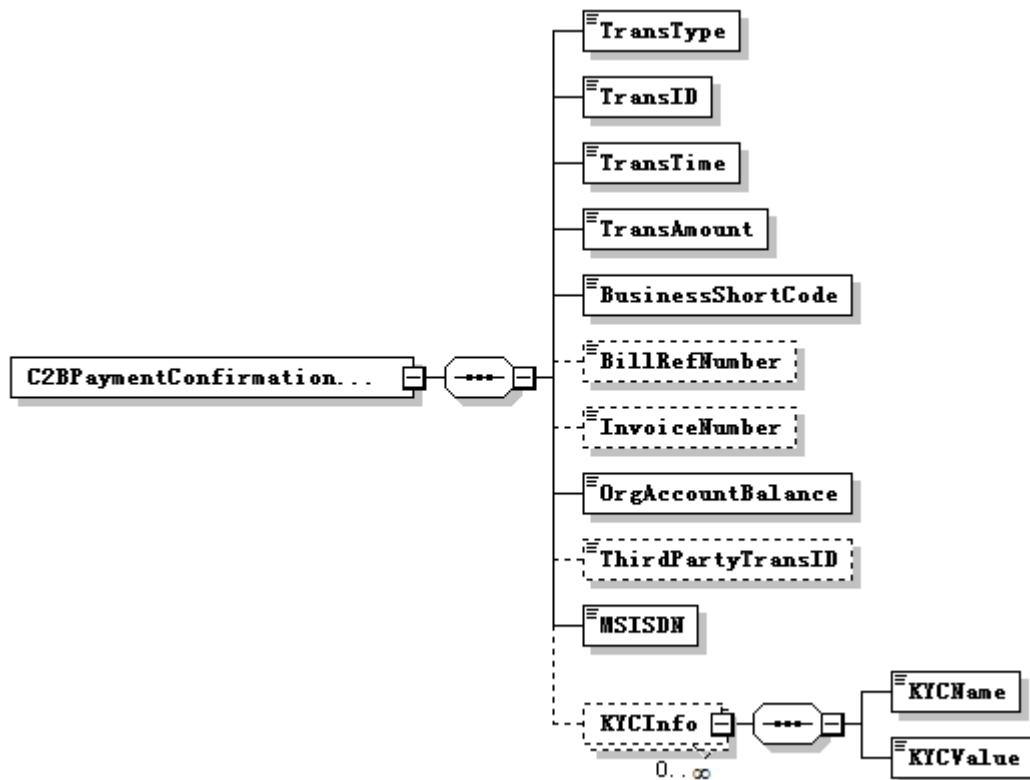
```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:c2b="http://cps.huawei.com/cpsinterface/c2bpayment">
  <soapenv:Header/>
  <soapenv:Body>
    <c2b:C2BPaymentValidationResult>
      <ResultCode>0</ResultCode>
      <ResultDesc>Service processing successful</ResultDesc>
      <ThirdPartyTransID>1234560000088888</ThirdPartyTransID>
    </c2b:C2BPaymentValidationResult>
  </soapenv:Body>
</soapenv:Envelope>
```

Please refer to the CBPInterface_C2BPaymentValidationAndConfirmation.wsdl file in section “7 Annex” to see the schema definition.


4.1.3 PayBill Transaction Confirmation Request from M-Pesa to Broker

The detail of C2BPaymenConfirmationRequest message from M-Pesa to Broker describes as following:

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SN	Field Name	type	Example value	Optional	Description
1	TransType	String	BuyGoods	No	The Transaction Type name of the Pay Bill transaction.
2	TransID	String	12345600000 07031	No	The unique identifier of the payment transaction that is generated by M-Pesa system.
3	TransTime	String	YYYYMMDD Dhhmmss 20140227082 020	No	The date and time when customer initiates a Buy Goods transaction.
4	TransAmount	String	123.00	No	The amount of the transaction. Two decimals fixed point number. Fixed Currency Type: KES e.g. 123.00 stands for: 123.00 Ksh
5	BusinessShortCode	String	12345	No	The organization short code of the Merchant in the M-Pesa system
6	BillRefNumber	String	TX1001	Yes	This field is not applicable for Buy Goods transactions. It will always be blank.

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7	InvoiceNumber	String	X334343	Yes	Invoice Number as Entered by Identity This field is reserved. It will always be blank in current delivery.
8	OrgAccountBalance	String	12345.00	No	The Available Balance of the organization's account for the Buy Goods transaction (the Credit Party account of the transaction). Two decimals fixed point number. Fixed Currency Type: KES e.g. 12345.00 stands for: 12345.00 Ksh
9	ThirdPartyTransID	String	1234560000088888	Yes	The unique identifier of the payment transaction that is generated by the third party This parameter only be present when ThirdPartyTransID was returned from the validation response message. This field is reserved. It will always be blank in current delivery.
10	MSISDN	String	254722703614	No	The customer's MSISDN, which is with country code prefix.
	KYCInfo				The customer's KYC information, maybe multiple KYC info.
11	KYCName	String	[Personal Details][First Name]	Yes	This KYC indicates the customer's first name
12	KYCValue	String	Hoiyor	Yes	The value of KYC field
13	KYCName	String	[Personal Details][Middle Name]	Yes	This KYC indicates the customer's middle name
14	KYCValue	String	G	Yes	The value of KYC field
15	KYCName	String	[Personal Details][Last Name]	Yes	This KYC indicates the customer's last name
16	KYCValue	String	Chen	Yes	The value of KYC field

Sample of SOAP message:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:c2b="http://cps.huawei.com/cpsinterface/c2bpayment">
  <soapenv:Header/>
```

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```

<soapenv:Body>
  <c2b:C2BPaymentConfirmationRequest>
    <TransactionType>PayBill</TransactionType>
    <TransID>1234560000007031</TransID>
    <TransTime>20140227082020</TransTime>
    <TransAmount>123.00</TransAmount>
    <BusinessShortCode>12345</BusinessShortCode>
    <BillRefNumber>TX1001</BillRefNumber>
    <InvoiceNumber></InvoiceNumber>
    <OrgAccountBalance>12345.00</OrgAccountBalance>
    <ThirdPartyTransID></ThirdPartyTransID>
    <MSISDN>254722703614</MSISDN>
    <KYCInfo>
      <KYCName>[Personal Details][First Name]</KYCName>
      <KYCValue>Hoiyor</KYCValue>
    </KYCInfo>
    <KYCInfo>
      <KYCName>[Personal Details][Middle Name]</KYCName>
      <KYCValue>G</KYCValue>
    </KYCInfo>
    <KYCInfo>
      <KYCName>[Personal Details][Last Name]</KYCName>
      <KYCValue>Chen</KYCValue>
    </KYCInfo>
  </c2b:C2BPaymentConfirmationRequest>
</soapenv:Body>

```

```
</soapenv:Envelope>
```

Please refer to the CBPIInterface_C2BPaymentValidationAndConfirmation.wsdl file in section “7 Annex” to see the schema definition.

4.1.4 PayBill Transaction Confirmation Result from Broker to M-Pesa

The C2BPaymentConfirmationResult message from Broker to M-Pesa is free text, no functional usage of this free text. It is only recorded in back-end log file in the M-Pesa system for traceability.


Sample of SOAP message:

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:c2b="http://cps.huawei.com/cpsinterface/c2bpayment">
  <soapenv:Header/>
  <soapenv:Body>
    <c2b:C2BPaymentConfirmationResult>C2B Payment Transaction 1234560000007031 result
    received.</c2b:C2BPaymentConfirmationResult>
  </soapenv:Body>
</soapenv:Envelope>

```

Please refer to the CBPIInterface_C2BPaymentValidationAndConfirmation.wsdl file in section “5 Annex” to see the schema definition.

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4.2 RegisterURL

4.2.1 RegisterURL interface specification

4.2.1.1 Interface Introduction

This service is for the third party system to register end-points on the broker where the validation and the confirmation messages are sent.

The detail of RegisterURL message from the third party to Broker describes as following:

4.2.1.2 Data Type Definition

4.2.1.2.1 IdentifierType enumeration

List of IdentityType values.


Enumeration	Description
1	MSISDN
2	TillNumber
3	SPShortCode
4	OrganizationShortCode
5	IdentityID
6	O2CLink
9	SPOperatorCode
10	POSNumber
11	OrganizationOperatorUserName
12	OrganizationOperatorCode
13	VoucherCode

4.2.1.2.2 ParameterType structure

Element name	Element type	Optional	Description
Key	xsd:string	No	It indicates a parameter name.
Value	xsd:string	No	It indicates a parameter value.

4.2.1.2.3 Parameters structure

Element name	Element type	Optional	Description
Parameter	ParameterType[1..unbounded]	No	It is used to carry specific parameters for specific transaction or business operation.

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4.2.1.2.4 ReferenceData structure


Element name	Element type	Optional	Description
ReferenceItem	ParameterType[1..unbounded]	No	It is used carry some reference data that MM need not analyze but need to record it into transaction log..

4.2.1.2.5 Transaction structure

Element name	Element type	Optional	Description
CommandID	xsd:string	No	The unique identifier of transaction/business operation. Max length is 64.eg • RegisterURL
LanguageCode	xsd:string	Yes	It indicates language. It's reserved.
OriginatorConversationID	xsd:string	No	The unique identifier of the request message generated by third party. It is used to identify a request between the third party and MM. Max length is 128. Field must start with the Organisation short and name of organisation. Eg. 232323_KCBOrg_XXXXXX XXXXXX must be unique for every transaction.
ConversationID	xsd:string	Yes	The unique identifier generated by MM for a previous request message. It is used to support communication multi-times between the third party and MM for one operation/transaction.
Remark	xsd:string	Yes	The remark information about this operation. Max length is 255
Parameters	Parameters	Yes	It is used to carry specific parameters for specific transaction or business operation. This service will have one parameter type "ResponseType" and the value can either be complete or cancel. This is the action that will be taken in-case the 3 rd party Validation URL registered are not reachable.
ReferenceData	ReferenceData	No	It is used carry some reference data that MM need not analyze but need to record it into transaction log. 1. ValidationURL is the Key and the Value is the Validation Service URL on the 3 rd parties end. 2. ConfirmationURL is the Key and the Value is the Confirmation Service URL on the 3 rd parties end.
Timestamp	xsd:string	No	The timestamp generated by the third party.

4.2.1.2.6 Caller structure

Element name	Element type	Optional	Description
CallerType	xsd:integer	Yes	Indicates the type of the caller: 2-APICaller

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			3-Other(Reserved). For this service use 2.
ThirdPartyID	xsd:string	Yes	The unique identifier of a third party system defined in MM. It indicates the third party which initiates the request. Max length is 20 This parameter is not used in this service. Leave it blank.
Password	xsd:string	Yes	This security credential of the ThirdPartyID defined in MM. If the password feature for third party is used in MM, then this parameter must be presented in the request message. This parameter is not used in this service. Leave it blank.
Checksum	xsd:string	Yes	Currently it is unused. It is reserved for API security. This parameter is not used in this service. Leave it blank.
ResultURL	xsd:string	Yes	It indicates the destination URL where Broker should send the result message to. This parameter is not used in this service. Leave it blank.

4.2.1.2.7 Initiator structure


Element name	Element type	Optional	Description
IdentifierType	IdentifierType	Yes	It indicates the identifier type of the initiator. The value of this parameter must be a valid identifier type supported by MM. For this service use 11.
Identifier	xsd:string	Yes	It indicates the identifier of the initiator. Its value must match the inputted value of the parameter IdentifierType. This parameter is not used in this service. Leave it blank.
SecurityCredential	xsd:string	Yes	It indicates the security credential of the initiator. Its value must match the inputted value of the parameter IdentifierType. This parameter is not used in this service. Leave it blank.
ShortCode	xsd:string	Yes	When the initiator is an organization operator, this parameter must be present in the request to indicate which organization the operator belongs to. If the initiator is not an organization operator, this parameter should not be present. This parameter is not used in this service. Leave it blank.

4.2.1.2.8 PrimaryParty structure

Element name	Element type	Optional	Description
IdentifierType	IdentifierType	No	It indicates the identifier type of the primary party. The value of this parameter must be a valid identifier type supported by MM and must match the inputted value of the parameter IdentityType. Set as 1
Identifier	xsd:string	Yes	It indicates a parameter value.
ShortCode	xsd:string	No	Short code of the Merchant Head office, store or C2B organisation

4.2.1.2.9 Identity structure

Element name	Element type	Optional	Description
--------------	--------------	----------	-------------

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Caller	Caller	Yes	It indicates the third party which initiates the request
Initiator	Initiator	Yes	It indicates the identity who makes the request. An initiator must be one of the following identity types: <ul style="list-style-type: none"> • SP operator • Organization operator(11) NOTE The value “11”(Organization Operator) will be used for all the services in this document.
PrimaryParty	PrimaryParty	No	If business operation/action, this element is not present; if transaction, this can be either the debit party or the credit party according to the transaction type. The value “1” (Customer)

4.2.1.2.10 Request structure

Element name	Element type	Optional	Description
Transaction	Transaction	No	It indicates a transaction.
Identity	Identity	No	This section is used to specify all identities involved in the request
KeyOwner	xsd:integer	No	It indicates which Key is used to encrypt the elements Initiator.SecurityCredential and the EncryptedParameters. Its value are enumerated as follows: 1:the API Caller's Key 2:the Initiator's Key For this service use 1.

4.2.1.2.11 Message Header: RequestSOAPHeader


Element name	Element type	Optional	Description
SpId	xsd: string	No	SP ID. This is the Service Provider Identifier that is allocated by the Broker to the 3rd party. [Example] 000201

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Element name	Element type	Optional	Description
SpPassword	xsd: string	Yes	<p>This is an encrypted form of the SP password issued to an SP when an account is created on the Broker.</p> <p>The encrypted password is a Base64 encoded string of the SHA-256 hash of the concatenation of the spId, password and the timeStamp as illustrated below:</p> <p>Given the following parameters</p> <p>spId: 601399</p> <p>password: spPassword</p> <p>timestamp: 20130702212854</p> <p>spPassword = BASE64(SHA-256(spId + Password + timeStamp))</p> <p>e.g.</p> <p>spPassword = BASE64(SHA-256(601399spPassword20130702212854))</p> <p>[Example]</p> <p>e6434ef249df55c7a21a0b45758a39bb</p>
ServiceId	xsd: string	Yes	<p>Service ID.</p> <p>This is the Service Identifier that is allocated by the Broker for every service created.</p> <p>[Example]</p> <p>3500001000012</p>
Timestamp	xsd: string	Yes	<p>Time stamp (UTC time).</p> <p>The value is required during SHA-256 encryption for spPassword.</p> <p>NOTE</p> <p>If the spPassword parameter must be set, this parameter is mandatory.</p> <p>[Format]</p> <p>yyyyMMddHHmmss</p> <p>[Example]</p> <p>20100731064245</p>

4.2.1.2.12 Response structure

Element name	Element type	Optional	Description
ResponseCode	xsd:string	No	It indicates whether MM accepts the request or not.
ResponseDesc	xsd:string	Yes	Its value is a description for the parameter ResultCode.
ConversationID	xsd:string	Yes	The unique identifier generated by M-Pesa for the request message.


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OriginatorConversationID	xsd:string	Yes	The unique identifier generated by the third party for the request message.
ServiceStatus	xsd: integer	Yes	It indicates the MM service status.

4.2.1.3 Instance

✓ Request messages

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:req="http://api-v1.gen.mm.vodafone.com/mminterface/request">
  <soapenv:Header>
    <tns:RequestSOAPHeader xmlns:tns="http://www.huawei.com/schema/osg/common/v2_1">
      <tns:spId>151515</tns:spId>
      <tns:spPassword>ODExNERCMDlCNjVDRkYxQUFCNzE5MkE1OEQyMjJDMzk1RUFCNzgwMjk2ODE4Rjk1OTE2MEFGNDU1QkRCMDkyMg==</tns:spPassword>
      <tns:timeStamp>20140730093620</tns:timeStamp>
      <tns:serviceId>151515001</tns:serviceId>
    </tns:RequestSOAPHeader>
  </soapenv:Header>
  <soapenv:Body>
    <req:RequestMsg><![CDATA[<?xml version="1.0" encoding="UTF-8"?>
<request xmlns="http://api-v1.gen.mm.vodafone.com/mminterface/request">
  <Transaction>
    <CommandID>RegisterURL</CommandID>
    <OriginatorConversationID>Reg-266-1126</OriginatorConversationID>
    <Parameters>
      <Parameter>
        <Key>ResponseType</Key>
        <Value>Completed</Value>
      </Parameter>
    </Parameters>
    <ReferenceData>
      <ReferenceItem>
        <Key>ValidationURL</Key>
        <Value>http://10.66.49.201:8099/mock</Value>
      </ReferenceItem>
      <ReferenceItem>
        <Key>ConfirmationURL</Key>
        <Value>http://10.66.49.201:8099/mock</Value>
      </ReferenceItem>
    </ReferenceData>
  </Transaction>
  <Identity>
    <Caller>
      <CallerType>0</CallerType>
      <ThirdPartyID/>
      <Password/>
      <Checksum/>
      <ResultURL/>
    </Caller>
  </Identity>
</request>
]]></req:RequestMsg>
  </soapenv:Body>
</soapenv:Envelope>
```

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```

    </Caller>
    <Initiator>
      <IdentifierType>1</IdentifierType>
      <Identifier/>
      <SecurityCredential/>
      <ShortCode/>
    </Initiator>
    <PrimaryParty>
      <IdentifierType>1</IdentifierType>
      <Identifier/>
      <ShortCode>898942</ShortCode>
    </PrimaryParty>
  </Identity>
  <KeyOwner>1</KeyOwner>
</request>]]></req:RequestMsg>
</soapenv:Body>
</soapenv:Envelope>


```

✓ Response messages

```

<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:req="http://api-v1.gen.mm.vodafone.com/mminterface/request">
  <soapenv:Header/>
  <soapenv:Body>
    <req:ResponseMsg><![CDATA[<?xml version="1.0" encoding="UTF-8"?><response
xmlns="http://api-v1.gen.mm.vodafone.com/mminterface/response"><ResponseCode>00000000</ResponseCode>
<ResponseDesc>success</ResponseDesc><ConversationID></ConversationID><OriginatorConversationID></Ori
ginatorConversationID><ServiceStatus>0</ServiceStatus></response>]]></req:ResponseMsg>
  </soapenv:Body>
</soapenv:Envelope>

```

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5 Annex

The attached is the WSDL file adopted for Buy Goods external validation confirmation.



CBPInterface_C2BPaymentValidationAndConfirmation.wsdl