



THE UNITED REPUBLIC OF TANZANIA

BILL AND PAYMENT POSTING APPLICATION PROGRAMING INTERFACE (APIv4.0)

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Document Description

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Owner	Government of Tanzania
Document Type	GePG – Public institution Integration

Document version Control

Version	Date	Change Description
1.0	24-02-2017	Baseline initial version created.
1.1	24-02-2017	Added Token Request Procedure
1.2	25-02-2017	I. Ack XML simplified II. Added payment posting section
1.3	16-05-2017	Added Bill cancellation feature
1.4	19-07-2017	Update bill information
1.4.1	12-10-2017	<ul style="list-style-type: none"> • Added Exact bill definition • Added CtrAccNum tag in payment notification
2.0	28-10-2017	<ul style="list-style-type: none"> • Added digital signature • Added reconciliation message • Added data type definitions
2.0.1	31-10-2017	<ul style="list-style-type: none"> • Document formatting • Added reserved fields on recon message
2.0.2	18-01-2018	<ul style="list-style-type: none"> • Added Signed Bill Cancellation Request Format
3.0	06-07-2018	<ul style="list-style-type: none"> • General Document Formatting • Added GePG online section • Added document pre-requisite section
4.0	01-07-2019	<ul style="list-style-type: none"> • Document Formatting • Added Bill control number reuse • Added Bill information update • Added Bill cancellation reason

1. PREREQUISITES

- I. Network Connection to GePG
Integrating institution is supposed to establish secure Virtual Private Network (VPN) connection with GePG DataCenter.
- II. Billing System
Integrating institution must have a working or complete developed billing system that is ready for integration testing with GePG.
- III. Call Back URLs
Integrating institution must provide the following API URLs for receiving responses from GePG into billing system:-
 - o Bill Processing Results
 - o Payment Notifications
 - o Reconciliation Processing Results
- IV. Government SMS Account
Integrating institution may be required to provide SMS account to be used in sending SMS notifications such as payment notifications, bill reminders e.t.c.
- V. Digital Certificates
Integrating institution must share her public certificate and obtain GePG public certificate to be used in verification of all messages exchanged between billing system and GePG.

NOTE:

Testing certificates may be provided by GePG.

- VI. GePG End Points
 - o Bill Submission:
<http://<gepgIP>:<port>/api/bill/sigqrequest>
 - o Bill Control Number Reuse Submission:
http://<gepgIP>:<port>/api/bill/sigqrequest_reuse
 - o Bill Update Submission:
http://<gepgIP>:<port>/api/bill/sigqrequest_change
 - o Bill Cancellation:
http://<gepgIP>:<port>/api/bill/sigcancel_request
 - o Reconciliation Request:
http://<gepgIP>:<port>/api/reconciliations/sig_sp_qrequest
 - o Form redirect request (Sending Payment Request) – REQ (For online payment)
<https://<gepgIP>:<port>/api/sp/paymentRequest>
 - o Form redirect request (Checking Payment Status) – REQ (For online payment)
<https://<gepgIP>:<port>/api/sp/statusRequest>

2. REQUEST HEADER

The following parameters should be included in HTTP header when sending request to GePG

Parameter	Values/Description
Content-Type	Application/xml
Gepg-Com	default.sp.in
Gepg-Code	will be given during the integration

3. BILL POSTING FLOW

- I. Integrating institution billing system composes bill submission request as per `gepgBillSubReq.xml` format and submit (single bill or multiple bills at once) to GePG
- II. GePG receive the bill, immediately send back the acknowledgement as per `gepgBillSubReqAck.xml` format to the billing system and post the bill to its incoming bill queue for processing.
- III. GePG process the bill, publish the bill response to outgoing bill queue, compose the bill response as per `gepgBillSubRes.xml` format and send the result to a billing system.
- IV. The billing system respond to a `gepgBillSubReq` with `gepgBillSubReqAck`, GePG receive the ACK and remove the bill from the queue.

NOTE: In case the GePG does not receive the ACK in step IV, it will keep on retrying to send the bill result until EOD when the message expires. Afterwards, in order to get the message; the institution will be required to resubmit the same request.

GE PG BILL POSTING FLOW



3.1 GePG Bill Submission Request –gepgBillSubReq

```

<gepgBillSubReq>
  <BillHdr>
    <SpCode>SP023</SpCode>
    <RtrRespFlg>true</RtrRespFlg>
  </BillHdr>
  <BillTrxInf>
    <BillId>7885</BillId>
    <SubSpCode>2001</SubSpCode>
    <SpSysId>tjv47</SpSysId>
    <BillAmt>7885</BillAmt>
    <MiscAmt>0</MiscAmt>
    <BillExprDt>2017-05-30T10:00:01</BillExprDt>
    <PyrId>Palapala</PyrId>
    <PyrName>Charles Palapala</PyrName>
    <BillDesc>Bill Number 7885</BillDesc>
    <BillGenDt>2017-02-22T10:00:10</BillGenDt>
    <BillGenBy>100</BillGenBy>
    <BillApprBy>Hashim</BillApprBy>
    <PyrCellNum>0699210053</PyrCellNum>
    <PyrEmail>charlestp@yahoo.com</PyrEmail>
    <Ccy>TZS</Ccy>
    <BillEqvAmt>7885</BillEqvAmt>
    <RemFlag>true</RemFlag>
    <BillPayOpt>1</BillPayOpt>
    <BillItems>
      <BillItem>
        <BillItemRef>788578851</BillItemRef>
        <UseItemRefOnPay>N</UseItemRefOnPay>
        <BillItemAmt>7885</BillItemAmt>
        <BillItemEqvAmt>7885</BillItemEqvAmt>
        <BillItemMiscAmt>0</BillItemMiscAmt>
        <GfsCode>140206</GfsCode>
      </BillItem>
      <BillItem>
        <BillItemRef>788578852</BillItemRef>
        <UseItemRefOnPay>N</UseItemRefOnPay>
        <BillItemAmt>7885</BillItemAmt>
        <BillItemEqvAmt>7885</BillItemEqvAmt>
        <BillItemMiscAmt>0</BillItemMiscAmt>
        <GfsCode>140206</GfsCode>
      </BillItem>
    </BillItems>
  </BillTrxInf>
</gepgBillSubReq>

```

gepgBillSubReq		Data Type	GePG Bill Submission Request – Used to Submit Bill to the GePG
BillHdr			Bill Header Information
SpCode	String(5)	Mandatory	Service Provider Code
RtrRespFlg	Boolean	Mandatory	Return Response Flag – Boolean if True then response for the submit request is required.
BillTrxInf			Bill Transaction Information - Can be many if submitting multiple bill
BillId	String(100)	Mandatory	Bill Identification – Unique identification of the Bill in

			Service Provider Billing System
SubSpCode	Number(10)	Mandatory	Service Provider Sub Code
SpSysId	String(10)	Mandatory	Service Provider System Identification Code
BillAmt	Double	Mandatory	Billed Amount can be decimal with precision of two.
MiscAmt	Double	Mandatory	Miscellaneous Amount can be decimal with precision of two. Always with billed currency. Default:0.00
BillExprDt	DateAndTime	Mandatory	Bill Expiry Date with format YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12). Beyond this date the bill is deemed invalid
PyrId	String(50)	Mandatory	Payer Identification
PyrName	String(200)	Mandatory	Payer Name
BillDesc	String(500)	Optional	Bill Description
BillGenDt	DateAndTime	Mandatory	Bill Generation Date with format YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12). Accepts today and past dates only.
BillGenBy	String(30)	Optional	Bill Generated By
BillApprBy	String(30)	Optional	Bill Approved By
PyrCellNum	String(12)	Optional	Payer Mobile/Cell Number should have twelve digits including country code e.g. 255XXXXXXXXXX
PyrEmail	String(30)	Optional	Payer Email Address
Ccy	String(3)	Mandatory	Billed Amount Currency must be standard currency code
BillEqvAmt	Double	Mandatory	Billed Equivalent Amount should be equal to the summation of all item equivalent amounts. Always submitted as TZS.
RemFlag	Boolean	Mandatory	Reminder Flag - True if reminder must be sent to the billed entity.
BillPayOpt	Numeric(1)	Mandatory	Bill Payment Options define the rules with which the bill should be paid. Can have the following values:- ○ 1:FULL Bill- must be paid in one installment with the amount paid equal or greater than the billed amount.

			<ul style="list-style-type: none"> ○ 2:PARTIAL Bill- may be paid in multiple installments with the last installment greater or equal to the billed amount ○ 3:EXACT Bill- must be paid in one installment with the amount paid exactly equal to the billed amount.
BillItems			Envelop for Bill items can have multiple BillItem definitions
BillItem			Bill item information
BillItemRef	String(50)	Mandatory	Item reference as deemed relevant by institution e.g. student registration number, customer account etc.
UseItemRefOnPay	String(1)	Mandatory	The value should be "N"
BillItemAmt	Double	Mandatory	Bill item amount can be decimal with precision of two. Always with billed currency.
BillItemEqvAmt	Double	Mandatory	Bill item equivalent amount should be equal to TZS equivalent of the bill item amount. Can be decimal with precision of two.
BillItemMiscAmt	Double	Mandatory	Bill item miscellaneous Amount can be decimal with precision of two. Always with bill item currency. Default:0.00
GfsCode	String(10)	Mandatory	GFS code is Government Standard for coding revenue sources. Should be specified for each bill item.

3.2 GePG Bill Submission Request Acknowledgement – gepgBillSubReqAck

```
<gepgBillSubReqAck>
    <TrxStsCode>7101</TrxStsCode>
</gepgBillSubReqAck>
```

NOTE:

Transaction Status Code (TrxStsCode)- Refer Appendix I for codes definition. If several will be separated by semicolon e.g. (7242;7201).

3.3 GePG Bill Submission Response–gepgBillSubResp

```

<gepgBillSubResp>
  <BillTrxInf>
    <BillId>7885</BillId>
    <TrxSts>GF</TrxSts>
    <PayCntrNum>0</PayCntrNum>
    <TrxStsCode>7242;7627</TrxStsCode>
  </BillTrxInf>
</gepgBillSubResp>

```

gepgBillSubResp	Data Type	GePG Bill Submission Response – Message returned upon successful Bill Submission
BillTrxInf		Bill Transaction information
BillId	String(100)	Bill Identification
TrxSts	String(2)	Transaction Status <ul style="list-style-type: none"> ○ GF – GePG Failure ○ GS – GePG Success
PayCntrNum	Numeric(12)	Payment Control Number
TrxStsCode	String(50)	Transaction Status Code (TrxStsCode)- Refer Appendix I for codes definition. If several will be separated by semicolon e.g. (7242;7201).

3.4 GePG Bill Submission Response Acknowledgement – gepgBillSubResAck

```

<gepgBillSubResAck>
  <TrxStsCode>7101</TrxStsCode>
</gepgBillSubResAck>

```

NOTE:

Transaction Status Code (TrxStsCode)- Always should be 7101: Successful Received

3.5 GePG Bill Control Number Reuse

The bill posting flow for control number reuse follows the same information flow sequence as the normal bill control number request and responses flow. Control number reuse request adds one more xml tag i.e. <PayCntrNum> carrying GePG previous issued valid control number.

NOTE:

Refer Section 3. Bill Posting Flow

3.5.1 Bill Control Number Reuse Request.

```
<gepgBillSubReq>
  <BillHdr>
    <SpCode>SP023</SpCode>
    <RtrRespFlg>>true</RtrRespFlg>
  </BillHdr>
  <BillTrxInf>
    <BillId>7885</BillId>
    <SubSpCode>2001</SubSpCode>
    <SpSysId>tjv47</SpSysId>
    <BillAmt>7885</BillAmt>
    <MiscAmt>0</MiscAmt>
    <BillExprDt>2017-05-30T10:00:01</BillExprDt>
    <PyrId>Palapala</PyrId>
    <PyrName>Charles Palapala</PyrName>
    <BillDesc>Bill Number 7885</BillDesc>
    <BillGenDt>2017-02-22T10:00:10</BillGenDt>
    <BillGenBy>100</BillGenBy>
    <BillApprBy>Hashim</BillApprBy>
    <PyrCellNum>0699210053</PyrCellNum>
    <PyrEmail>charlestp@yahoo.com</PyrEmail>
    <Ccy>TZS</Ccy>
    <BillEqvAmt>7885</BillEqvAmt>
    <RemFlag>>true</RemFlag>
    <BillPayOpt>1</BillPayOpt>
    <PayCntrNum>990239121373</PayCntrNum>
    <BillItems>
      <BillItem>
        <BillItemRef>788578851</BillItemRef>
        <UseItemRefOnPay>N</UseItemRefOnPay>
        <BillItemAmt>7885</BillItemAmt>
        <BillItemEqvAmt>7885</BillItemEqvAmt>
        <BillItemMiscAmt>0</BillItemMiscAmt>
        <GfsCode>140206</GfsCode>
      </BillItem>
      <BillItem>
        <BillItemRef>788578852</BillItemRef>
        <UseItemRefOnPay>N</UseItemRefOnPay>
        <BillItemAmt>7885</BillItemAmt>
        <BillItemEqvAmt>7885</BillItemEqvAmt>
        <BillItemMiscAmt>0</BillItemMiscAmt>
        <GfsCode>140206</GfsCode>
      </BillItem>
    </BillItems>
  </BillTrxInf>
</gepgBillSubReq>
```

gepgBillSubReq Data Type			GePG Bill Control Number Reuse Submission Request - Additional Field
PayCntrNum	String(12)	Mandatory	Previously issued control number to be reused.

3.6 GePG Bill Change

The GePG bill change or update api also follows the bill information flow as depicted in section 3. of this document. The change request only requires submission of the bill id, the integrated system identification and some bill fields permitted for the update process. Other responses remain the same as shown in normal bill control number request.

3.6.1 Bill Change or Update Request

```

<gepgBillSubReq>
  <BillHdr>
    <SpCode>SP023</SpCode>
    <RtrRespFlg>true</RtrRespFlg>
  </BillHdr>
  <BillTrxInf>
    <BillId>699371-11834245667</BillId>
    <SpSysId>tjv47</SpSysId>
    <BillExprDt>2019-10-21T10:52:17</BillExprDt>
    <BillRsv1></BillRsv1>
    <BillRsv2></BillRsv2>
    <BillRsv3></BillRsv3>
  </BillTrxInf>
</gepgBillSubReq>

```

gepgBillSubReq	Data Type		GePG Bill Change Submission Request
BillHdr			Bill Header Information
SpCode	String(5)	Mandatory	Service Provider Code
RtrRespFlg	Boolean	Mandatory	Return Response Flag - Boolean if True then response for the submit request is required.
BillTrxInf			Bill Transaction Information - Can be many if submitting multiple bill
BillId	String(100)	Mandatory	Bill Identification - Unique identification of the Bill in Service Provider Billing

SpSysId	String(10)	Mandatory	System
BillExprDt	DateAndTime	Mandatory	Service Provider System
			Bill Expiry Date with format YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12). Beyond this date the bill is deemed invalid
BillRsv1	String(100)	Optional	Reseved Field
BillRsv2	String(100)	Optional	Reseved Field
BillRsv3	String(100)	Optional	Reseved Field

3.7 GePG Bill Cancellation Request – gepgBillCanclReq

```

<gepgBillCanclReq>
  <SpCode>SP108</SpCode>
  <SpSysId>tjv47</SpSysId>
  <CanclReasn>Customer over billed</CanclReasn>
  <BillId>991080001559</BillId>
  <BillId>4355678</BillId>
</gepgBillCanclReq>

```

gepgBillCanclReq		Data Type	GePG Bill cancellation request - Used to cancel bill in the GePG
SpCode	String(5)	Mandatory	Service Provider Code
BillId	String(100)	Mandatory	Bill Identification - Unique identification of the Bill in Service Provider Billing System The request can contain multiple Bill Identification by repeating the tag <BillId ></ BillId>.
SpSysId	String(10)	Mandatory	Service Provider System Identification Code
CanclReasn	String(255)	Mandatory	Bill Cancellation reason

3.8 GePG Bill Cancellation response - gepgBillCanclResp

```

<gepgBillCanclResp>
  <BillCanclTrxDt>
    <BillId>991080001559</BillId>
    <TrxSts>GS</TrxSts>
    <TrxStsCode>7283</TrxStsCode>
  </BillCanclTrxDt>
  <BillCanclTrxDt>
    <BillId>4355678</BillId>
    <TrxSts>GF</TrxSts>
    <TrxStsCode>7204</TrxStsCode>
  </BillCanclTrxDt>
</gepgBillCanclResp>

```

gepgBillCancelResp	Data Type	GePG Bill cancellation Response – Message returned upon successful Bill cancellation request
BillCancelTrxDt		Bill Cancel Transaction details can contain multiple responses by repeating the definition BillCancelTrxDt.
BillId	String(100)	Bill Identification – Unique identification of the Bill in Service Provider Billing System
TrxSts	String(2)	Transaction Status <ul style="list-style-type: none"> ○ GF – GePG Failure ○ GS – GePG Success
TrxStsCode	String(50)	Transaction Status Code (TrxStsCode)- Refer Appendix I for codes definition. If several will be separated by semicolon e.g. (7242;7201).

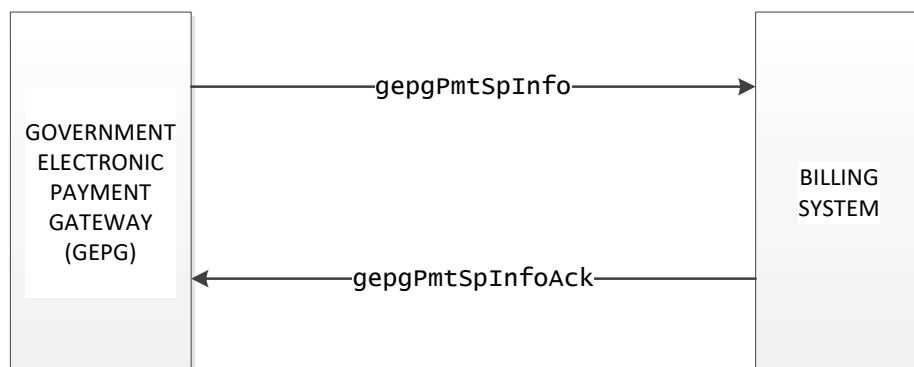
4 PAYMENT POSTING FLOW

Payment Service Provider (Bank, Mobile Money Operator) accepts the payment, credit the public institution bank account and share the payment information with GePG.

- I. Once the payment is received, GePG will settle the bill and notify a respective institution by sending **gepgPmtSpInfo** to institution billing system indicated in **SpSysId** field during bill submission.
- II. The billing system has to respond to a **gepgPmtSpInfo** message with **gepgPmtSpInfoAck**.
- III. GePG will receive the ACK and remove the payment notification message from the queue.

NOTE: In case the GePG does not receive the ACK in step III, it will keep on retrying to send the payment information until EOD when the message expires. Afterwards, in order to get the message; the institution will be required to resubmit the same request.

GEPG PAYMENT POSTING FLOW



4.1 GePG Payment Information posting –gepgPmtSpInfo

```

<gepgPmtSpInfo>
  <PymtTrxInf>
    <TrxId></TrxId>
    <SpCode></SpCode>
    <PayRefId></PayRefId>
    <BillId></BillId>
    <PayCtrNum></PayCtrNum>
    <BillAmt></BillAmt>
    <PaidAmt></PaidAmt>
    <BillPayOpt></BillPayOpt>
    <CCy></CCy>
    <TrxDtTm></TrxDtTm>
    <UsdPayChnl></UsdPayChnl>
    <PyrCellNum></PyrCellNum>
    <PyrName></PyrName>
    <PyrEmail></PyrEmail>
    <PspReceiptNumber></PspReceiptNumber>
    <PspName></PspName>
    <CtrAccNum></CtrAccNum>
  </PymtTrxInf>
</gepgPmtSpInfo>

```

gepgPmtSpInfo	Data Type	GePG payment posting to public institution – Used to Submit payment info received from payment service provider
PymtTrxInf		Payment Information Envelop
TrxId	String(100)	PSP Transaction Identification
SpCode	String(5)	Service Provider Code
PayRefId	String(100)	Payment receipt issued by the GePG
BillId	String(100)	Bill Identification – Unique identification of the Bill in Service Provider Billing System
PayCtrNum	Number(12)	Payment Control Number
BillAmt	Double	Bill Amount Billed Amount can be decimal with precision of two.
PaidAmt	Double	Paid Amount can be decimal with precision of two.
BillPayOpt	String(10)	Bill Payment Options define the rules with which the bill should be paid. Can have the following values:- ○ 1:FULL Bill- must be paid in one installment with the amount paid equal or greater than the billed amount. ○ 2:PARTIAL Bill- may be paid in multiple installments with the last installment greater or equal to the billed amount 3:EXACT Bill- must be paid in one installment with the amount paid exactly

		equal to the billed amount.
CCy	String(3)	Paid Amount Currency must be standard currency code
TrxDtTm	DateAndTime	Transaction Date and Time with format YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12)
UsdPayChn	String(50)	Payment provider payment channel used to pay the bill e.g. Online banking, Mobile banking, Point Of Sale etc
PyrCellNum	String(12)	Payer Mobile/Cell Number as received from payment service provider. Should have twelve digits including country code e.g. 255XXXXXXXX
PyrName	String (200)	Payer Name as received from payment service provider
PyrEmail	String(100)	Payer Email Address as received from payment service provider
PspReceiptNumber	String(100)	Payment Receipt issued by payment service provider
PspName	String(100)	Payment service provider Name eg. NMB, Vodacom etc
CtrAccNum	String(30)	Credited Account Number

4.2 GePG Payment Information posting Acknowledgement – gepgPmtSpInfoAck

```
<gepgPmtSpInfoAck>
  <TrxStsCode>7101</TrxStsCode>
</gepgPmtSpInfoAck>
```

NOTE:

Transaction Status Code (TrxStsCode)- Always should be 7101:
Successful Received

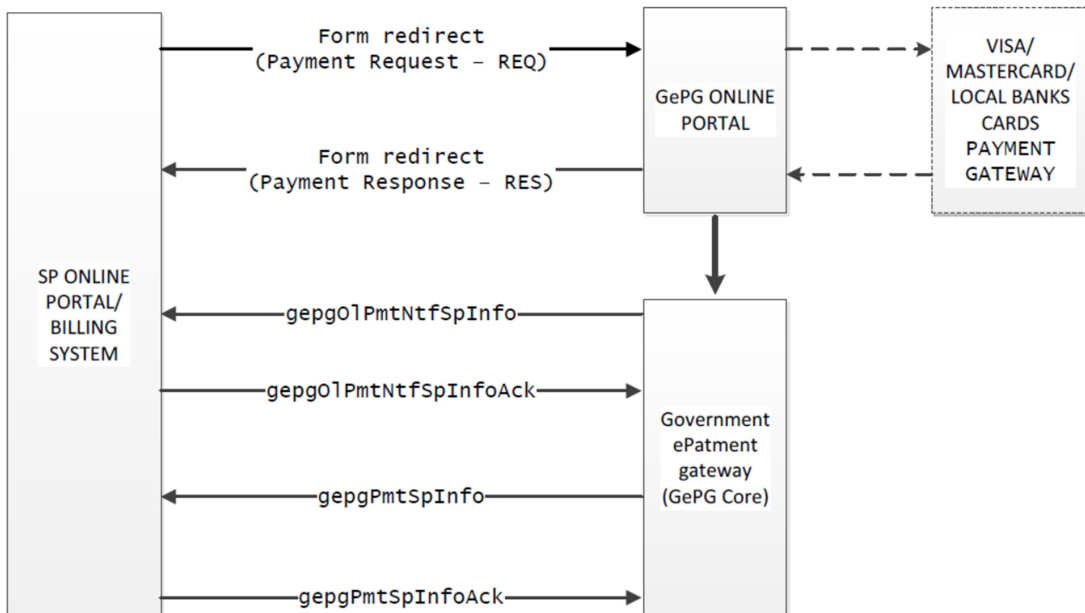
5 ONLINE PAYMENTS (LOCAL CARDS/VISA/MASTERCARD)

- a. Public institution billing system/online portal compose redirect form request and submit to GePG online portal as per Form redirect Request REQ.
- b. GePG receive the request, extract and verify the information, Once the request verified to be correct, GePG online portal calculate transaction charges (PSP commission) and present to a customer. Customer has to accept to proceed forward.

- c. Upon customer acceptance GePG online portal will redirect the customer to a desired card online scheme (Local/visa/MasterCard etc) as specified by the Public institution in Form redirect Request - REQ for payment
- d. Once payment is made, GePG online portal will send the feedback to Public institution billing system/online portal with transaction **Authorization Code** for successful payment or with specific error message for a failed payment. Both feedbacks are sent as per Form redirect Response - RES. The same feedback will be sent to GePG core (but only for successful transactions)
- e. Instantly GePG will notify a respective institution by sending gepg01PmtSpInfo to institution billing system.
- f. The billing system respond to a gepg01PmtSpInfo with gepg01PmtSpInfoAck , GePG receive the ACK and remove the notification from its queues.
- g. Once the transaction credited in institution bank account (usually at the next day (T+1) for online payments), GePG will notify a respective institution by sending gepgPmtSpInfo to institution billing system
- h. The billing system respond to a gepgPmtSpInfo with gepgPmtSpInfoAck , GePG receive the ACK and remove the notification from its queues

NOTE: In case the GePG does not receive the ACK in step e and h, it will keep on retrying to send the notifications until the ACK is received.

GEPG ONLINE PAYMENT FLOW



5.1 Form redirect – Payment Request (REQ) – From SP to GePG

```
<form method="GET" action="" >
<input type="text" name="CrtNum" >
<input type="hidden" name="SpCode" value="">
<input type="hidden" name="BillAmt" value="">
<input type="hidden" name="Hashvalue"
value="" > <input type="hidden" name="TrxId"
value="" > <input type="hidden" name="
PrefPat" value="" > <input type="submit"
name="check" value="check" >
```

Payment Request (PR)	Data Type	Form redirect – Payment Request, PR – Used to Submit online payment request to GePG from public institution online portal/billing system
CtrNum	Number(12)	Payment Control Number
SpCode	String(5)	Service Provider Code
BillAmt	Double	Bill Amount
HashValue	String	Secure Hash (Generated as per instruction provided in Below)
TrxId	String(100)	Transaction id must be unique in each request
PrefPat	String (20)	Carries the value of ID of the preferred payment service provider – ID's of all available providers will be shared during integration

5.2 Form redirect – Payment Status Request (RES) – From SP to GePG

```
<form method="POST" action="" >
<input type="text" name="CrtNum" >
<input type="hidden" name="SpCode" value="">
<input type="hidden" name="BillAmt" value="">
<input type="hidden" name="HashValue"
value="" > <input type="hidden" name="TrxId"
value="" > <input type="submit" name="check"
value="check" >
```

Payment Status Request (StatusReq)	Data Type	Post Request – Payment Status Request, StatusReq– Used to Check status of a transaction on online payment gateway to GePG from public institution online portal/billing system incase payment response was not received
CtrNum	Number(12)	Payment Control Number
SpCode	String(5)	Service Provider Code
BillAmt	Double	Bill Amount
HashValue	String	Secure Hash (Generated as per instruction provided in Below)
TrxId	String(100)	Transaction id must be the same as used in initial request

5.3 Form redirect – Payment Response (Res) – From GePG to SP

```

<form action="">
<input type="hidden" name=" TrxId" value="">
<input type="hidden" name=" AuthId" value="ME00000585">
<input type="hidden" name=" SpCode " value="SP108">
<input type="hidden" name=" CtrNum " value="991081123890">
<input type="hidden" name=" BillAmt " value="1000">
<input type="hidden" name=" DptName " value=" Abdallah Samizi">
<input type="hidden" name=" DptCellNum " value="255716208468">
<input type="hidden" name=" DptEmail " value="as@yourdomain.go.tz">
<input type="hidden" name=" Ccy " value="USD">
<input type="hidden" name=" TrxDtTm " value="2018-07-04T14:30:12">
<input type="hidden" name=" TrxStsCode" value="">
<input type="hidden" name=" TrxSts" value="">
<input type="hidden" name=" TrxStsCode" value="">
<input type="hidden" name=" HashValue" value="837CF44D341292342B16CED6">
</form>

```

Payment Response (PRN)	Data Type	Form redirect – Payment Response, PRN – Used to Return payment response of payment request – PR to public institution online portal/billing system from GePG
TrxId	String(100)	Transaction id must be unique in each request
AuthId	String(100)	Transaction id must be unique in each request
SpCode	String(5)	Service Provider Code
CtrNum	Number(12)	Payment Control Number
BillAmt	Double	Bill Amount

DptName	String (200)	Depositor Name
DptCellNum	String(30)	Depositor Mobile/Cell Number
DptEmail	String(100)	Depositor Email Address
Ccy	String(3)	Currency
TrxDtTm	DateAndTime	Transaction Date and Time YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12)
HashValue	String	Secure Hash (Generated as per instruction provided in Below)
TrxStsCode	Number(4)	Transaction Status Code - the list of codes will be shared during integration
TrxSts	String	Description of transaction Status Code

NOTE:

The same response will be used for Payment Status Request(StatusReq)(POST response) and Payment Request(Req) (Redirect Response)

5.4 GePG Instant Online Payment Info posting – gepgOIPmtSpInfo

```

<gepgOIPmtNtfSpInfo>
  <OIPymtTrxInf>
    <TrxId>OLA10012500000003</TrxId>
    <Auth>TZ1000000003</Auth>
    <SpCode>SP102</SpCode>
    <PayRefId>99000523965</PayRefId>
    <BillId>310000752099</BillId>
    <PayCtrNum>991020004068</PayCtrNum>
    <PaidAmt>51898.15</PaidAmt>
    <CCy>TZS</CCy>
    <TrxDtTm>2018-03-21T08:12:15</TrxDtTm>
    <UsdPayChnl>VC</UsdPayChnl>
    <PyrCellNum>255786235710</PyrCellNum>
    <PyrEmail>salama@nimelipa.tz</PyrEmail>
    <PyrName>Salama</PyrName>
    <Rsv1/>
    <Rsv2/>
    <Rsv3/>
    <Rsv4/>
    <Rsv5/>
  </OIPymtTrxInf>
</gepgOIPmtNtfSpInfo>

```

gepg01PmtNtSpInfo		Data Type	GePG online payment advice to public institution – Used to Submit payment info advice received from GePG online portal
01PymtTrxInf			Online Payment Information Envelop
TrxId	String(100)		Transaction id
Auth	String(100)		Authorization code received from Local Banks/Migs gateways
SpCode	String(5)		Service Provider Code
PayRefId	String(100)		Payment receipt issued by the GePG
BillId	String(100)		Bill Identification – Unique identification of the Bill in Service Provider Billing System
PayCtrNum	Number(12)		Payment Control Number in payment by payer
BillAmt	Double		Bill Amount
PaidAmt	Double		Paid Amount
Ccy	String(3)		Currency
TrxDtTm	DateAndTime		Transaction Date and Time YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12)
UsdPayChn	String(2)		Payment provider payment channel used to pay the bill Online bank, Mobile bank, POS etc
PyrCellNum	String(30)		Payer Mobile/Cell Number as received from payment provider
PyrName	String(200)		Payer Name as received from payment provider
PyrEmail	String(100)		Payer Email Address as received from payment service provider
Rsv1	String(100)		Reserved fields
Rsv2	String(100)		Reserved fields
Rsv3	String(100)		Reserved fields
Rsv4	String(100)		Reserved fields
Rsv5	String(100)		Reserved fields

5.5 GePG Instant Payment Info Acknowledgement – gepg01PmtSpInfoAck

```
<gepg01PmtNtfSpAck>
  <01StsCode>7101</01StsCode>
</gepg01PmtNtfSpAck>
```

NOTE:

Online Status Code (01StsCode)- Refer Appendix I for codes definition. If several will be separated by semicolon e.g. (7242;7201).

5.6 GePG Payment Information posting – gepgPmtSpInfo

Refer Section 4.1

5.7 GePG Payment Information posting Acknowledgement– gepgPmtSpInfoAck

Refer section 4.2

5.8 Hash Generation

Step 1 – Construct the source string

- a. The source string is formed with all data element values as specified in Form redirect – Payment Request (REQ) – From SP to GePG.
- b. The values should then be sorted by their data element name, in ascending order without white space in between the words.

Below is format of source string, in ascending order:

[accessCode,amount,controlNumber,orderId,socode,prefPat]

Sample source string constructed from the sample message in Form redirect –

Payment Request (REQ) – From SP to GePG Form redirect – Payment Request (REQ) – From SP to GePG

991081234546SP108orderIdprefPat

Step 2 – Hash the source string

- a. Hash the constructed source string with secret key (Provided by GePG during integration) using HmacSHA256
- b. Take the result value and populate it into the “hashValue” data element.

6 RECONCILIATION POSTING FLOW

- I. Institution sends reconciliation request to GePG by submitting gepgSpReconcReq.

- II. GePG will receive the `gepgSpReconcReq` request, perform minimal validations and respond to the billing system with `gepgSpReconcReqAck` acknowledging the request.
- III. GePG will then process the request by creating `gepgSpReconcResp` response and send it to the respective billing system.
- IV. GePG will receive the `gepgSpReconcRespAck` acknowledgement and remove the reconciliation notification message from the queue.

NOTE: In case GePG does not receive the ACK in step IV, it will keep on retrying to send the reconciliation information until EOD when the message expires. Afterwards, in order to get the message; the institution will be required to resubmit the same request.

6.1 GePG Reconciliation Request –`gepgReconcReq`

```
<gepgSpReconcReq>
  <SpReconcReqId>1379794698</SpReconcReqId>
  <SpCode>SP108</SpCode>
  <SpSysId>INST001</SpSysId>
  <TnxDt>2017-10-09</TnxDt>
  <ReconcOpt>1</ReconcOpt>
</gepgSpReconcReq>
```

<code>gepgReconcReq</code> Data Type		GePG Reconciliation Request- Send to GePG by PSP for reconciliation	
gepgSpReconcReq			Batch Reconciliation details
SpReconcReqId	Numeric(15)	Mandatory	Unique Reconciliation Request Identification
SpCode	String(5)	Mandatory	Service Provider Code
SpSysId	String(10)	Mandatory	Service Provider System Identification Code
TnxDt	Date	Mandatory	Reconciliation transactions date with format YYYY-MM-DD (2017-03-25)
ReconcOpt	Numeric(1)	Mandatory	Reconciliation Option can be:- <ul style="list-style-type: none"> o 1 :GePG successful transactions and o 2 :Exception Transaction report after reconciliation between GePG and payment service provider.

6.2 GePG Reconciliation Request Acknowledgement – gepgSpReconcReqAck

```
<gepgSpReconcReqAck>  
  <ReconcStsCode>7241</ReconcStsCode>  
</gepgSpReconcReqAck>
```

NOTE:

Transaction Status Code (TrxStsCode)- Refer Appendix I for codes definition. If several will be separated by semicolon e.g. (7242;7201).

6.3 GePG Reconciliation Response – gepgReconcResp

```
<gepgSpReconcResp>  
  <ReconcBatchInfo>  
    <SpReconcReqId>1379794698</SpReconcReqId>  
    <SpCode>SP108</SpCode>  
    <SpName>GOV Agency</SpName>  
    <ReconcStsCode>GOV Agency</ReconcStsCode>  
  </ReconcBatchInfo>  
  <ReconcTrans>  
    <ReconcTrxInf>  
      <SpBillId>FH4671150752</SpBillId>  
      <BillCtrNum>991080222529</BillCtrNum>  
      <pspTrxId>E991080222529</pspTrxId>  
      <PaidAmt>37500</PaidAmt>  
      <CCy>TZS</CCy>  
      <PayRefId>9910222529</PayRefId>  
      <TrxDtTm>2017-10-09T07:35:56</TrxDtTm>  
      <CtrAccNum>0150211612834</CtrAccNum>  
      <UsdPayChnl>FAHARI HUDUMA</UsdPayChnl>  
      <PspName>NMB</PspName>  
      <PspCode>PSP006</PspCode>  
      <DptCellNum/>  
      <DptName/>  
      <DptEmailAddr/>  
      <Remarks>Failed at PSP</Remarks>  
      <ReconcRsv1></ReconcRsv1>  
      <ReconcRsv2></ReconcRsv2>  
      <ReconcRsv3></ReconcRsv3>  
    </ReconcTrxInf>  
    <ReconcTrxInf>  
      <SpBillId>FH4671150754</SpBillId>  
      <BillCtrNum>991080222520</BillCtrNum>  
      <pspTrxId>E991080222528</pspTrxId>  
      <PaidAmt>37500</PaidAmt>  
      <CCy>TZS</CCy>  
      <PayRefId>9910222529</PayRefId>  
      <TrxDtTm>2017-10-09T07:35:56</TrxDtTm>  
      <CtrAccNum>0150211612834</CtrAccNum>  
      <UsdPayChnl>FAHARI HUDUMA</UsdPayChnl>  
      <PspName>NMB</PspName>  
      <PspCode>PSP006</PspCode>  
      <DptCellNum/>  
      <DptName/>  
      <DptEmailAddr/>  
      <Remarks>Failed at PSP</Remarks>  
      <ReconcRsv1></ReconcRsv1>  
      <ReconcRsv2></ReconcRsv2>  
      <ReconcRsv3></ReconcRsv3>  
    </ReconcTrxInf>  
  </ReconcTrans>  
</gepgSpReconcResp>
```

gepgReconcResp	Data Type	GePG Reconciliation Response- Send to PSP by GePG for reconciliation
ReconcBatchInfo		Batch Reconciliation details
SpReconcReqId	Number(50)	Unique Reconciliation Request Identification
SpCode	String (5)	Service Provider Code
SpName	String(30)	Service provider Name e.g. Ministry of Lands and Human Settlement.
ReconcStsCode	String(50)	Transaction Status Code (TrxStsCode)- Refer Appendix I for codes definition. If several will be separated by semicolon e.g. (7242;7201).
ReconcTrans		Reconciliation Detail
ReconcTrxInf		Envelope for reconciliation transaction data. Can be multiple if multiple transactions were found.
SpBillId	String(50)	Bill Identification - Unique identification of the Bill in Service Provider Billing System
PayRefId	String(100)	Payment receipt issued by the GePG
BillCtrNum	Numeric(12)	Bill Control Number
PaidAmt	Double	Paid Amount, negative(-) amount indicate reversed transaction on bank side. Can be decimal with precision of two.
CCy	String(3)	Paid Amount Currency must be standard currency code
TrxDtTm	DateAndTime	Transaction Date and Time YYYY-MM-DDTHH24:MI:SS (2017-03-25T14:30:12)
CtrAccNum	String(15)	Credited Account Number
UsdPayChnl	String(50)	Used Payment Channel
DptCellNum	String(12)	Payer Mobile/Cell Number as received from payment service provider. Should have twelve digits including country code e.g. 255XXXXXXXXX
DptName	String (100)	Depositor Name
DptNameEmailAddr	String(100)	Depositor Email Address
Remarks	String(200)	Reconciliation remarks
ReconcRvs01	string(50)	Reserved field (For future use)
ReconcRvs02	string(50)	Reserved field (For future use)
ReconcRvs03	string(50)	Reserved field (For future use)

6.4 GePG Reconciliation Response Acknowledgement – gepgPmtSpInfoAck

```
<gepgSpReconcRespAck>  
    <ReconcStsCode>7101</ReconcStsCode>  
</gepgSpReconcRespAck>
```

NOTE:
Reconciliation Transaction Status Code (ReconcStsCode) - Always should be
7101: Successful Received

7 Digital Signature Security

7.1 Overview

Digital signature will be used for messages exchange between the gateway, Service Provider and Payment Service Provider. The SP and PSP will be required to apply the digital signature.

Digital signatures will also be used for files and messages sent via the upload facility of the web station. Files which have to be uploaded must be previously signed by the Participant's private key and verified using participants Public Key.

In case of failure of to verify the signature messages will be rejected with the reason "Digital Signature Failed".

7.2 Digital Signature

The security architecture used by the Gateway is based on Public Key Infrastructure (PKI) technology in which two keys (Public and Private) are used. The keys are generated using digital certificates downloaded by the Central CA server. PKI digital certificates are used for access control and digital signature.

7.3 Format of Digital Signature

The files and message will be digitally signed using the PKCS12 standard. This provides authentication, message integrity and non-repudiation of origin. The standard describes a general syntax for data that may have

cryptography applied to it, such as digital signatures and digital envelopes.

If the signing is to be done directly by the PSP and SP, the Gateway expects files or message to be digitally signed and obey the following rules:

<p>The file/message contains the actual message (BillPosting, Payments and acknowledgement) and the digital signature of that message in the form of</p> <pre><Envelop> <message></message> <digital_signature></digital_signature> </Envelop></pre>
<p><Digital_signature> is the electronic signature in PKCS#12 format</p>
<p>The digital signature must be BASE64 encoded.</p>
<p>The Digital signature Algorithm used must be SHA1withRSA</p>
<p><message></message> is the appropriate API message format E.g.</p> <pre><gepgBillSubReq> <BillHdr> <SpCode>S023</SpCode> <RtrRespFlg>>true</RtrRespFlg> </BillHdr> <BillTrxInf> <BillId>7885</BillId> <SubSpCode>2001</SubSpCode> <SpSysId>tjv47</SpSysId> <BillAmt>7885</BillAmt> <MiscAmt>0</MiscAmt> <BillExprDt>2017-05-30T10:00:01</BillExprDt> <PyrId>Samizi</PyrId> <PyrName>Samizi Abdallah</PyrName> <BillDesc>Bill Number 7885</BillDesc> <BillGenDt>2017-02-22T10:00:10</BillGenDt> <BillGenBy>100</BillGenBy> <BillApprBy>Hashim</BillApprBy> <PyrCellNum>0699210053</PyrCellNum> <PyrEmail>Samizi@gmail.com</PyrEmail> <Ccy>TZS</Ccy> <BillEqvAmt>7885</BillEqvAmt> <RemFlag>>true</RemFlag> <BillPayOpt>1</BillPayOpt> <BillItems> <BillItem> <BillItemRef>788578851</BillItemRef> <UseItemRefOnPay>N</UseItemRefOnPay> <BillItemAmt>7885</BillItemAmt> <BillItemEqvAmt>7885</BillItemEqvAmt> <BillItemMiscAmt>0</BillItemMiscAmt> <GfsCode>140206</GfsCode> </BillItem> </BillItems> </BillTrxInf> </gepgBillSubReq></pre>

Therefore, after applying the digital signature the complete message exchanged between participants and the system will be: -

<Gepg>

```

<gepgBillSubReq>
  <BillHdr>
    <SpCode>S023</SpCode>
    <RtrRespFlg>true</RtrRespFlg>
  </BillHdr>
  <BillTrxInf>
    <BillId>7885</BillId>
    <SubSpCode>2001</SubSpCode>
    <SpSysId>tjv47</SpSysId>
    <BillAmt>7885</BillAmt>
    <MiscAmt>0</MiscAmt>
    <BillExprDt>2017-05-30T10:00:01</BillExprDt>
    <PyrId>Samizi</PyrId>
    <PyrName>Samizi Abdallah</PyrName>
    <BillDesc>Bill Number 7885</BillDesc>
    <BillGenDt>2017-02-22T10:00:10</BillGenDt>
    <BillGenBy>100</BillGenBy>
    <BillApprBy>Hashim</BillApprBy>
    <PyrCellNum>0699210053</PyrCellNum>
    <PyrEmail>Samizi@gmail.com</PyrEmail>
    <Ccy>TZS</Ccy>
    <BillEqvAmt>7885</BillEqvAmt>
    <RemFlag>true</RemFlag>
    <BillPayOpt>1</BillPayOpt>
    <BillItems>
      <BillItem>
        <BillItemRef>788578851</BillItemRef>
        <UseItemRefOnPay>N</UseItemRefOnPay>
        <BillItemAmt>7885</BillItemAmt>
        <BillItemEqvAmt>7885</BillItemEqvAmt>
        <BillItemMiscAmt>0</BillItemMiscAmt>
        <GfsCode>140206</GfsCode>
      </BillItem>
    </BillItems>
  </BillTrxInf>
</gepgBillSubReq>

```

Actual GePG Message

```

<gepgSignature>
U6vJ6jZYnrQQST5e/wBiFETG9aiPoJwmPufgdOomrtA8Hdcpaqz2iUP6Baqqaxs7zvLVlVoNp+HV
s1cmw6+Rk17rqaMqMf7NabI+m+0JpLZArf5i toNov11/NXHJtasISx2UGq23kBCVn0aNXLQzfcvM
Cbbs3n2izs+5ZFVfns0tCbJPNJY3uwNqotXY8MSpxjwRhvxg484ab72diFhkoiOixxp5JwCVA/I
QVwJVvIav4xRy8QSQ7NMkwBF10n07m2UNMFPqIfybr/Bsi5evFHxf9M1z9puIh9je7kLbEbKdSL
HQ24o1TGdHSpCLCbJ9KmbbipMKuzbZTwhC3w80aEn1GzjNAT4kTwwrJ8se4X02qSkz9vDR+tZJiN
wgHC42H4SgSunn1f1Z6w/0Ny/N+IPR61Bgq1k8pvUF39Lf0GfPr1Yr74RHu1Ub7L/8JTuyFub5f
M69G5PbRRRUamRE+q5/zXPiksn7Qs1wuV21b1G+6Zq2I13ztzuyFSIP4Di po9i kEQ9yYKkq6D0we
DHsxkx80HAEoTFihZJcgf3ZrSs1a0CFok8TTrp4EACR37GBrr30waebiU+OJtzWBNowM3/mqprn+
t+mfJ+s7Dkk81xK+hwKPYFBUUDryy1Qv9RS71uZE4khLqA4t1RqMgC49Guud5TFm8V0yutmR3dk=
</gepgSignature>

```

Result Signature

</Gepg>