GHL the ASEAN payment people

Internet Payment Gateway

Merchant Integration Guide

Version 2.8

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GHL Systems Berhad (293040-D)
C-G-15, Block C, Jalan Dataran SD1, Dataran SD, PJU 9,
Bandar Sri Damansara 52200 Kuala Lumpur, Malaysia
Tel +603 6286 3388 Fax +603 6280 2999 www.ghl.com

Innovation Centre
L5-E-7B, Enterprise 4, Technology Park Malaysia.
Bukit Jalil, 57000 Kuala Lumpur, Malaysia.
Tel +603 8998 3600 Fax +603 8998 3301

e-pay (M) Sdn. Bhd. (494207-U)
16-18, Jalan PJS 11/28 A, Bandar Sunway,
47500 Subang Jaya, Selangor, Malaysia.
Tel +603 5632 2488 Fax +603 5636 6966 www.e-pay.com.my

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Document Version History

This section details the changes that were made to this document. The first author is the creator of this document.

#	Version	Date	Author	Description

1.	2.1	22 Aug 2013	eGHL	• Added the following mandatory fields:
				  • CustName
				  • CustEmail
				  • CustPhone
				• Added the following non-mandatory field:
				  • CustMAC
				• Modified the following conditional field to be mandatory:
				  • CustIP

2.	2.2	4 Sept 2013	eGHL	• Added Reversal Pending status (31) in section 3.3 (Query Transaction Status)
3.	2.3	6 Jun 2014	eGHL	• Added MerchantApprovalURL and MerchantUnApprovalURL in section 2.1 (Payment Request) • Added MerchantApprovalURL and MerchantUnApprovalURL in section 2.7.1.1 (Payment Request Hashing)
4.	2.3	9 Jul 2014	eGHL	• Added SessionID in section 2.1 (Payment Request)
5.	2.4	17 Jul 2014	eGHL	• Added TokenType and Token in section 2.1 (Payment Request) and section 2.2 (Payment Response)
6.	2.5	16 Oct 2014	eGHL	• Added MerchantCallBackURL in section 2.1 (Payment Request) and section 2.7.1.1 (Payment Request Hashing)
7.	2.6	26 Nov 2014	eGHL	• Added B4TaxAmt and TaxAmt in section 2.1 (Payment Request)
8.	2.7	6 Apr 2015	eGHL	• Added transaction type AUTH in TransactionType field of section 2.1 (Payment Request) • Added transaction type CAPTURE in section 2.5 (Capture Request)

				• Added Param6 and Param7 in section 2.1 (Payment Request) and section 2.2 (Payment Response) • Added AUTH and CAPTURE in section 3.1 (Transaction Type) • Added status 15 for Auth, 16 for Captured in section 3.3 (Query Transaction Status)
9.	2.8	25 May 2015	eGHL	• Added transaction type REFUND in section 2.9 (Refund Request) • Added status 10 for Refunded in section 3.3 (Query Transaction Status)

1 Introduction

Payment Gateway provides a web interface that allows integration with Merchant System which would like to accept online payment by 3D and non-3D credit card, direct debit and e-Wallet payments.

This Merchant Integration Guide provides merchants with the necessary technical information to integrate their applications (Merchant Systems) with Payment Gateway.

The manual contains message format required between Payment Gateway and Merchant System for various payment transaction types, namely Payment, Query and Reversal. It is intended as a technical guide for merchant developers and system integrators who are responsible for designing or programming the respective online applications to integrate with Payment Gateway.

1.1 Pre-requisite

All merchants who would like to integrate with Payment Gateway must obtain a valid payment account from eGHL. Upon payment account generated, eGHL will provide merchant a Service ID and Merchant Password.

2 Payment API Reference Fields (HTTP GET and POST)

2.1 Payment Request (Merchant System → Payment Gateway)

The following fields are the Payment information expected from Merchant System to Payment Gateway in order to perform an online payment transaction:

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	7	**Y**	**SALE** – Direct captured for credit card payment; Payment request for other payment methods **AUTH** – For credit card payment, authorize the availability of funds for a transaction but delay the capture of funds until a later time. This is often useful for merchants who have a delayed order fulfillment process. Authorize & Capture also enables merchants to modify the original authorization amount due to order changes occurring after the initial order is placed, such as taxes, shipping or item availability Re: Section 2.5 for Transaction Type CAPTURE message format
2.	PymtMethod	A	3	**Y**	Payment Method **CC –** Credit Card **DD –** Direct Debit (not applicable to TransactionType AUTH) **WA –** e-Wallet (not applicable to Transaction Type AUTH) **ANY** – All payment method(s) registered with eGHL
3.	ServiceID	AN	3	**Y**	Merchant Service ID given by eGHL
4.	PaymentID	AN	20	**Y**	Unique transaction ID/reference code assigned by merchant for this payment transaction (No duplicate PaymentID is allowed)
5.	OrderNumber	AN	20	**Y**	Reference number / Invoice number for this order PaymentID must be unique but OrderNumber can be the same under different PaymentID, indicating multiple payment attempts are made on a particular order

					If Order Number is not applicable, please provide the same value as PaymentID
6.	PaymentDesc	AN	100	**Y**	Order's descriptions
7.	MerchantReturnURL	AN	255	**Y**	Merchant system's **browser redirect** URL which receives payment response from eGHL when transaction is completed (approved/declined/system error/ cancelled by buyer on eGHL Payment Page) If MerchantApprovalURL is provided, when payment is approved, MerchantApprovalURL will be used instead of MerchantReturnURL If MerchantUnApprovalURL is provided, when payment is declined, MerchantUnApprovalURL will be used instead of MerchantReturnURL
8.	Amount	N	12(2)	**Y**	Payment amount in 2 decimal places regardless whether the currency has decimal places or not. Please exclude "," sign. e.g. 1000**.00** for IDR **Invalid format**: 1,000.00 or 1000
9.	CurrencyCode	A	3	**Y**	3-letter ISO4217 of Payment Currency Code Re: Section 3.5
10.	HashValue	AN	100	**Y**	Message digest value calculated by Merchant System in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.7.1.1
11.	CustIP	AN	20	**Y**	Customer's IP address captured by merchant system
12.	CustName	AN	50	**Y**	Customer Name
13.	CustEmail	AN	60	**Y**	Customer's Email Address
14.	CustPhone	AN	25	**Y**	Customer's Contact Number

15.	B4TaxAmt	N	12(2)	N	Original amount before tax is incurred, in 2 decimal places regardless whether the currency has decimal places or not. As for final payment amount after tax is incurred, is to be specified in Amount field Please exclude "," sign. e.g. 1000**.00** for IDR **Invalid format**: 1,000.00 or 1000
16.	TaxAmt	N	12(2)	N	Tax amount incurred Please exclude "," sign. e.g. 1000**.00** for IDR **Invalid format**: 1,000.00 or 1000
17.	MerchantName	AN	25	N	Merchant's business name
18.	CustMAC	AN	50	N	Machine ID (MAC Address) of customer's computer/device which was used to make payment
19.	MerchantApprovalURL	AN	255	N	URL to link to merchant's website when payment is approved If not provided, MerchantReturnURL will be used
20.	MerchantUnApprovalURL	AN	255	N	URL to link to merchant's website when payment is declined If not provided, MerchantReturnURL will be used
21.	MerchantCallBackURL	AN	255	N	**Server-to-server** URL as an additional link to merchant's website to be informed of transaction status This is useful when browser redirect URLs (MerchantReturnURL/MerchantApproval URL/MerchantUnApprovalURL) were not able to receive payment response due to buyer's Internet connectivity problem or buyer closed browser

					Upon receiving response from Gateway, MerchantCallBackURL is to return an acknowledgement message “OK” to the Gateway or else Gateway will continue to send response to this URL for a maximum of 3 times
22.	LanguageCode	A	2	N	Language Code for eGHL Payment Info Collection Page Re: Section 3.6
23.	PageTimeout	N	4	N	eGHL Payment Info Collection Page timeout in **seconds** Applicable for merchant system which would like to bring forward to Payment Gateway, the time remaining before product/order is released For example, a movie ticket sales page shows time remaining countdown from 15 minutes till 5 minutes. Upon customer’s clicking “checkout / proceed / pay” button, merchant system can then pass the value of (5 minutes x 60 seconds=300) seconds in this field to Gateway which will then continue the countdown from 5 minutes. Upon timeout, all entry fields and buttons on the Collection Page will be disabled
24.	CardHolder	AN	30	N	Cardholder’s Name For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
25.	CardNo	N	19	N	Credit Card Number used for payment authorization For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page If merchant has own payment page to collect card information, merchant system is required to be PCI compliant
26.	CardExp	N	6	N	Expiry date of credit card. Date format is **YYYYMM**, e.g. 201312 for year 2013 December

					For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
27.	CardCVV2	N	4	N	3-4 digits Card Verification Value available on the back of credit card For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
28.	IssuingBank	AN	30	N	For PymtMethod “CC”, this field indicates Bank which issued the credit card used for this transaction If not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page For PymtMethod “DD”, this field indicates Direct Debit banks/payment switches. If not provided, the list of Direct Debit/payment switches supported will be shown on eGHL Payment Info Collection Page
29.	BillAddr	AN	100	N	Billing Address (excludes postcode, town/city, state and country) For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
30.	BillPostal	AN	15	N	Billing Postcode For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
31.	BillCity	A	30	N	Billing Town/City For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
32.	BillRegion	A	30	N	Billing Region/State For PymtMethod “CC”, if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page

33.	BillCountry	A	2	N	Billing Country Code Re: Section 3.7 For PymtMethod "CC", if not provided, Payment Gateway will prompt this field on eGHL Payment Info Collection Page
34.	ShipAddr	AN	100	N	Shipping Address (excludes postcode, town/city, state and country)
35.	ShipPostal	AN	15	N	Shipping Postcode
36.	ShipCity	A	30	N	Shipping Town/City
37.	ShipRegion	A	30	N	Shipping Region/State
38.	ShipCountry	A	2	N	Shipping Country Code Re: Section 3.7
39.	SessionID	AN	100	N	Session ID
40.	TokenType	A	3	N	Token Type **OCP** – One-click Payment
41.	Token	ANS	50	C	Token Value If TokenType is specified, Token is expected to have value
42.	Param6	ANS	50	N	Additional data from merchant system that will be passed back to merchant in payment response
43.	Param7	ANS	50	N	Additional data from merchant system that will be passed back to merchant in payment response

Req? – Required? (Mandatory fields?)
Y – Yes
N – No
C – Conditional

Sample HTML Form Post Payment Request

```
<form name="frmPayment" method="post" action="https://xxx.e-
ghl.com/IPG/payment.aspx">
<input type="hidden" name="TransactionType" value="SALE">
<input type="hidden" name="PymtMethod" value="CC">
<input type="hidden" name="ServiceID" value="A07">
<input type="hidden" name="PaymentID" value="ABCDEFGH130820142128">
<input type="hidden" name="OrderNumber" value="IJKLMN">
<input type="hidden" name="PaymentDesc" value="Booking No: IJKLMN, Sector:
KUL-BKI, First Flight Date: 26 Sep 2012">
<input type="hidden" name="MerchantName" value="Merchant A">
<input type="hidden" name="MerchantReturnURL"
value="https://merchA.merchdomain.com/pymtresp.aspx">
<input type="hidden" name="Amount" value="228.00">
<input type="hidden" name="CurrencyCode" value="MYR">
<input type="hidden" name="CustIP" value="192.168.2.35">
<input type="hidden" name="CustName" value="Jason">
<input type="hidden" name="CustEmail" value="Jason@gmail.com">
<input type="hidden" name="CustPhone" value="60126902328">
<input type="hidden" name="HashValue" value="hash value generated">
<input type="hidden" name="MerchantTermsURL"
value="http://merchA.merchdomain.com/terms.html">
<input type="hidden" name="LanguageCode" value="en">
<input type="hidden" name="PageTimeout" value="780">
</form>
```

2.2 Payment Response (Payment Gateway → Merchant System)

Upon payment process completion, the following fields will be returned from Payment Gateway to Merchant System's MerchantReturnURL in order to complete an end-to-end payment process:

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	7	**Y**	Follows request
2.	PymtMethod	A	3	**Y**	Payment Method **CC –** Credit Card **DD –** Direct Debit **WA –** e-Wallet
3.	ServiceID	AN	3	**Y**	Follows request
4.	PaymentID	AN	20	**Y**	Follows request
5.	OrderNumber	AN	20	**Y**	Follows request
6.	Amount	N	12(2)	**Y**	Follows request
7.	CurrencyCode	N	3	**Y**	Follows request
8.	HashValue	AN	100	**Y**	Message digest value calculated by Payment Gateway in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.2
9.	TxnID	AN	30	**Y**	Unique Transaction ID or Reference Code assigned by Payment Gateway for this transaction
10.	IssuingBank	AN	30	**Y**	Follows request if this field is provided in request If not provided in request, For PymtMethod "CC", this field is the Bank Name keyed in by customer on eGHL Payment Info Collection Page For PymtMethod "DD", this field is the Bank Name chosen by customer to perform Direct Debit transaction

11.	TxnStatus	N	4	**Y**	Re: Section 3.2
12.	AuthCode	AN	12	N	Authorization Code returned by bank
13.	TxnMessage	AN	255	N	Message that briefly explains the response
14.	TokenType	A	3	N	Token Type If merchant is subscribed to eGHL One-Click Payment feature, upon payment approved, TokenType will be "**OCP**", together with token value in **Token** field
15.	Token	ANS	50	C	Token Value If Token Type is "**OCP**", Token field will hold the Token Value for One-Click Payment purposes
16.	Param6	ANS	50	C	Follows request
17.	Param7	ANS	50	C	Follows request

Sample VB.net Code to Retrieve Payment Response Fields

```
Imports System.Web

Var1 = Server.UrlDecode(HttpContext.Current.Request("PaymentID")
Var2 = Server.UrlDecode(HttpContext.Current.Request("OrderNumber")
Var3 = Server.UrlDecode(HttpContext.Current.Request("Amount")
Var4 = Server.UrlDecode(HttpContext.Current.Request("CurrencyCode")
Var5 = Server.UrlDecode(HttpContext.Current.Request("TxnID")
Var6 = Server.UrlDecode(HttpContext.Current.Request("PymtMethod")
Var7 = Server.UrlDecode(HttpContext.Current.Request("TxnStatus")
Var8 = Server.UrlDecode(HttpContext.Current.Request("AuthCode")
Var9 = Server.UrlDecode(HttpContext.Current.Request("TxnMessage")
Var10 = Server.UrlDecode(HttpContext.Current.Request("IssuingBank")
Var11 = Server.UrlDecode(HttpContext.Current.Request("HashValue")
```

2.3 Query Request (Merchant System → Payment Gateway)

The following fields are the Payment information expected from Merchant System to Payment Gateway in order to query payment status.

No MerchantReturnURL involved. Merchant System can get query response on the **same session**.

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	7	**Y**	**QUERY**
2.	PymtMethod	A	3	**Y**	Payment Method submitted in the original Payment Request being queried
3.	ServiceID	AN	3	**Y**	Merchant Service ID given by eGHL
4.	PaymentID	AN	20	**Y**	Unique Transaction ID or Reference Code assigned by Merchant System for the original Payment Request being queried
5.	Amount	N	12(2)	**Y**	Payment Amount submitted in Payment Request
6.	CurrencyCode	A	3	**Y**	Payment Currency Code submitted in Payment Request
7.	HashValue	AN	100	**Y**	Message digest value calculated by Merchant System in **hexadecimal** string using **SHA256** hash algorithm Re: 2.7.1.3

Sample VB.net Code HTTP POST Query Request And Receive Query Response

Reference: http://msdn.microsoft.com/en-us/library/debx8sh9.aspx

```
Imports System
Imports System.IO
Imports System.Net
Imports System.Text
Namespace Examples.System.Net
    Public Class WebRequestPostExample

        Public Shared Sub Main()
            ' Create a request using a URL that can receive a post.
            Dim request As WebRequest = WebRequest.Create("https://secure2pay.e-
ghl.com/IPG/payment.aspx ")
            ' Set the Method property of the request to POST.
            request.Method = "POST"
            ' Create POST data and convert it to a byte array.
            Dim postData As String =
"TransactionType=QUERY&PymtMethod=CC&ServiceID=A07&PaymentID=
ABCDEFGH130820142128&Amount=228.00&CurrencyCode=MYR&HashValue=hash value generated"
            Dim byteArray As Byte() = Encoding.UTF8.GetBytes(postData)
            ' Set the ContentType property of the WebRequest.
            request.ContentType = "application/x-www-form-urlencoded"
            ' Set the ContentLength property of the WebRequest.
            request.ContentLength = byteArray.Length
            ' Get the request stream.
            Dim dataStream As Stream = request.GetRequestStream()
            ' Write the data to the request stream.
            dataStream.Write(byteArray, 0, byteArray.Length)
            ' Close the Stream object.
            dataStream.Close()

            ' Get the response.
            Dim response As WebResponse = request.GetResponse()
            ' Display the status.
            Console.WriteLine(CType(response, HttpWebResponse).StatusDescription)
            ' Get the stream containing content returned by the server.
            dataStream = response.GetResponseStream()
            ' Open the stream using a StreamReader for easy access.
            Dim reader As New StreamReader(dataStream)
            ' Read the content.
            Dim responseFromServer As String = reader.ReadToEnd()
            ' Display the content.
            Console.WriteLine(responseFromServer)

            ' +++++ Parse Query Response Here ++++++++++++++++++++++++++++++++++++
            ' +++++ Sample of Query Response Is Available On The Next Section +++++

            ' Clean up the streams.
            reader.Close()
            dataStream.Close()
            response.Close()
        End Sub
    End Class
End Namespace
```

2.4 Query Response (Payment Gateway → Merchant System)

Upon query process completion, Payment Gateway will return **all fields same as Payment Response** fields together with the following **additional** fields.

For Query transaction status, please refer to section 3.3.

No MerchantReturnURL involved. Merchant System can get query response on the **same session**.

No.	Field	Data Type	Max Length	Req?	Description
14.	TxnExists	N	1	**Y**	An identifier to indicate whether the transaction being queried exists in Payment Gateway. **0 –** Transaction being queried **exists** in Payment Gateway. Merchant System can proceed to refer to the rest of other fields for details, e.g. TxnStatus **1 –** Transaction being queried **does not exist** in Payment Gateway. In other words, Payment Gateway is not able to find any transaction that is matched with all Query request fields submitted by merchant system **TxnStatus** will be **-1** **2 –** There was some kind of internal **error** occurred during query processing. Merchant System can retry sending query request **TxnStatus** will be **-2**
15.	QueryDesc	AN	255	N	Description of query result

Sample Query Response (A single string will be returned to Merchant System on the same Query session)

TxnExists=0&QueryDesc=Exists&ServiceID=D01&PymtID=ABC1234567890&Amount=1234.00&CurrencyCode=THB&TxnStatus=0&……

Sample Query Response (TxnExists=1)

TxnExists=1&QueryDesc=Transaction Not Exists&TransactionType=QUERY&PymtMethod=CC&ServiceID=TIS&PaymentID=JEFSIT13110700004&OrderNumber=&Amount=0.14&CurrencyCode=MYR&TxnID=&IssuingBank=&TxnStatus=-1&AuthCode=&BankRefNo=&TxnMessage=&HashValue=1d54f8eb9ff6c92c09737f61b8a68afed0ff1725a5c22efbc3b7c5bb50a2cd0c

Sample Query Response (TxnExists=2)

TxnExists=2&QueryDesc=Invalid Service ID&TransactionType=QUERY&PymtMethod=CC&ServiceID=TI1&PaymentID=JEFSIT13110700003&OrderNumber=&Amount=0.14&CurrencyCode=MYR&TxnID=&IssuingBank=&TxnStatus=-2&AuthCode=&BankRefNo=&TxnMessage=&HashValue=9ee1609200924444f924993361a138be3da59d8545db14e5985f787e1254c4c7

2.5 Capture Request (Merchant System → Payment Gateway)

The following fields are the Payment information expected from Merchant System to Payment Gateway in order to capture the original authorization transaction (payment request with transaction type AUTH):

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	7	**Y**	**CAPTURE**
2.	PymtMethod	A	3	**Y**	Payment Method submitted in the original Payment Request being captured
3.	ServiceID	AN	3	**Y**	Merchant Service ID given by eGHL
4.	PaymentID	AN	20	**Y**	Unique Transaction ID or Reference Code assigned by Merchant System for the original authorization transaction
5.	Amount	N	12(2)	**Y**	Transaction amount to be captured in 2 decimal places, e.g. 100**.00** Should not be exceeding the original authorization request amount
6.	CurrencyCode	N	3	**Y**	Original authorization transaction's ISO4217 3-letter currency code
7.	HashValue	AN	40	**Y**	Message digest value calculated by Merchant System in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.3

2.6 Capture Response (Merchant System → Payment Gateway)

Upon capture process completion, the following fields will be returned from Payment Gateway to Merchant System in order to complete an end-to-end capture process.

No MerchantReturnURL involved. Merchant System can get Capture response on the **same session**.

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	7	**Y**	Follows request
2.	PymtMethod	A	3	**Y**	Follows request
3.	ServiceID	AN	3	**Y**	Follows request
4.	PaymentID	AN	20	**Y**	Follows request
5.	Amount	N	12(2)	**Y**	Follows request
6.	CurrencyCode	N	3	**Y**	Follows request
7.	TxnStatus	N	4	**Y**	Capture status Re: Section 3.2
8.	HashValue	AN	100	**Y**	Message digest value calculated by Payment Gateway in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.2
9.	TxnMessage	AN	255	N	Message that briefly explains the response
10.	TxnID	AN	30	N	Unique Transaction ID or Reference Code assigned by Payment Gateway for the original authorization transaction, available only if Payment Gateway received the original authorization transaction
11.	IssuingBank	AN	30	N	This field is the Bank Name keyed in by customer on eGHL Payment Info Collection Page Available only if Payment Gateway

					received the original authorization transaction
12.	AuthCode	AN	12	N	Available only if Payment Gateway received the original authorization transaction and only if bank returned the Auth Code

Sample Capture Response (A single string will be returned to Merchant System on the same Capture session)

ServiceID=D01&PymtID=ABC1234567890&TxnStatus=0&……

2.7 Reversal Request (Merchant System → Payment Gateway)

Prior to sending Reversal, recommended Merchant System to send a Query request to Payment Gateway to get the actual payment status. Based on Query response, Merchant System will be able to know whether the payment transaction is successful in order to further determining whether to send a Reversal request to reverse the original payment.

Under the following situations, Merchant System can send Reversal request to Payment Gateway to reverse payment previously sent to Payment Gateway:

1. **Error Handling**
   a. **Timeout –** Merchant System successfully sent out Payment request to Payment Gateway but Merchant System is not able to receive response within timeout period.

   b. **Others** – Any other errors, encountered by Merchant System, that could have direct impact to the payment, such as power failure, database errors, hardware failure and system failure (bugs, services interrupted).

2. **Product Fulfillment Failure**
   Merchant System received payment approved status from Payment Gateway but Merchant System somehow failed to complete product fulfillment process for the respective booking, reservation or order made by the consumer due to certain scenarios such as inventory availability problem or unforeseen price changes problem.

Some tips for **Reversal handling** by Merchant System:

1. Reversal is not allowed to be used by merchants for Refund purposes.

2. Reversal process can only be performed before bank's settlement. As such, if any of the above scenarios occurred, it is advisable to reverse a transaction within **one hour** of its original Sale time. Reversal of a transaction already settled by bank will be rejected with **TxnStatus=1** (Failed). Merchant System should not attempt Reversal anymore.

3. Reversal amount must be the same as the original Payment amount. Partial Reversal will be rejected with **TxnStatus=-1** (Not Found). Merchant System should only attempt Reversal with the original Payment amount and currency code.

4. Merchant System can retry performing Reversal of the respective transaction upon receiving **Query TxnStatus = 31** or **Reversal TxnStatus=2** (Reversal is pending processing) or **TxnStatus=-2** (Internal system error) or when Merchant System encountered communication error with Payment Gateway during Reversal processing, such as Merchant System failed to send Reversal request or timeout Payment Gateway for Reversal response. Under these circumstances, in order to obtain Reversal response, Merchant System can either send **Query** to check whether status received is **TxnStatus=9 (**Transaction Reversed**)** or perform Reversal request again and each **Reversal retry** attempt is recommended to be at least **5 minutes** apart in order to save server and network resources.

5. If Merchant System somehow failed to receive **Payment** response from Payment Gateway, the original Payment request could be failed or never received by Payment Gateway. For such Reversal, Merchant System will receive successful Reversal response with **TxnStatus=0** (Transaction Reversed). Merchant System should not attempt Reversal anymore.

The following fields are the Payment information expected from Merchant System to Payment Gateway in order to reverse the original sale/payment:

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	5	**Y**	**RSALE** – Reversal
2.	PymtMethod	A	3	**Y**	Payment Method submitted in the original Payment Request being reversed
3.	ServiceID	AN	3	**Y**	Merchant Service ID given by eGHL
4.	PaymentID	AN	20	**Y**	Unique Transaction ID or Reference Code assigned by Merchant System for the original Payment transaction
5.	Amount	N	12(2)	**Y**	Original Payment transaction amount to be reversed in 2 decimal places, e.g. 100**.00** No partial reversal is allowed
6.	CurrencyCode	N	3	**Y**	Original Payment transaction's ISO4217 3-letter currency code
7.	HashValue	AN	40	**Y**	Message digest value calculated by Merchant System in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.3

Sample VB.net Code HTTP POST Reversal Request And Receive Reversal Response

Reference: http://msdn.microsoft.com/en-us/library/debx8sh9.aspx

```
Imports System
Imports System.IO
Imports System.Net
Imports System.Text
Namespace Examples.System.Net
    Public Class WebRequestPostExample

        Public Shared Sub Main()
            ' Create a request using a URL that can receive a post.
            Dim request As WebRequest = WebRequest.Create("https://secure2pay.e-
ghl.com/IPG/payment.aspx ")
            ' Set the Method property of the request to POST.
            request.Method = "POST"
            ' Create POST data and convert it to a byte array.
            Dim postData As String =
"TransactionType=RSALE&PymtMethod=CC&ServiceID=A07&PaymentID=
ABCDEFGH130820142128&Amount=228.00&CurrencyCode=MYR&HashValue=hash value generated"
            Dim byteArray As Byte() = Encoding.UTF8.GetBytes(postData)
            ' Set the ContentType property of the WebRequest.
            request.ContentType = "application/x-www-form-urlencoded"
            ' Set the ContentLength property of the WebRequest.
            request.ContentLength = byteArray.Length
            ' Get the request stream.
            Dim dataStream As Stream = request.GetRequestStream()
            ' Write the data to the request stream.
            dataStream.Write(byteArray, 0, byteArray.Length)
            ' Close the Stream object.
            dataStream.Close()

            ' Get the response.
            Dim response As WebResponse = request.GetResponse()
            ' Display the status.
            Console.WriteLine(CType(response, HttpWebResponse).StatusDescription)
            ' Get the stream containing content returned by the server.
            dataStream = response.GetResponseStream()
            ' Open the stream using a StreamReader for easy access.
            Dim reader As New StreamReader(dataStream)
            ' Read the content.
            Dim responseFromServer As String = reader.ReadToEnd()
            ' Display the content.
            Console.WriteLine(responseFromServer)

            ' +++++ Parse Reversal Response Here ++++++++++++++++++++++++++++++++++++
            ' +++++ Sample of Reversal Response Is Available On The Next Section +++++

            ' Clean up the streams.
            reader.Close()
            dataStream.Close()
            response.Close()
        End Sub
    End Class
End Namespace
```

2.8 Reversal Response (Payment Gateway → Merchant System)

Upon reversal process completion, the following fields will be returned from Payment Gateway to Merchant System in order to complete an end-to-end payment reversal process.

No MerchantReturnURL involved. Merchant System can get Reversal response on the **same session**.

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	5	**Y**	Follows request
2.	PymtMethod	A	3	**Y**	Payment Method **CC –** Credit Card **DD –** Direct Debit **WA –** e-Wallet
3.	ServiceID	AN	3	**Y**	Follows request
4.	PaymentID	AN	20	**Y**	Follows request
5.	Amount	N	12(2)	**Y**	Follows request
6.	CurrencyCode	N	3	**Y**	Follows request
7.	TxnStatus	N	4	**Y**	Reversal status Re: Section 3.4
8.	HashValue	AN	100	**Y**	Message digest value calculated by Payment Gateway in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.2
9.	TxnMessage	AN	255	N	Message that briefly explains the response
10.	TxnID	AN	30	N	Unique Transaction ID or Reference Code assigned by Payment Gateway for the original Payment transaction, available only if Payment Gateway received the original Payment transaction

11.	IssuingBank	AN	30	N	For PymtMethod “CC”, this field is the Bank Name keyed in by customer on eGHL Payment Info Collection Page For PymtMethod “DD”, this field is the Bank Name chosen by customer to perform Direct Debit transaction Available only if Payment Gateway received the original Payment transaction
12.	AuthCode	AN	12	N	Available only if Payment Gateway received the original Payment transaction and only if bank returned the Auth Code

Sample Reversal Response (A single string will be returned to Merchant System on the same Reversal session)

ServiceID=D01&PymtID=ABC1234567890&TxnStatus=0&……

2.9 Refund Request (Merchant System → Payment Gateway)

The following fields are the Payment information expected from Merchant System to Payment Gateway in order to refund the original sale/payment:

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	5	**Y**	**REFUND** – Refund
2.	PymtMethod	A	3	**Y**	Payment Method submitted in the original Payment Request being refunded
3.	ServiceID	AN	3	**Y**	Merchant Service ID given by eGHL
4.	PaymentID	AN	20	**Y**	Unique Transaction ID or Reference Code assigned by Merchant System for the original Payment transaction
5.	Amount	N	12(2)	**Y**	Transaction amount to be refunded in 2 decimal places, e.g. 100**.00** Should not be exceeding the original sale request amount
6.	CurrencyCode	N	3	**Y**	Original Payment transaction's ISO4217 3-letter currency code
7.	HashValue	AN	40	**Y**	Message digest value calculated by Merchant System in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.3

2.10 Refund Response (Payment Gateway → Merchant System)

Upon refund process completion, the following fields will be returned from Payment Gateway to Merchant System in order to complete an end-to-end refund process.

No MerchantReturnURL involved. Merchant System can get Refund response on the **same session**.

No.	Field	Data Type	Max Length	Req?	Description
1.	TransactionType	A	7	**Y**	Follows request
2.	PymtMethod	A	3	**Y**	Follows request
3.	ServiceID	AN	3	**Y**	Follows request
4.	PaymentID	AN	20	**Y**	Follows request
5.	Amount	N	12(2)	**Y**	Follows request
6.	CurrencyCode	N	3	**Y**	Follows request
7.	TxnStatus	N	4	**Y**	Capture status Re: Section 3.4
8.	HashValue	AN	100	**Y**	Message digest value calculated by Payment Gateway in **hexadecimal** string using **SHA256** hash algorithm Re: Section 2.11.1.2
9.	TxnMessage	AN	255	N	Message that briefly explains the response
10.	TxnID	AN	30	N	Unique Transaction ID or Reference Code assigned by Payment Gateway for the original Payment transaction, available only if Payment Gateway received the original Payment transaction
11.	IssuingBank	AN	30	N	This field is the Bank Name keyed in by customer on eGHL Payment Info Collection Page Available only if Payment Gateway received the original Payment transaction

12.	AuthCode	AN	12	N	Available only if Payment Gateway received the original Payment transaction and only if bank returned the Auth Code

Sample Refund Response (A single string will be returned to Merchant System on the same Refund session)

ServiceID=D01&PymtID=ABC1234567890&TxnStatus=0&……

2.11 Additional Information

2.11.1 Usage of Hash Value

A hash value (or simply hash), also called a message digest, is a number generated from a text string. The hash is substantially smaller than the text string itself, and is generated by a formula or hash algorithm in such a way that it is extremely unlikely that some other texts will produce the same hash value.

For online payment processing, hashing plays an important role to ensure the transmitted request and response messages have not been tampered with, in order to achieve data integrity.

For transaction request, Merchant System is required to use SHA256 hash algorithm to generate a hash value from a combination of Merchant Password and certain transaction fields, and then includes the hash value in HashValue field before sending the request to Payment Gateway which will then generate a hash value based on the same method and then verify these two hash values. If both hash value matched, Payment Gateway will further process the payment request or else it will discard the request message and will treat it as an invalid message.

Likewise, for transaction response, Merchant System can generate hash value based on Merchant Password and certain response fields and then verify this hash value with the value retrieved from HashValue field of response. If both hash value mismatched, Merchant System can treat the response as invalid and discard it. Merchant System can only accept genuine payment response which had not been tampered with.

2.11.1.1 Payment Request Hashing

Payment request's Hash Value should be generated based on the following fields:

Hash Key = Password + ServiceID + PaymentID + MerchantReturnURL + MerchantApprovalURL + MerchantUnApprovalURL + MerchantCallBackURL + Amount + CurrencyCode + CustIP + PageTimeout + CardNo + Token

Hash Key Example
abc123**S22**PAYTEST123**https://www.shop.com/success.asp**12.34**MYR**113.210.6.150**900**4444333322221111

Hash Value (SHA256)
`28010d7207bdbd6e8ae3890fdb56c541c552c10b609b978fd69428fbb7a4fbc2`

2.11.1.2 Payment/Query/Reversal/Capture/Refund Response Hashing

Payment/Query/Reversal/Capture/Refund response's Hash Value should be generated based on the following fields:

Hash Key = Password + TxnID + ServiceID + PaymentID + TxnStatus + Amount + CurrencyCode + AuthCode

Hash Key Example
abc123**TESTTXN123**S22**PAYTEST123**1**12.34**458**123456**

Hash Value (SHA256)
94f47e73f659b8a44bac8d8a1274fc884d1fb7b7c3d0de47b1439378c8ce02cf

2.11.1.3 Query/Reversal/Capture/Refund Request Hashing

Query/Reversal/Capture/Refund request's Hash Value should be generated based on the following fields:

Hash Key = Password + ServiceID + PaymentID + Amount + CurrencyCode

Hash Key Example
abc123**S22**PAYTEST123**12.34**MYR

Hash Value (SHA256)
320b0e212a875228fb80efd7604534af47055e56167aa7e83842cf68788097b5

3 Appendix

3.1 Transaction Type

TransactionType	Description
SALE	Payment transaction
AUTH	Authorization transaction
CAPTURE	Capture transaction
QUERY	Status inquiry transaction
RSALE	Reversal transaction
REFUND	Refund transaction

3.2 Payment/Capture Transaction Status

TxnStatus	Description
0	Transaction successful
1	Transaction failed

3.3 Query Transaction Status

TxnStatus	Description
0	Transaction successful (for transaction type SALE)
1	Transaction failed
2	Sale pending, retry Query
10	Transaction refunded
15	Transaction authorized (for transaction type AUTH)
16	Transaction captured
31	Reversal pending, merchant system can retry Reversal if merchant system initiated the Reversal request or else merchant system can retry Query
9	Transaction reversed
-1	Transaction not exists/not found
-2	Internal system error

3.4 Reversal/Refund Transaction Status

TxnStatus	Description
0	Reversal/Refund success
1	Reversal/Refund failed, original transaction could be still under processing or failed due to other reasons like rejected by bank; Merchant System can send a Query to get actual payment status. If payment status from Query response is transaction successful, then only determine to whether proceed with sending Reversal/Refund. This will minimize the possibility of Reversal/Refund failed due to original transaction still under processing
2	Reversal/Refund pending, merchant system can retry Reversal/Refund
-1	Original transaction not found based on ServiceID, PaymentID, Amount and CurrencyCode, merchant system can stop Reversal/Refund
-2	Internal system error encountered during Reversal/Refund processing, Merchant System can retry Reversal/Refund

3.5 Currency Code

Currency Code	Currency
MYR	Malaysia Ringgit
SGD	Singapore Dollar
THB	Thai Baht
CNY	China Yuan (Ren Min Bi)
PHP	Philippine Peso

3.6 Language Code

Language Code	Language
EN	English (default language)
BM	Malaysia
TH	Thai
CN	Chinese

3.7 Country Code

Country Code	Country
MY	Malaysia
TH	Thailand
SG	Singapore
PH	Philippines
CN	China
ID	Indonesia