

Technical Specification for Electronic Data Interface

2015.03.18

Ver. 3.4.0

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Document History

[illegible]

1. Outline

The following Specification is designed to integrate international payment services with ease

1.1. Communication

Communication between Merchant's server and Payment Gateway's server is operated by HTTPS protocol. Request Data form is utilized by Form parameter and sent in POST method. Response Data uses string type categorized in specific string, JSON and XML.

1.2. Abbreviation

Category	Description
AN	Alphanumeric
N	Numeric
M	Mandatory
O	Option
C	Conditionally Mandatory
V	Variable data length

2. Elements of Specification

2.1. Category Description

2.1.1. "?" (Start Request)

Starting point of Request

2.1.2. Ver

Module version of current integration. Current version is "1000"

2.1.3. RequestType

Value to differentiate Service Request

Value	Description
TRAN	Purchase/Refund/Capture Confirmation Request

2.1.4 MID

Smartro's Merchant ID to categorize merchants in service types. Eg) mcausa840m

2.1.5. TransactionType

Value to differentiate transaction type such as Authorization/Refund/Capture Request

Value	Description
AA	Authorization
AC	Refund

AD	Refund within Network
AQ	Real-time Capture Request
AS	Verification Approval
SQ	3D Secure Verification Approval

2.1.6. Reference

Created to differentiate transactions requested by Merchant. Merchant creates and sets Reference at Purchase Request.

The value must be unique and its 4 digits above from the end must be in numbers.

- ※ The last 4 digits of the data are used in Encryption/Decryption and Forgery/Alteration Verification
- ※ Reference value when Refund within network is set equivalent to when requesting purchase

2.1.7. Currency

Currency Code on Purchase/Refund Request

Value	Description	Amount Setting	Remarks
JPY	Japanese Yen	12.2 ⇒ 12 12.5 ⇒ 13	
USD	US Dollar	12 ⇒ 12.00 12.356 ⇒ 12.36	
EUR	Euro	12 ⇒ 12.00 12.356 ⇒ 12.36	
HKD	Hong Kong Dollar	12 ⇒ 12.00 12.356 ⇒ 12.36	
GBP	British Pound	12 ⇒ 12.00 12.356 ⇒ 12.36	
SGD	Singapore Dollar	12 ⇒ 12.00 12.356 ⇒ 12.36	
AUD	Australian Dollar	12 ⇒ 12.00 12.356 ⇒ 12.36	
THB	Thailand Baht	12 ⇒ 12.00 12.356 ⇒ 12.36	
CAD	Canadian Dollar	12 ⇒ 12.00 12.356 ⇒ 12.36	
RUB	Russian Dollar	12 ⇒ 12.00 12.356 ⇒ 12.36	
CNY	Chinese Yuan	12 ⇒ 12.00 12.356 ⇒ 12.36	

2.1.8. Amount

Amount for Purchase/Refund request. When Partial Refund, amount must be smaller than original transaction amount

2.1.7. Must follow Currency amount setting form

2.1.9. CardNumber

Credit Card Number. Currently VISA, MASTER and JCB valid

- ※ AES-128 bit encryption required. [Refer 4.1. Credit Card Data Encryption]

2.1.10. ExpiryYYMM

Credit Card expiry date. Year 2 digit + Month 2 digit form requested when setup

※ AES-128 bit encryption required. [Refer 4.1. Credit Card Data Encryption]

2.1.11. CVC

Card Verification Value Code. 3 digit numbers when VISA,MASTER or JCB

※ AES-128 bit encryption required. [Refer 4.1. Credit Card Data Encryption]

2.1.12. AcquireType

Capture type per purchase. Smartro proceeds capture process after purchase for automatic capture.

Merchant needs to make separate capture request for manual capture

Value	Description
1	Automatic Capture
2	Manual Capture

2.1.13. ProductName

Product Name of Purchase

2.1.14. BuyerEmail

Buyer's E-mail address

2.1.15. BuyerName

Buyer's Name as specified on Credit Card FirstName + '-' + LastName eg> hong-gildong

2.1.16. BuyerID

Buyer's ID managed by Merchant

2.1.17. BuyerIP

Buyer's IP address in device when purchase

2.1.18. OutputType

Value for Output Data Type. Currently provided Output Types are Character String, JSON, XML format categorized in Delimiter

Value	Description
D	Categorized into !@# Delimiters for output
J	Response Data Output in JSON format
X	Response Data Output in XML format

2.1.19. VerifyValue

Value to verify whether value sent from Merchant to Smartro and/or from Smartro to Merchant is forged and/or altered.

Method to create Verification Data is by using specific Value Type with Delimiter as shown in table below.

※ Any occurring error while creating Verification Value, the value will be set to "NULL".

[Refer 4.2. Forgery/Alteration data verification]

Transactio	Classificatio	Verification Data
------------	---------------	-------------------

n Type	n	
AA	Request	Reference+[Delimiter]+Amount+[Delimiter]+MID+[Delimiter]+AcquireType
	Response	Reference+[Delimiter]+MID+[Delimiter]+ResponseCode+[Delimiter]+TID+[Delimiter]+ResponseDate+[Delimiter]+ ResponseTime
AC	Request	Reference+[Delimiter]+MID+[Delimiter]+TID+[Delimiter]+Amount+[Delimiter]+PartialCancelCode
	Response	Reference+[Delimiter]+MID+[Delimiter]+ResponseCode+[Delimiter]+TID+[Delimiter]+ResponseDate+[Delimiter]+ ResponseTime
AD	Request	Reference+[Delimiter]+MID+[Delimiter]+Amount+[Delimiter]+AuthDate
	Response	Reference+[Delimiter]+MID+[Delimiter]+ResponseCode+[Delimiter]+TID+[Delimiter]+ResponseDate+[Delimiter]+ ResponseTime
AQ	Request	Reference+[Delimiter]+MID+[Delimiter]+ TID+[Delimiter]+Amount
	Response	Reference+[Delimiter]+MID+[Delimiter]+ResponseCode+[Delimiter]+TID+[Delimiter]+ResponseDate+[Delimiter]+ ResponseTime
SQ	Request	Reference+[Delimiter]+Amount+[Delimiter]]+MID+[Delimiter]+TransactionType
	Response	Reference+[Delimiter]+MID+[Delimiter]+ResponseCode+[Delimiter]+TID+[Delimiter]+ResponseDate+[Delimiter]+ ResponseTime

2.1.20. ResponseCode

Response Code [Refer APPENDIX I]

2.1.21. ResponseMessage

Response Message [Refer APPENDIX I]

2.1.22. ResponseDate

Response Date. Purchase Date in YYYYMMDD format

2.1.23. ResponseTime

Response Time. Purchase Time in HH24MISS format

2.1.24. TID

Purchase Transaction ID created by Smartro. Required when requesting Refund and/or Capture

2.1.25. AuthCode

Purchase Authorization Code (Number). Required when requesting Refund and/or Capture

2.1.26. PartialCancelCode

Refund Type. Full amount or Partial Amount Refund.

Value	Description
-------	-------------

0	Full Amount refund request
1	Partial Amount refund request

2.1.27. ServiceType

Henceforth, Service type to be used in separate value. Currently fixed to A

2.1.28. AuthDate

Original Transaction Date

2.1.29. ServerIP

Merchant Server's Official IP

2.1.30. SiteURL

Merchant's online mall URL

3. Payment Service

3.1. Purchase Request

3.1.1. Description

Request purchase to be processed

3.1.2. HTTPS Request

No	Field Name	Type	Length	Condition	Description
1	?	AN	1	M	Start Request Refer to 2.1.1.
2	Ver	AN	4	M	1000 fixed Refer to 2.1.2.
3	RequestType	AN	4	M	Request Type Refer to 2.1.3.
4	MID	AN	10	M	Merchant ID Refer to 2.1.4.
5	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
6	Reference	AN	20	M	Transaction reference number (Unique) Refer to 2.1.6.
7	Currency	AN	3	M	Currency Type Refer to 2.1.7.
8	Amount	AN	12	M	Transaction Amount Refer to 2.1.8.
9	CardNumber	V	-	M	Card Number Refer to 2.1.9.
10	ExpiryYYMM	V	-	M	Expiry Date Refer to 2.1.10.
11	CVC	V	-	M	CVC Refer to 2.1.11.
12	AcquireType	AN	1	M	Acquiring Type Refer to 2.1.12.

13	ProductName	AN	100	O	Product Name Refer to 2.1.13.
14	BuyerEmail	AN	60	O	Buyer's E-mail Address Refer to 2.1.14.
15	BuyerName	AN	31	O	Buyer's Name Refer to 2.1.15.
16	BuyerID	AN	20	O	Buyer's ID Refer to 2.1.16.
17	BuyerIP	AN	40	M	Buyer's IP Refer to 2.1.17.
18	ServerIP	AN	40	M	Merchant Server IP (Official IP) Refer to 2.1.29.
19	SiteURL	AN	200	M	Merchant URL Refer to 2.1.30.
20	OutputType	AN	1	M	Output Format Refer to 2.1.18.
21	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.
22	Pares	AN	6k	O	Length of 4~6k byte when RequestType value is AS

Example 1: * Credit Card Data unencrypted

```

Request Start    ?
Ver             1000
RequestType     TRAN
MID             mcausa840m
TransactionType AA
Reference       MERCHANT00001234
Currency        USD
Amount          100.99
CardNumber      4141414141414141
ExpiryYYMM     1711
CVC             125
AcquireType     1
ProductName     PRODUCT
BuyerEmail      test@test.com
BuyerName       TEST
BuyerID         TEST
BuyerIP         211.123.123.123
ServerIP        209.121.111.2
SiteURL         https://www.aaaaaaa.com
OutputType      X
                OGIjMGNmNmViOWIxN2QwZjdkMjJiNDU2ZjE
VerifyValue     yMTI1N2RjMTI1NGUxZjAxNjY1MzZWE3NzZkZjQxNA==
                zZWE3NzZkZjQxNA==
Pares           ?

```

Example 2: * Credit Card Data encrypted

Request Start ?
Ver 1000
RequestType TRAN
MID mcausa840m
TransactionType AA
Reference MERCHANT00003783
Currency USD
Amount 10.84
CardNumber 66VwxV18yJtMpx2ynJrituttHeqF4+B/hiN+Wu9uFLY=
ExpiryYYMM hKWRom2bQB0M1LQWACKwsg==
CVC 8LfzGICzvohr3On8Uf+yhg==
AcquireType 2
ProductName PRODUCT
BuyerEmail test@test.com
BuyerName TEST
BuyerID TESTID
BuyerIP 211.123.123.122
OutputType X
VerifyValue TUVSQ0hBTIQwMDAwMTIzNA==w2LMTAuODQ=/wZbWN
hdXNhODQwbQ==+mDMQ==
Pares ?

3.1.3. Response

No	Field Name	Type	Length	Condition	Description
1	Ver	AN	4	M	1000 fixed Refer to 2.1.2.
2	RequestType	AN	4	M	Request Type Refer to 2.1.3.
3	MID	AN	10	M	Merchant ID Refer to 2.1.4.
4	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
5	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
6	ResponseCode	AN	4	M	Response Code Refer to 2.1.20.
7	ResponseMessage	AN	100	M	Response Message Refer to 2.1.21.
8	ResponseDate	AN	8	M	Transaction Date YYYYMMDD Refer to 2.1.22.
9	ResponseTime	AN	6	M	Transaction Time HHMMSS Refer to 2.1.23.
10	TID	AN	30	M	Smartro's Transaction Number (Unique) Refer to 2.1.24.
11	AuthCode	AN	12	M	Authorization Number Refer to 2.1.25.
12	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

```
<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>AA</TransactionType>
  <Reference>MERCHANT00001234</Reference>
  <ResponseCode>0000</ResponseCode>
  <ResponseMessage>Processing Valid</ResponseMessage>
  <ResponseDate>20140927</ResponseDate>
  <ResponseTime>164500</ResponseTime>
  <TID>mcausa840m01011409271743213011</TID>
  <AuthCode>00417432</AuthCode>
  <VerifyValue>
    NjNjMmM1YTUzOTU4MzRlZjQxZjJmZDA5ZTAxMDdiZG
    MxZGNhNzIwODJlMjg1MTNiYTljY2FINTQwNzIxMTAwMA==
  </VerifyValue>
</Response>
```

Example 2:

```
<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>AA</TransactionType>
  <Reference>MERCHANT00003783</Reference>
  <ResponseCode>E917</ResponseCode>
  <ResponseMessage>Card Number Error</ResponseMessage>
  <ResponseDate>20140927</ResponseDate>
  <ResponseTime>164500</ResponseTime>
  <TID>mcausa840m01011409271743213012</TID>
  <AuthCode></AuthCode>
  <VerifyValue>
    OWJkZWY0YTJkYTM2ZDRmYzgyYzI4MDAzZWY4OTdhMDFhNW
    Y0NDAzZjA0OTFjYmQ5NjZlMGVmYTBMYjdhZjk4Zg==
  </VerifyValue>
</Response>
```

3.2. Refund Request

3.2.1. Description

Request for Refund to process.

3.2.2. HTTPS Request

No	Field Name	Type	Length	Condition	Description
1	?	AN	1	M	Start Request Refer to 2.1.1.
2	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
3	RequestType	AN	4	M	Request Type Refer to 2.1.3.

4	MID	AN	10	M	Merchant ID Refer to 2.1.4.
5	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
6	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
7	Currency	AN	3	M	Currency Refer to 2.1.7.
8	Amount	AN	12	M	Refund request amount Refer to 2.1.8.
9	TID	AN	30	M	Smartro's Transaction Number Refer to 2.1.24.
10	AuthDate	AN	8	M	Authorization Date Refer to 2.1.28.
11	AuthCode	AN	12	M	Authorization Number Refer to 2.1.25.
12	PartialCancelCode	AN	1	M	Whether Partial Refund or full Refer to 2.1.26.
13	OutputType	AN	1	M	Output Format Refer to 2.1.18.
14	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

```

Request Start      ?
Ver                1000
RequestType        TRAN
MID                mcausa840m
TransactionType     AC
Reference           MERCHANT00001246
Currency           USD
Amount             100.99
TID                mcausa840m01011409271743213011
AuthDate           20140927
AuthCode           00417432
PartialCancelCode   0
OutputType          X
VerifyValue         MTNkNTZINTE1MzI0YWQ1OTE4MjA2YWU1
                   MzAwNmIyYmVjMmRmN2I0MWQ4N2RjOWE3
                   YjU4Zjg5ZTAzYTk4OWU0NA==

```

Example 2:

```

Request Start      ?
Ver                1000
RequestType        TRAN
MID                mcausa840m
TransactionType     AC
Reference           MERCHANT00001246

```

Currency	USD
Amount	50.99
TID	mcausa840m01011409271743213011
AuthDate	20140927
AuthCode	00417432
PartialCancelCode	1
OutputType	X
VerifyValue	N2RmODE4NzRiOWIwZjRiYjViZDdINTJh YjY0ZTIOTMzYWQ2YWJkNWRiM2M1NjVI MDY2NDU2NTQ4ZGRmM2Y4Yw==

3.2.3. Response

No	Field Name	Type	Length	Condition	Description
1	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
2	RequestType	AN	4	M	Request Type Refer to 2.1.3.
3	MID	AN	10	M	Merchant ID Refer to 2.1.4.
4	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
5	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
6	ResponseCode	AN	4	M	Response Code Refer to 2.1.20.
7	ResponseMessage	AN	100	M	Response Message Refer to 2.1.21.
8	ResponseDate	AN	8	M	Transaction Date Refer to 2.1.22.
9	ResponseTime	AN	6	M	Transaction Time Refer to 2.1.23.
10	TID	AN	30	M	Smartro's Transaction Number (Unique) Refer to 2.1.24.
11	AuthCode	AN	12	M	Authorization Number (Origin Transaction Authorization Number) Refer to 2.1.25.
12	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

```
<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>AC</TransactionType>
  <Reference> MERCHANT00001246</Reference>
  <ResponseCode>0000</ResponseCode>
  <ResponseMessage>Processing Valid</ResponseMessage>
  <ResponseDate>20140928</ResponseDate>
  <ResponseTime>112500</ResponseTime>
  <TID>mcausa840m01011409271743213011</TID>
  <AuthCode>00417432</AuthCode>
  <VerifyValue>
    NThkNjI4ZTgzM2FjNjJIYzk3ZjdINTc1NGM1M2MyZmUwN2I
    5MGU5ZDQ1Zjk4YzdhZjhiMDFmNTIkMDM3NTIxZg==
  </VerifyValue>
</Response>
```

Example 2:

```
<Response>
  <Ver>1000</Ver>
```

```

<RequestType>TRAN</RequestType>
<MID>mcausa840m</MID>
<TransactionType>AC</TransactionType>
<Reference>MERCHANT00001246</Reference>
<ResponseCode>E903</ResponseCode>
<ResponseMessage>Transaction Date mismatch</ResponseMessage>
<ResponseDate>20140928</ResponseDate>
<ResponseTime>112500</ResponseTime>
<TID>mcausa840m01011409271743213011</TID>
<AuthCode>00417432</AuthCode>
<VerifyValue>
    NzFiMGE5MDI5YTg0MWUzNjIwNGIxMGM3ZjM5ZDI5NmRIY
    mRiODE1YmQ1NGIyMjQ4MTk3ZDQ4ZWY0ZTM0MTMxNg==
</VerifyValue>
</Response>

```

3.3. Refund Request within Network

3.3.1. Description

Refund is requested with enforcement when Merchant does not receive response on purchase request.

3.3.2. HTTPS Request

No	Field Name	Type	Length	Condition	Description
1	?	AN	1	M	Start Request Refer to 2.1.1.
2	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
3	RequestType	AN	4	M	Request Type Refer to 2.1.3.
4	MID	AN	10	M	Merchant ID Refer to 2.1.4.
5	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
6	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
7	Currency	AN	3	M	Currency Refer to 2.1.7.
8	Amount	AN	12	M	Refund Request Amount Refer to 2.1.8.
9	AuthDate	AN	8	M	Origin Transaction Authorization Date Refer to 2.1.28.
10	OutputType	AN	1	M	Output Format Refer to 2.1.18.
11	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

Request Start ?
Ver 1000
RequestType TRAN
MID mcausa840m
TransactionType CC
Reference MERCHANT00001246
Currency USD
Amount 100.99
AuthDate 20140927
OutputType X
VerifyValue MTNkNTZINTE1MzI0YWQ1OTE4MjA2YWU1
MzAwNmIyYmVjMmRmN2I0MWQ4N2RjOWE3
YjU4Zjg5ZTAzYTk4OWU0NA==

Example 2:

Request Start ?
Ver 1000
RequestType TRAN
MID mcausa840m
TransactionType CC
Reference MERCHANT00001246
Currency USD
Amount 100.99
AuthDate 20140927
OutputType X
VerifyValue N2RmODE4NzRiOWIwZjRiYjViZDdlINTJh
YjY0ZTI0OTMzYWQ2YWJkNWRiM2M1NjVI
MDY2NDU2NTQ4ZGRmM2Y4Yw==

3.3.3. Response

No	Field Name	Type	Length	Condition	Description
1	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
2	RequestType	AN	4	M	Request Type Refer to 2.1.3.
3	MID	AN	10	M	Merchant ID Refer to 2.1.4.
4	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
5	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
6	ResponseCode	AN	4	M	Response Code Refer to 2.1.20.
7	ResponseMessage	AN	100	M	Response Message Refer to 2.1.21.
8	ResponseDate	AN	8	M	Transaction Date Refer to 2.1.22.
9	ResponseTime	AN	6	M	Transaction Time Refer to 2.1.23.

10	TID	AN	30	M	Smartro's Transaction Number (Unique) Refer to 2.1.24.
11	AuthCode	AN	12	M	Authorization Number (Original Transaction Authorization Number) Refer to 2.1.25.
12	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

```
<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>CC</TransactionType>
  <Reference> MERCHANT00001246</Reference>
  <ResponseCode>0000</ResponseCode>
  <ResponseMessage>Processing Valid</ResponseMessage>
  <ResponseDate>20140928</ResponseDate>
  <ResponseTime>112500</ResponseTime>
  <TID>mcausa840m01011409271743213011</TID>
  <AuthCode>00417432</AuthCode>
  <VerifyValue>
    NThkNjI4ZTgzM2FjNjJlYzk3ZjdINTc1NGM1M2MyZmUwN2I
    5MGU5ZDQ1Zjk4YzdhZjhiMDFmNTIkMDM3NTIxZg==
  </VerifyValue>
</Response>
```

Example 2:

```
<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>AC</TransactionType>
  <Reference>MERCHANT00001246</Reference>
  <ResponseCode>E903</ResponseCode>
  <ResponseMessage>Transaction Date mismatch</ResponseMessage>
  <ResponseDate>20140928</ResponseDate>
  <ResponseTime>112500</ResponseTime>
  <TID>mcausa840m01011409271743213011</TID>
  <AuthCode>00417432</AuthCode>
  <VerifyValue>
    NzFiMGE5MDI5YTg0MWUzNjIwNGIxMGM3ZjM5ZDI5NmRIY
    mRiODE1YmQ1NGIyMjQ4MTk3ZDQ4ZWY0ZTM0MTMxNg==
  </VerifyValue>
</Response>
```

3.4. Capture Confirmation Request

3.4.1. Description

Request for Capture to be processed. (Usage of following part of Specification requires additional agreement/discussion)

3.4.2. HTTPS Request

No	Field Name	Type	Length	Condition	Description
1	?	AN	1	M	Start Request Refer to 2.1.1.
2	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
3	RequestType	AN	4	M	Request Type Refer to 2.1.3.
4	MID	AN	10	M	Merchant ID Refer to 2.1.4.
5	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
6	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
7	TID	AN	30	M	Smartro's Transaction Number Refer to 2.1.24.
8	AuthDate	AN	8	M	Original Transaction Date Refer to 2.1.28.
9	AuthCode	AN	15	M	Original Authorization Number Refer to 2.1.25.
10	ServiceType	AN	1	M	A Fixed Value Refer to 2.1.27.
11	OutputType	AN	1	M	Output Format Refer to 2.1.18.
12	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

Request Start	?
Ver	1000
RequestType	TRAN
MID	mcausa840m
TransactionType	AQ
Reference	MERCHANT00001234
TID	mcausa840m01011409271743213011
AuthDate	20140927
AuthCode	00417432
ServiceType	A
OutputType	X
VerifyValue	ZDJjYjYxNTU2ZDU3YmIzMGIY2NmMjM 3NzYzN2Q4ZDg5MWMxZmQ3MmIzNjdl NDcyZGE3MzgZTA0NTdlYTVINA==

3.4.3. Response

No	Field Name	Type	Length	Condition	Description
1	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
2	RequestType	AN	4	M	Request Type Refer to 2.1.3.
3	MID	AN	10	M	Merchant ID Refer to 2.1.4.
4	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
5	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
6	ResponseCode	AN	4	M	Response Code Refer to 2.1.20.
7	ResponseMessage	AN	100	M	Response Message Refer to 2.1.21.
8	ResponseDate	AN	8	M	Transaction Date Refer to 2.1.22.
9	ResponseTime	AN	6	M	Transaction Time Refer to 2.1.23.
10	TID	AN	30	M	Smartro's Transaction Number (Unique) Refer to 2.1.24.
11	AuthCode	AN	15	M	Authorization Number (Original Transaction Authorization Number) Refer to 2.1.25.
12	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

```
<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>AQ</TransactionType>
  <Reference>MERCHANT00001246</Reference>
  <ResponseCode>0000</ResponseCode>
  <ResponseMessage>Processing Valid</ResponseMessage>
  <ResponseDate>20140928</ResponseDate>
  <ResponseTime>112500</ResponseTime>
  <TID>mcausa840m01011409271743213011</TID>
  <AuthCode>00417432</AuthCode>
  <VerifyValue>
    ZjQwOGE3MzQyZGY0NzJmNjVhZjc1NzQ0NTc3NjY5YjE4MmM4
    Y2IxOGY5Y2U3MDNIMGQ2MTE4ZjZiZDI1OTIwNQ==
  </VerifyValue>
</Response>
```

3.5. 3D Secure Request

3.5.1. Description

Request 3D Secure Verification. (Usage of following part of Specification requires additional

agreement/discussion)

Step 1 > Visa3D Request Specification -> Smartro -> acquire Acs_url,Pareq,Md

Step 2 > Provide verification screen(UI) to customer by transmitting values such as Pareq, Md, TermUrl (Address for Merchant to receive Pares) to the address Acs_url.

Merchant to use `target= "_blank"` and 'JavaScript' to its optimization

```
<form name="postForm" action="<%=ACS_URL%>" method="POST" target="_blank">
<input type="hidden" name="PaReq" value="<%=PAREQ%>">
<input type="hidden" name="TermUrl" value="<%= 리턴받을 주소 %>">
<input type="hidden" name="MD" value="<%=MD%>">
</form>
<script language="JavaScript"> document.postForm.submit(); </script>
```

Step 3 > Transmit received Pares value to TermUrl(Address for Merchant to receive Pares) via '3.1. Purchase Request'.

3.5.2. HTTPS Request

No	Field Name	Type	Length	Condition	Description
1	?	AN	1	M	Start Request Refer to 2.1.1.
2	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
3	RequestType	AN	4	M	Request Type Refer to 2.1.3.
4	MID	AN	10	M	Merchant ID Refer to 2.1.4.
5	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
6	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
7	Currency	AN	3	M	Currency Refer to 2.1.7.
8	Amount	AN	12	M	Refund Request Amount Refer to 2.1.8.
9	CardNumber	V	-	M	Card Number Refer to 2.1.9.
10	ExpiryYYMM	V	-	M	Expiry Date Refer to 2.1.10.
11	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

Request Start	?
Ver	1000
RequestType	TRAN
MID	mcausa840m
TransactionType	AQ

Reference	MERCHANT00001234
Currency	USD
Amount	100.99
CardNumber	66VwxV18yJtMpx2ynJrituttHeqF4+B/hiN+Wu9uFLY=
ExpiryYYMM	hKWRom2bQB0M1LQWACKwsg==
VerifyValue	ZDJjYjYxNTU2ZDU3YmIzMGIY2NmMjM 3NzYzN2Q4ZDg5MWMxZmQ3MmIzNjdl NDcyZGE3MzgZTA0NTdiYTVINA==

3.5.3. Response

No	Field Name	Type	Length	Condition	Description
1	Ver	AN	4	M	1000 Fixed Refer to 2.1.2.
2	RequestType	AN	4	M	Request Type Refer to 2.1.3.
3	MID	AN	10	M	Merchant ID Refer to 2.1.4.
4	TransactionType	AN	2	M	Transaction Type Refer to 2.1.5.
5	Reference	AN	20	M	Transaction Reference Number (Unique) Refer to 2.1.6.
6	ResponseCode	AN	4	M	Response Code Refer to 2.1.20.
7	ResponseMessage	AN	100	M	Response Message Refer to 2.1.21.
8	ResponseDate	AN	8	M	Transaction Date Refer to 2.1.22.
9	ResponseTime	AN	6	M	Transaction Time Refer to 2.1.23.
10	TID	AN	30	M	Smartro's Transaction Number (Unique) Refer to 2.1.24.
11	AuthCode	AN	15	M	Authorization Number (Original Transaction Authorization Number) Refer to 2.1.25.
12	Acs_url	AN	1k	M	Verification URI
13	Pareq	AN	4k	M	Verification Request value 1
14	Md	AN	40	M	Verification Request value 2
15	VerifyValue	V	-	M	Verification Value Refer to 2.1.19.

Example 1:

```

<Response>
  <Ver>1000</Ver>
  <RequestType>TRAN</RequestType>
  <MID>mcausa840m</MID>
  <TransactionType>AQ</TransactionType>
  <Reference>MERCHANT00001246</Reference>

```

```
<ResponseCode>0000</ResponseCode>
<ResponseMessage>Processing Valid</ResponseMessage>
<ResponseDate>20140928</ResponseDate>
<ResponseTime>112500</ResponseTime>
<Acs_url>https://dpay.smilepay.co.kr/3dTest?</Acs_url>
<Pareq>?</Pareq>
<Md>?<Md>
<VerifyValue>
  ZjQwOGE3MzQyZGY0NzJmNjVhZjc1NzQ0NTc3NjY5YjE4MmM4
  Y2IxOGY5Y2U3MDNlMGQ2MTE4ZjZiZDI1OTIwNQ==
</VerifyValue>
</Response>
```

4. Data Encryption

4.1. Credit Card Data Encryption

4.1.1. Description

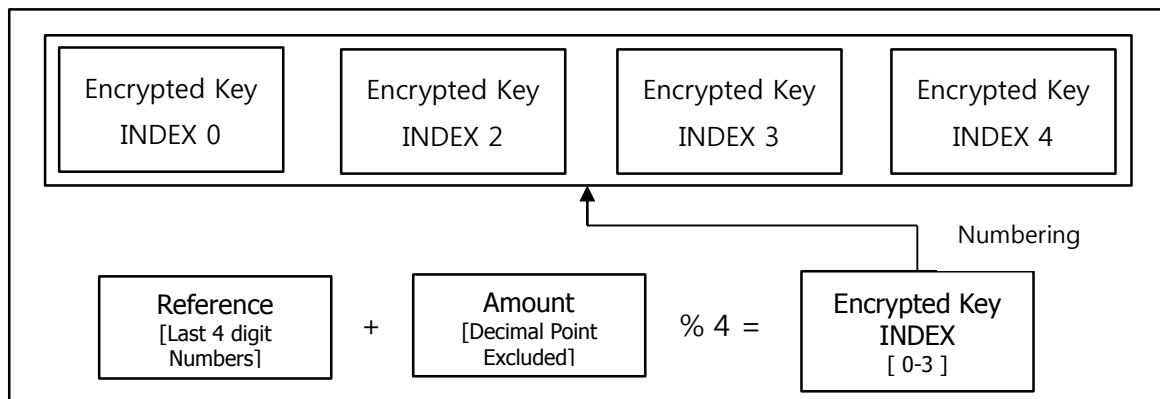
Encrypt Credit Card Number, Expiry Date, CVC and other Credit Card Details to transmit Data in safe and secure environment.

4.1.2. Algorithm

Algorithm encryption uses AES 128bit. (Block Mode : ECB Mode, Padding Method : PKCS5)
Refer to 4.1.3 for Key creation method.

4.1.3. Key Creation Method

Smartro provides key that is 88 byte in length to Merchants. When 64byte is divided into 4 blocks, 4 keys are created that can be used in AES 128bit. Under the arranged rules, select 1 key out of the 4 keys and encrypt.



4.1.4. Sample Source

<Java Code>

```
/* 88 byte Merchant Issuing Key*/
String merchantKey = "Kr1A0sO6GPBw2L/wZ+mDBPSuqGlJeHXEw" +
    "ByclfCB2kM0VrTx05cAhhmG8nvadMgLnn3"+
    "nuxKC1IGoVN3t27+uVA==";

/* 64 byte Encrypted Key*/
String secureKey = merchantKey.substring(0,64);

/* Divide 64 byte Key into 16 byte*/
String aesKeyId0 = secureKey.substring(0,16);
String aesKeyId1 = secureKey.substring(16,32);
String aesKeyId2 = secureKey.substring(32,48);
String aesKeyId3 = secureKey.substring(48);
```

```

/*
  When Reference = MERCH123456, Amount = 5.95
  Use 3rd index Key(aesKeyId3) as the remainder after dividing into 4 is 3
*/
int idx = ( 3456 + 595 ) % 4 = 3

/*
  Encode Base64 with the created Encrypted Key after encryption with AES encryption
  Algorithm
*/
String encryptResult = new String(BASE64.encodeBase64(_${Data Encryption}_));

```

4.2. Forgery/Alteration Data Verification

4.2.1. Description

Create data to verify forgery/alteration from Request/Response data based on rules set for each services.

[Refer to 2.1.19 VerifyValue]

4.2.2. Algorithm

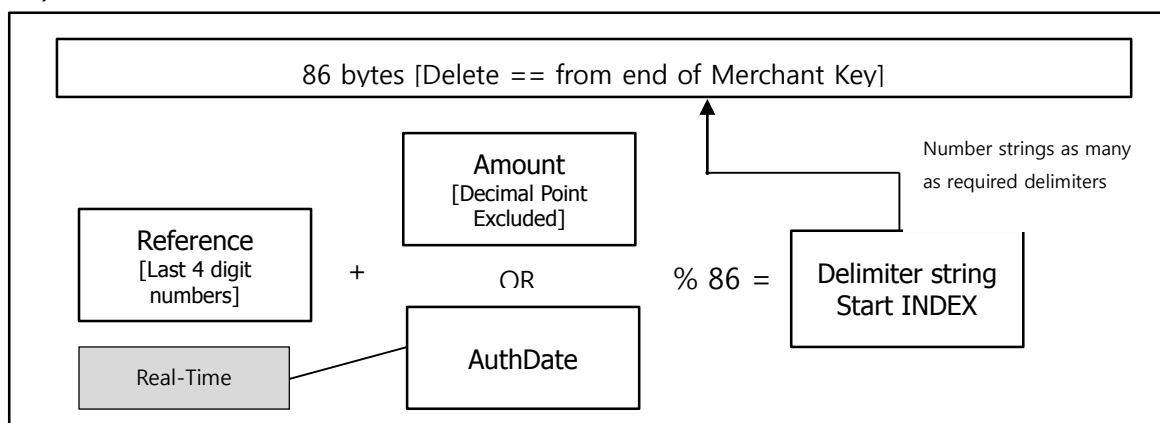
SHA 256 Hash Algorithm is recommended for use. If the language does not support, the created data (as created based on the rules set for each services) is to be sent as it is.

4.2.3. Method to create Data

Create data to verify forgery/alterations from Request/Response data based on rules set for each services.

Data is composed by selecting entry from request and/or response data and connecting entries with created delimiters.

As how encrypted key is created, same follows when delimiters are created by using Reference and key issued to Merchant.



4.2.4. Sample Source

```
<Java Code>
// create VerifyValue when requesting purchase

/*
  Reference = MERCH123456, Amount = 5.95, MID = mcausa840m, AcquireType = 1
*/

/* Use 86 byte from Merchant issued key(Delete "=") */
String merchantKey = "Kr1A0sO6GPBw2L/wZ+mDBPSuqGIJeHXEw" +
                    "ByclfCB2kM0VrTx05cAhhmG8nvadMgLNn3"+
                    "nuxKC1IGoVN3t27+uVA";

/*
  When Reference = MERCH123456, Amount = 5.95
  INDES is 9 as the remainder after dividing in 86 is 9
*/
int idx = ( 3456 + 595 ) % 86 = 9

/*
  When requesting purchase, three delimiter 3 byte are required. (9 byte extracted from Start
  INDEX 9)
  ※ Like Java, add 1 to response value when Start INDEX is 1 not 0.
  ※ When data is extracted from Start INDEX and the data is lacking at the end, extract
  from the front for the lacking data.
*/
String delimiters = merchantKey.substring(9,18); // (int idx may vary based on Amount
and Reference; total 9 byte length)

/*
  Create Data (Encode BASE64 for each element)
  If SHA 256 Hash is invalid send below data
*/
StringBuffer buffer = new StringBuffer();
buffer.append(Base64.encodeBase64("MERCH123456".getBytes())); //Reference
buffer.append(delimiters.substring(0,3)); // First delimiter (3 byte)
buffer.append(Base64.encodeBase64("5.95".getBytes())); // Amount
buffer.append(delimiters.substring(3,6)); // Second delimiter (3 byte)
buffer.append(Base64.encodeBase64("mcausa840m".getBytes())); // MID
buffer.append(delimiters.substring(6,9)); // Third delimiter (3 byte)
buffer.append(Base64.encodeBase64("1".getBytes())); // AcquireType

/*
  Apply if SHA 256 Hash is valid (SHA 256 ⇒ Hex ⇒ Base64 )
*/
```

```
MessageDigest sha256 = MessageDigest.getInstance("SHA-256");  
  
sha256.update(buffer.toString().getBytes());  
  
byte[] hashResultBytes = sha256.digest();  
  
String verifyValue =  
    new String(Base64.encodeBase64(new String(Hex.encodeHex(digest)).getBytes()));
```

APPENDIX I. Response Code/Message

Code	Message
0000	Processing Valid
E901	VAN communication Error
G001	Unregistered Merchant
E900	Invalid Transaction - Others
G002	PG Basic Information Error
G003	Terminal ID Error
E902	Invalid Transaction Cancellation
E903	Transaction Date mismatch
E904	Purchaser Serial Number Error
E905	Transaction Specification Form Error
E906	Please enquire International Brand Company
E907	Amount Error
E908	Original Transaction Amount
E909	Cancelled Transaction
E910	Invalid part cancellation
E911	Expiry Date Error
E912	Installment Month Error
E913	Installment Amount Error
E914	Settlement Transaction
E915	Non-existent Original Transaction
E916	Transaction Restricted Merchant
E917	Card Number Error
E918	Password Error
E919	Password input limit exceeded
E920	Transaction Suspended Card
E921	Insufficient Funds
E922	Merchant Limit Exceeded
E923	Expired expiry date
E924	Cardholder Limit Exceeded
E925	Lost/Stolen Card
E926	Unregistered Password
E927	System Error
W003	Merchant Data Search Failure
W004	Invalid Currency Code
W006	Verification Key creation Failure

W007	Forgery/Alteration Verification Failure
W008	Code Decryption Failure
W009	Communication Failure
M001	Inserted invalid card number
M002	Please insert CVV number
M003	There is no card holder information
M004	This card is suspended
M005	This card is stolen card
M006	This card is expired
M007	Amount limitation exceeded
M008	Failed CVV verification
M009	This card cannot be used
M010	Call card issuer
M011	Daily amount limitation exceeded
M012	Monthly amount limitation exceeded
M013	Maximum amount limitation exceeded
M014	Amount is under minimum limitation
M015	Manual acquiring
M016	There is something missing on requesting
M017	Does not fit on requesting data
M018	Transaction category is wrong
M019	Merchant is not registered
M020	Transaction password does not match
M021	This merchant cannot do live processing
M022	Not registered service URL
M023	not on service area
M024	Original transaction information does not exist
M025	Processing amount is wrong
M026	Does not match with Approval processing currency
M027	This transaction is already cancelled
M028	This transaction is already refunded
M029	This transaction is declined
M030	Transaction ID does not exist
M031	This merchant order number does not exist
M032	Merchant server timed out
M033	Requesting time expired
M034	Transaction data verification has been failed
M035	Database error 1

M036	Database error 2
M037	This card cannot be approved
M038	Acquirer error
M039	Cannot identify this transaction