



Lacent

Lacent Payments

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History

Date	Version	Description	Name
14 november 2018	V1.0	Final version V1.0	
26 november 2018	V1.1	Added security/HMAC	
27 november 2018	V1.2	Added HMAC for callback	
28 november 2018	V1.3	Added HMAC for responses	
1 december 2018	V1.4		
17 december 2018	V1.5		
02 january 2019	V1.6		
21 february 2019	V1.7	Add health check endpoint	
05 march 2019	V1.8	Make applicant initials optional	
07 march 2019	V1.9	Add restrictions on number fields	
11 march 2019	V1.10	Refund of 0 cents is allowed	
13 march 2019	V1.11	Amounts in already carried out payments should be > 0	
21 may 2019	V1.12	Negative amounts and numbers possible in lines. E-mail address optional in applicant.	

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1. General

1.1 Objectives

The main objectives of this document are:

- Service contract with the merchant

1.2 Payment process online

In general there are two phases in the payment process:

1. Request to pay with a specific payment method (the payment request);
We capture directly after the acceptance of the contract/payment
2. Modification of a request consisting of:
 1. Cancellation;
 2. Return;

1.3 Payment process offline

In general there are two phases in the payment process:

3. Request to pay with barcode and a specific payment method (the payment request). We do a direct capture.
4. Modification of a request consisting of:
 1. Cancellation;
 2. Return;

1.4 Payment methods

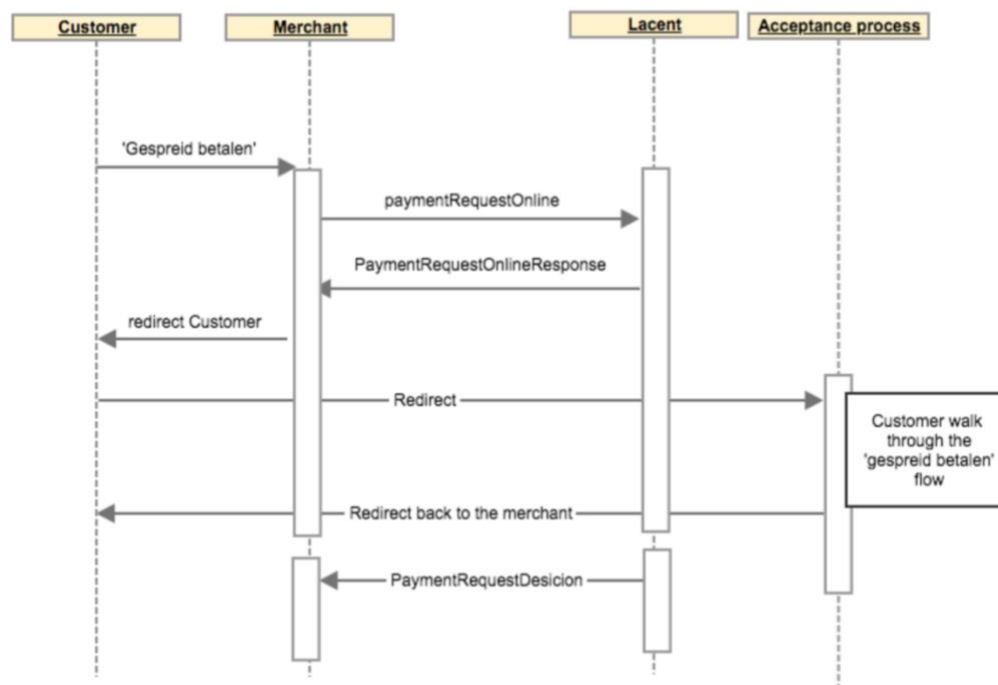
The first payment method that will be offered to customers is "Credit" (so paying in monthly installments). The interfacing will be constructed in such a way that the other current payment methods (invoiced payments, buy now pay later) can be easily integrated.

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2. Payment Request

2.1 Request process

Payment Request Online



1. The customer chooses “gespreid betalen” during checkout;
2. After negotiation between services, the customer is redirected to a login/create account page. Lacent generates a globally unique key that identifies the payment request (paymentRequestIdentifier)
3. The customer performs the things he/she needs to do in order to pay e.g. filling out a Income and expenses form;
4. After completion of the flow the customer is redirected back to the merchant’s website or app;
5. At the same time Lacent communicates the results of the payment request through a notification message. The results can be (definitions are described in paragraph “results of request”).
 - a. Accepted;
 - b. Rejected;
 - c. Cancelled;
 - d. Pending;

When the payment is in a pending state then (after some time) Lacent will send an Accepted, Cancelled or Rejected notification message.

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2.2 Security

Authorization is being done on three levels:

1. IP whitelisting
2. Basic authentication
3. Request signing using HMAC

2.2.1 HMAC

2.2.1.1 Calls to Lacent

All requests to Lacent need to have the correct HTTP header for signing:

```
X-Authorization: hmac <merchant-id>:<hash>:<nonce>:<timestamp>
```

- **hmac:** Authentication scheme, is always hmac
- **merchant-id:** id provided by Lacent to identify the merchant. This is used to lookup the secret key used to sign the request
- **hash:** base64 encoded HMAC SHA256 hash. The content for the hash is a concatenated string consisting of merchant-id, timestamp, nonce and request content separated by semicolons. The HMAC is signed with the secret key.
- **nonce:** random sequence of characters that should be different for each request, valid characters: a-z, A-Z, 0-9, '-'
- **timestamp:** request time in seconds since the epoch (01-01-1970 00:00:00) in UTC time

The hash is calculated over a concatenated string consisting of merchant-id, timestamp, nonce and request content separated by semicolons.

The request content can either be

- the URL path and the JSON body in case of a POST or PUT separated by a semicolon
- the URL path followed by a semicolon in case of a GET request.

Some examples:

- POST to /merchant-api/online/v1/payment-requests with body { "key1": "value1" } : the input for the hash is "/merchant-api/online/v1/payment-requests;{ "key1": "value1" }"
- PUT to /merchant-api/v1/refunds/12345678 with body { "key1": "value1" } : the input for the hash is "/merchant-api/v1/refunds/12345678;{ "key1": "value1" }"
- GET /merchant-api/v1/status/12345678: the input for the hash is "/merchant-api/v1/status/12345678;"

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2.2.1.2 Response from Lacent

Responses from Lacent are also signed. For this purpose the HTTP header 'X-Authorization' is used. This header will have the following structure:

```
X-Authorization: hmac <hash>:<nonce>:<timestamp>
```

- **hmac:** Authentication scheme, is always hmac
- **hash:** base64 encoded HMAC SHA256 hash. The content for the hash is a concatenated string consisting of merchant-id, timestamp, nonce and request content separated by semicolons. The HMAC is signed with the secret key.
- **nonce:** random sequence of characters that should be different for each request, valid characters: a-z, A-Z, 0-9, '-'
- **timestamp:** request time in seconds since the epoch (01-01-1970 00:00:00) in UTC time

The hash is calculated over a concatenated string consisting of merchant-id, timestamp, nonce and response content (or the empty string if there is no body) separated by semicolons.

2.2.1.3 Calls to the callback URL of the merchant

The callback URL of the merchant will be called with some query parameters. The request will be signed by using the following input for the hash: all query parameters, except 'shaSign', concatenated in alphabetical order using name + '=' + value separated by semicolons. Values used for the signing will not be URL encoded.

This is the list of query parameters:

- additionalData (optional)
- decision
- decisionDateTime
- errorCode (optional)
- shaSign
- merchantRequestReference
- nonce
- paymentMethod
- paymentRequestId
- requestedPaymentAmount
- timestamp (request time in seconds since the epoch (01-01-1970 00:00:00) in UTC time)

All query parameters will be URL encoded. The signature hash will be base64 encoded (and after that URL encoded).

The callback URL must be implemented idempotent by the merchant.

2.3 Payment request object online

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2.3.1 PaymentRequestOnline

Attribute	Description	Type	Length	Required (Y/N)	Remarks
merchantRequestReference	A unique reference for the whole transaction provided by the merchant	String	100	N	We strongly recommend to use this for linking the payment request
paymentMethod	See payment method	Enum String		Y	For now we only offer the credit payment method. Possible values: 'Credit', 'Invoiced'
requestedPaymentAmount	The amount of credit that is requested by the customer	Integer		Y	The requested amount is always in cents and should be > 0.
invoiceAddress		Address		Y	
Delivery		DeliveryCharacteristics		Y	
Routing		Routing		Y	
Payments		List of Payment		N	
requestTags		List of RequestTag		N	
Merchant		Merchant		Y	
Lines		List of Line		Y	
applicant		Applicant		Y	

2.3.2 Address

Attribute	Description	Type	Length	Required (Y/N)	Remarks
countryCode	The country code of the address	Enum String	10	Y	For now this will always be 'NL'
houseNumber	The house number of the given address	String	10	Y	See also questions on the source of addresses
houseNumberAddition	The addition to the house number	String	10	N	See also question on the source of addresses
postalCode	The (official) postcode of the address.	String	10	Y	The postal code has the format of 'NNNNAA' or 'NNNN AA' for Dutch postal codes(i.e. 8011NW)
Street	The name of the street	String	50	Y	
City	The name of the city	String	50	Y	

2.3.3 Applicant

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Attribute	Description	Type	Length	Required (Y/N)	Remarks
dateOfBirth	The date of birth of the customer	String	10	N	Format: yyyy-mm-dd
emailAddress	The email address of the customer	String	320	N	We don't validate if an email address is valid or not.
externalCustomerNumber	Number provided by the the merchant to identify the customer uniquely.	String	100	N	The customer number (or customer reference) of the merchant
gender	See gender types	Enum String	10	Y	Gender is (in the context of credit payment) important because gender determines how we perform a BKR check. Possible values: 'Male', 'Female', 'Unknown'
initials	The initials of the customer	String	20	N	
firstName	First name of the customer	String	100	N	
lastName	The last name of the customer	String	200	Y	As for credit we have an obligation to register a new loan on birth name. The general rule at Lacent is to ask for a birth name when gender is female. For this specific situation Lacent will ask for a birth name during the acceptance process (if needed of course)
telephoneNumber	The phone number the customer has provided	String	17	N	Phone can either be a landline or a mobile number
prefixLastName	The prefix of the last name.	String	10	N	Examples : " van" or " van der"

2.3.4 Delivery characteristics

attribute	Description	Type	Length	Required (Y/N)	Remarks
deliveryDate	The date the delivery of the goods will take place	String	10	N	Format yyyy-mm-dd

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deliveryMethod	The way the goods are delivered	Enum String		Y	This is important because it will have an effect on fraud detection. I.e. when a customer wants to pick up the goods in a store it will probably be a safer method than delivering the goods to a delivery parcel station Possible values: 'Store', 'DHL', 'DHLPickup', 'CompanyDelivery'
deliveryAddress	The address where the goods will be delivered	Address		Y	

2.3.5 Line

attribute	Description	Type	Length	Required (Y/N)	Remarks
itemPrice	The price of an individual line item	Integer		Y	Amounts are always in cents and include VAT; Amounts can be negative
merchantLineReference	Unique reference of the merchant of the line item	String	100	Y	
productClassification	Description of classification of the product	String	100	N	
numberOfItems	The number of items on the line	Integer		Y	Always a whole positive or negative number
description	The description of a line item	String	255	Y	

2.3.6 Payments

Is a list of already carried out payments for this request (e.g. via gift card).

attribute	Description	Type	Length	Required (Y/N)	Remarks
amount	The amount of the payment as recorded by the merchant	Integer		Y	Amount is always in (euro) cents and has to be a positive number (amount > 0)
paymentType	Free format payment type as reference for the merchant	String	100	Y	

2.3.7 Request tags

One or more key value pairs provided by the merchant. For example a key "campaign" and a value "christmas 2018" or key "store" with value "Zwolle".

attribute	Description	Type	Length	Required (Y/N)	Remarks
tagName	The name of the tag	String	50	Y	
tagValue	The value of the tag	String	100	Y	

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2.3.8 Merchant

Unique identification of the merchant.

attribute	Description	Type	Length	Required (Y/N)	Remarks
merchantId	The unique id of the merchant provided by Lacent	String	100	Y	
merchantName	The commercial name of the merchant	String	100	Y	For example : “cafeteria Hans en Frietje”

2.3.9 Routing

URL's for routing the customer back to the merchant's website.

attribute	Description	Type	Length	Required (Y/N)	Remarks
callbackUrl	URL to send the customer to after the payment flow has been completed	String	2000	Y	For all outcomes (Accepted, Rejected, Pending) except Cancelled
cancelUrl	URL for landing page when customers explicitly cancel the flow	String	2000	Y	

2.3.10 PaymentRequestOnlineResponse

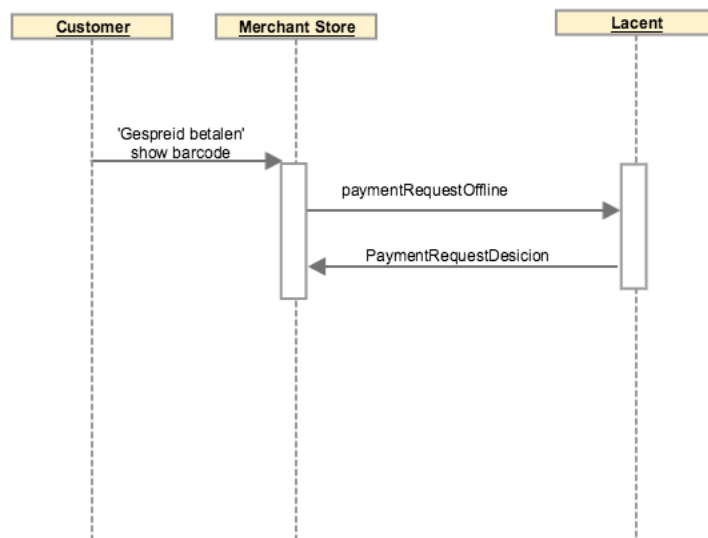
attribute	Description	Type	Length	Required (Y/N)	Remarks
paymentRequestId	A unique number for this payment request transaction.	String	36	Y	It's a UUID
redirectUrl	URL where the merchant needs to redirect the customer to	String	2000	Y	

2.4 Payment request offline

This paragraph describes the API calls from a store sale point of view.

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Payment Request Offline



2.4.1 PaymentRequestOffline

attribute	Description	Type	Length	Required (Y/N)	Remarks
merchantRequestReference	A unique reference for the whole transaction provided by the merchant	String	100	N	We strongly recommend to use this for linking the payment request
paymentMethod	See payment method	Enum String		Y	For now we only offer the credit payment method. Possible values: <i>'Credit'</i> , <i>'Invoiced'</i>
requestedPaymentAmount	The amount of credit that is requested by the customer	Integer		Y	The requested amount is always in cents and should be > 0.
invoiceAddress		Address		N	
delivery		DeliveryCharacteristics		N	
routing		Routing		N	
payments		List of Payment		N	
requestTags		List of RequestTag		N	
merchant		Merchant		Y	
lines		List of Line		Y	
applicant		Applicant		N	
customerBarcodeToken	A unique set of characters that identifies the Lacent customer	String	128	Y	

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2.4.2 *payment request offline response*

The offline request will be answered with a `PaymentRequestDecision`, described in 2.5.1. Not all decisions apply for offline, see 2.5.1 for details.

2.5 Results of a Payment request

The merchant needs to have an endpoint available where Lacent can send an update of the payment request. The message in 2.5.1 is sent to this endpoint in JSON format with a HTTP POST request. The request will be signed in the same way a response of a synchronous call is signed. The signature will be sent via a HTTP header:

```
X-Authorization: hmac <hash>:<nonce>:<timestamp>
```

The hash is calculated over a concatenated string consisting of merchant-id, timestamp, nonce and response content, separated by semicolons.

Example message (including all optional fields):

```
{
  "paymentRequestId": "uuid",
  "paymentMethod": "Credit",
  "requestedPaymentAmount": 57895,
  "decision": "Accepted",
  "decisionDateTime": "2018-12-03T14:37:02.889Z",
  "errorCode": "string",
  "additionalData": "string"
}
```

There is also an endpoint available which can be used by the merchant to get the status of a payment request.

2.5.1 *paymentRequestDecision*

Attribute	Description	Type	Length	Required (Y/N)	Remarks
paymentRequestId	A unique number for the payment request transaction.	String	36	Y	It's a UUID
paymentMethod	The original payment method	String		Y	Can be used for extra verification on the merchant's side
requestedPaymentAmount	The original requested amount in cents	Integer		Y	Can be used for extra verification on the merchant's side
Decision	The current decision of the paymentRequest	String Enum		Y	For possible values see 2.5.2

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decisionDateTime	Date of the decision	String		Y	Format yyyy-mm-ddThh:mi:ss.SSSZ In UTC timezone. Example: 2018-11-06T09:41:25.020Z
merchantRequestReference	A unique reference for the whole transaction provided by the merchant	String	100	N	
errorCode	Error code (indication of the nature of the error)	String		N	List of error codes needs to be decided
additionalData	Additional info for the payment request.	String	255	N	Possibly a reject reason or error message

2.5.2 Payment request status

Type	End state	Description	Remarks/questions
InProgress*	No	Payment request is received, processing has not been completed	Not for offline.
Accepted	Yes	The requested payment method is accepted by Lacent	Lacent won't do (partial) prepayments for now, so the request is either accepted, rejected or pending.
Rejected	Yes	The requested payment method is Rejected.	Rejected may be communicated with a reject reason included
Cancelled*	Yes	The request is cancelled by the customer	This means that the customer has deliberately chosen to return to the merchant's site to pay in a different way. Not for offline.
Pending*	No	Some additional steps need to be performed in order to accept or reject	The assumption is that ILT verification will be part of the acceptance flow. When ILT verification is necessary it will take some time to process income/housing costs documents. Not for offline.

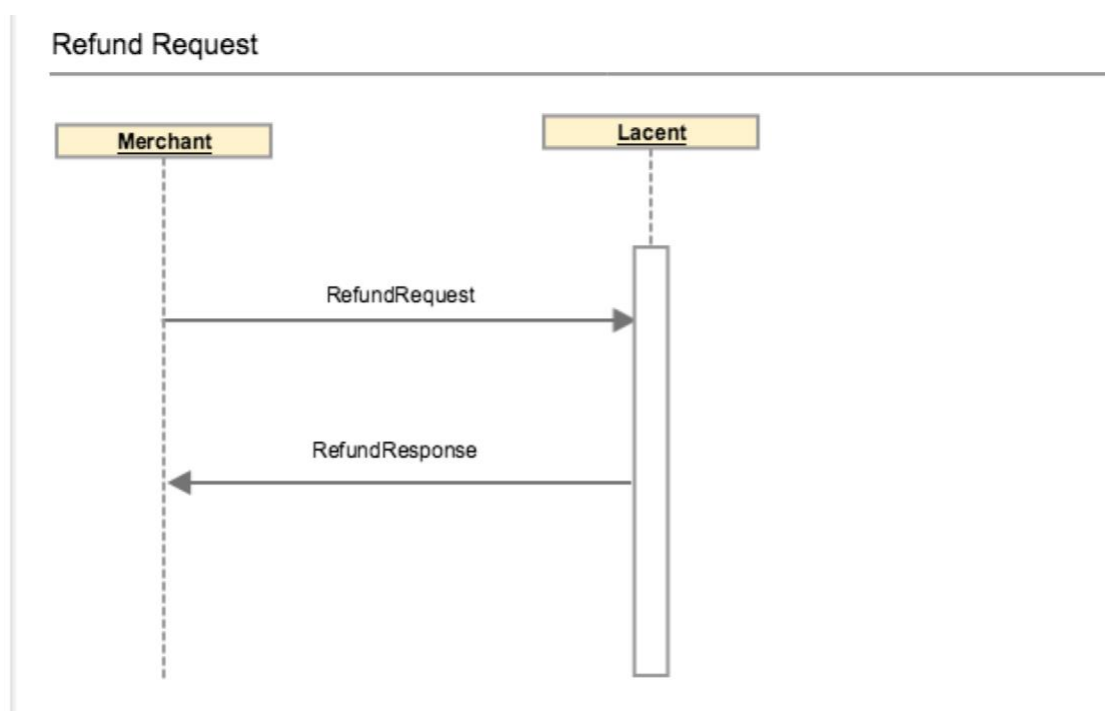
* These statuses will not appear in the response to the submit of an offline payment request

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2.6 Refund

The merchant can refund a certain amount of a payment.

At this moment cancel and refund are the same. For changing use this method also.



2.6.1 RefundRequest

attribute	Description	Type	Length	Required (Y/N)	Remarks
originalPaymentRequestId	Original payment request Id.	String	36	Y	It's a UUID
refundAmount	The amount of the refund	Integer		Y	The amount is always in cents and should be ≥ 0 *
merchant	The merchant account	Merchant		Y	

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merchantRequestReference	A unique reference for the refund transaction provided by the merchant	String	100	N	We strongly recommend to use this for linking the refund request
additionalData	Additional info about the refund request.	String	255	N	

* The service will also check that the requested refund amount is not greater then the open amount for the given payment request.

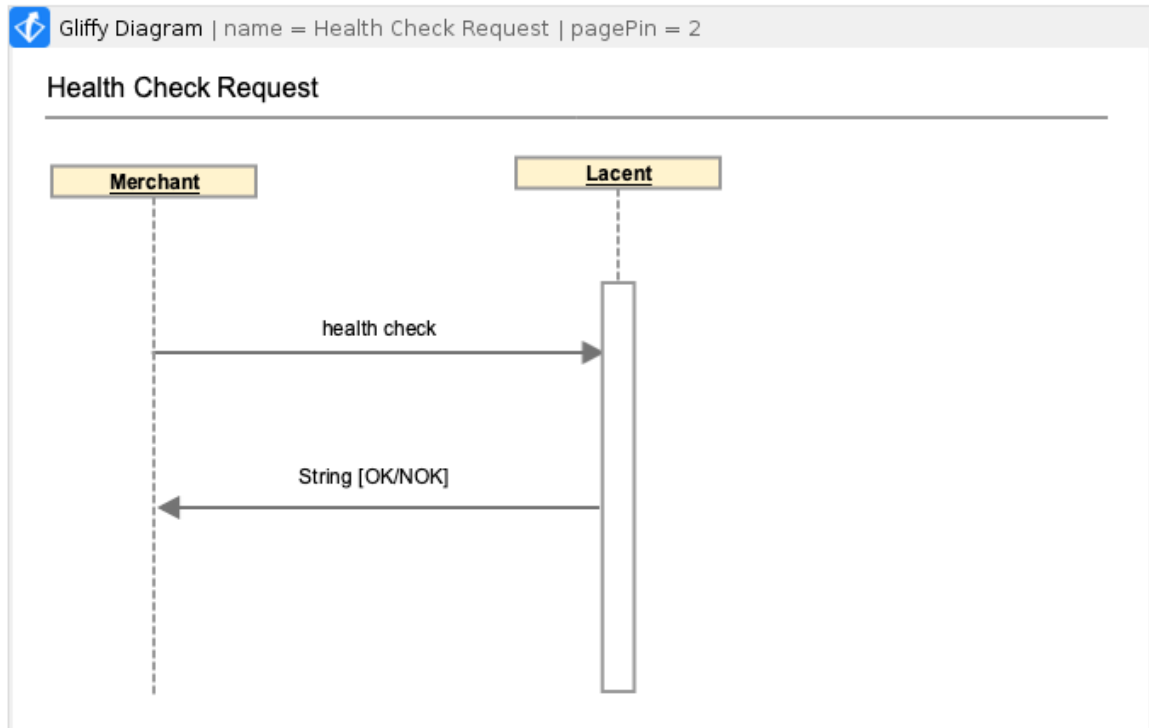
2.6.2 RefundResponse

Attribute	Description	Type	Length	Required (Y/N)	Remarks
refundRequestId	Refund reference id	String	36	Y	Unique identifier issued by Lacent. It's a UUID
response	The decision on the refund request	String Enum		Y	Possible values 'Accepted', 'Rejected'. Rejection can occur when the requested refund amount exceeds the requested payment amount
additionalData	Additional info about the refund request.	String	255	N	Reason why the refund is Rejected

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2.7 Health check

Lacent has an endpoint available to check the status of the environment for the Merchant.



2.7.1 Response

Response is OK or NOK. When NOK, then not all services are up and running. The customer may have a problem to finish the payment request.