Version 1.0

Guide Testverktyg

Merchant Swish Simulator

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1 Document Versions

Date	Version	Name	Description
2015-11-05	0.9.8	AT	First release to publish
2015-12-10	0.9.8.1	CS	Renamed document to Guide Testverktyg 3.3 Added information about port. 4.2.1 Changed example callback url. 4.2.2 Changed example callback url. 4.3 Changed example callback url. 4.5 Deleted error codes AC05, AC06, AC07, AC15, AM04, AM14, AM21, and DS0K. Added error code RF07. 5.1 Changed example callback url. 5.2 Changed example callback url. 6.2 Changed example callback url. 6.3 Changed example callback url. 6.5 Deleted error codes AC05, AC06, AC07, AC15, AM04, AM14, AM21, and DS0K. Added error code RF07. Deleted note related to error code RF04. Added error code RF07. 7.1 Changed example callback url.
2016-01-18	1.0	PJ	Created version 1.0

2 Background

Merchant Swish Simulator (MSS) is a test tool to offer a way for merchants to verify the format of and content in the API calls to Swish without any backward integration to other system components by returning an error message or a correctly formatted response message. Merchants are MSS User Guide target reader group. Merchants will able to send requests to MSS in order to validate positive and negative test cases.

3 Prerequisites

3.1 URLs of MSS

HTTPS://mss.swicpc.bankgirot.se/swish-cpcapi/api/v1/paymentrequests/

HTTPS://mss.swicpc.bankgirot.se/swish-cpcapi/api/v1/refunds/

3.2 TLS certificates

In order to communicate with the Swish server use the Swish client TLS certificate in the file “Swish Merchant Test Certificate 1231181189.p12”. The file contains the Swish Merchant Test Certificate together with the complete chain of trust and the private key. The password for the private key is “swish”. The test certificate is used together with the Swish number in the file name, e.g. 123 118 11 89.

It is necessary to provide the Swish client TLS certificate together with all CA certificates up to the Swish Root CA in order to correctly set up a TLS session with the Swish API.

It is recommended to require verification of the Swish server TLS certificate and not to ignore this verification, in case your server allows you to disable server certificate verification. The Swish server TLS certificate is issued under the same Swish Root CA as the Swish Merchant Test Certificate (i.e. “Test Swish Root CA v1 Test”). The Swish Root CA certificate is available in the file mentioned above but also in a separate file “Test Swish Root CA v1 Test.pem”.

3.3 TLS for the callback endpoint

The callback endpoint has to use HTTPS on port 443 and it is highly recommended to use IP filtering as well. For the callback Swish will be acting client and the merchant server is acting server. Swish will validate the merchant callback server TLS certificate against a list of commonly recognized CAs.

4 Create payment request

Merchants can create payment request for both E-Commerce and M-Commerce to MSS. Once MSS receives a “create payment request” call from merchants, there are two answers that will be returned from MSS. The first answer is synchronous, the second one is asynchronous. Please note the following:

1. MSS directly returns “Payment request created” response to the merchants. In case of M-Commerce the response will also contain a Token, unique for each payment request.
2. MSS sends a “Payment confirmation” to the merchant’s callback URL after some delay, default is five seconds. The delay is only configurable by Getswish.

In order to create payment request to MSS, Payment request object need to be POST to URL:

HTTPS://mss.swicpc.bankgirot.se/swish-cpcapi/api/v1/paymentrequests/

4.1 Payment request object

The Payment Request Object is used in all payment request operations. The fields marked as mandatory in the list below have to be present in the Create operation.

Property	Type	Mandatory/ Optional	Description
payeePaymentReference	string	O	Payment reference of the payee, which is the Merchant that receives the payment. This reference could be order id or similar.
callbackUrl	string	M	URL that Swish will use to notify caller about the outcome of the Payment request. The URL has to use HTTPS.
payerAlias	string	O	The registered Cell phone number of the person that makes the payment. It can only contain numbers and has to be at least 8 and at most 15 numbers. It also needs to match the following format in order to be found in Swish: country code + cell phone number (without leading zero). E.g.: 46712345678
payeeAlias	string	M	The Swish number of the payee. It needs to match with Merchant Swish number.
amount	string	M	The amount of money to pay. The amount cannot be less than 1 SEK and not more than 999999999999.99 SEK. Valid value has to be all numbers or with 2 digit decimal
currency	string	M	The currency to use. Only supported value currently is SEK.
message	string	O	Merchant supplied message about the payment/order. Max 50 chars. Allowed characters are the letters a-o¨, A-Ö, the numbers 0-9 and the special characters :;.,?!()". For MSS, errorCode as defined in section 0 can be set in the message property in order

4.2 Example positive test cases

4.2.1 E-Commerce

A “create payment request” call from merchants with the payer’s mobile telephone number is for E-Commerce.

```
curl -v --request POST https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/paymentrequests \
    --header "Content-Type: application/json" \
    --data @- <<!
{
    "payeePaymentReference": "0123456789",
    "callbackUrl": "https://example.com/api/swishcb/paymentrequests",
    "payerAlias": "4671234768",
    "payeeAlias": "1231181189",
    "amount": "100", "currency": "SEK",
    "message": "Kingston USB Flash Drive 8 GB"
}
!

< HTTP/1.1 201 Created
< Location:
https://mss.swicpc.bankgirot.se/swish-
cpcapi/v1/paymentrequests/AB23D7406ECE4542A80152D909EF9F6B
```

4.2.2 M-Commerce

A “create payment request” call from merchants without the payer’s mobile telephone number is for M-Commerce.

```
curl -v --request POST https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/paymentrequests \
    --header "Content-Type: application/json" \
    --data @- <<!
{
    "payeePaymentReference": "0123456789",
    "callbackUrl": "https://example.com/api/swishcb/paymentrequests",
     "payeeAlias": "1231181189",
    "amount": "100",
    "currency": "SEK",
    "message": "Kingston USB Flash Drive 8 GB"
}
!
```

```
< HTTP/1.1 201 Created
< Location:
https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/paymentrequests/AB23D7406ECE4542A80152D909EF9F6B
< PaymentRequestToken: f34DS34lfd0d03fdDselkfd3ffk21
```

4.3 Example negative test cases

A “create payment request” call from merchants with errorCode in property 'message'.

```
curl -v --request POST https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/paymentrequests/ \
    --header "Content-Type: application/json" \
    --data @- <<!
{
    "payeePaymentReference": "0123456789",
    "callbackUrl": "https://example.com/api/swishcb/paymentrequests",
    "payeeAlias": "1231181189",
    "amount": "100", "currency": "SEK", "message": "BE18"
}
!

< HTTP/1.1 422 Unprocessable Entity
< Content-Type: application/json
< Transfer-Encoding: chunked
<
[{"errorCode":"BE18","errorMessage":"In this case incorrect
MSISDN","additionalInformation":null}]
```

4.4 HTTP status codes

Potential HTTP status codes returned for create payment response:

HTTP status codes	Returned scenarios
201 Created	Returned when Payment request was successfully created. Will return a Location header and if it is M-Commerce case, it will also return PaymentRequestToken header.
400 Bad Request	Returned when the Create Payment Request operation was malformed.

401 Unauthorized	Returned when there are authentication problems with the certificate. Or the Swish number in the certificate is not enrolled. Will return nothing else.
403 Forbidden	Returned when the payeeAlias in the payment request object is not the same as Merchants Swish-number.
415 Unsupported Media Type	Returned when Content-Type header is not "application/json". Will return nothing else.
422 Unprocessable Entity	Returned when there are validation errors. Will return an Array of Error Objects.
500 Internal Server Error	Returned if there was some unknown/unforeseen error that occurred on the server, this should normally not happen. Will return nothing else.

4.5 Error codes

Potential Error codes which can be set on Create payment request 'message' to simulate validation failure in the “Payment request created” response (HTTP status code 422 is returned for the first answer):

Error codes	Description
FF08	PayeePaymentReference is invalid
RP03	Callback URL is missing or does not use Https
BE18	Payer alias is invalid
RP01	Payee alias is missing or empty
PA02	Amount value is missing or not a valid number
AM06	Amount value is too low
AM02	Amount value is too large
AM03	Invalid or missing Currency
RP02	Wrong formatted message
RP06	Another active PaymentRequest already exists for this payerAlias. Only applicable for E-Commerce.
ACMT03	Payer not Enrolled
ACMT01	Counterpart is not activated
ACMT07	Payee not Enrolled

Potential Error codes which can be set on Create payment request 'message' to simulate failed “Payment confirmation” (HTTP status code 422 is returned for the second answer):

Error codes	Description
RF07	Transaction declined
BANKIDCL	Payer cancelled BankId signing
FF10	Bank system processing error
TM01	Swish timed out before the payment was started
DS24	Swish timed out waiting for an answer from the banks after payment was started. Note: If this happens Swish has no knowledge of whether the payment was successful or not. The Merchant should inform its consumer about this and recommend them to check with their bank about the status of this payment.

5 Retrieve payment confirmation callback

Merchants can retrieve payment confirmation callback by sending GET HTTP to URL:

HTTPS://mss.swicpc.bankgirot.se/swish-cpcapi/api/v1/paymentrequests/{id}

The URL is the “Location” defined in a response of create payment request, check section 5.1 and 5.2 for an example (blue marked areas).

Once MSS receives “Retrieve payment confirmation callback” from merchants, MSS sends a “Payment confirmation” to the merchant’s callback URL. It is possible to simulate all possible values of Payment status by providing the Payment request id of a call made earlier that leads to that outcome.

Remark: MSS stores the necessary information about each incoming “Payment request” in a cache which automatically expires every 24 hours or when the MSS server is restarted.

5.1 Example retrieve payment confirmation callback

```
curl -v --request GET
https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/paymentrequests/AB23D7406ECE4542A80152D909EF9F6B

< HTTP/1.1 200 OK
{
    "id": "AB23D7406ECE4542A80152D909EF9F6B",
    "payeePaymentReference": "0123456789",
    "paymentReference": "6D6CD7406ECE4542A80152D909EF9F6B",
    "callbackUrl": "https://example.com/api/swishcb/paymentrequests",
    "payerAlias": "07211234567",
    "payeeAlias": "1231234567890",
    "amount": "100",
    "currency": "SEK",
```

```
    "message": "Kingston USB Flash Drive 8 GB",
    "status": "PAID",
    "dateCreated": "2015-02-19T22:01:53+01:00",
    "datePaid": "2015-02-19T22:03:53+01:00"
}
```

5.2 Example retrieve payment confirmation callback negative

```
curl -v --request GET
https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/paymentrequests/88C45305089D4186BD4AC141D0911D55

< HTTP/1.1 200 OK

{
    "id":"88C45305089D4186BD4AC141D0911D55",
    "payeePaymentReference":"0123456789",
    "paymentReference":null,
    "callbackUrl":"https://example.com/api/swishcb/paymentrequests",
    "payerAlias":null,
    "payeeAlias":"1231181189",
    "amount":100.00,
    "currency":"SEK",
    "message":"AC05",
    "status":"ERROR",
    "dateCreated":"2015-10-20T10:01:31.784Z",
    "datePaid":null,
    "errorCode":"AC05",
    "errorMessage":"Payers bank account is closed"
}
```

5.3 HTTP status codes

Potential HTTP status codes returned for retrieve payment confirmation callback response:

HTTP status codes	Returned scenarios
200 OK	Returned when Payment request was found. Will return Payment Request Object.
401 Unauthorized	Returned when there are authentication problems with the

	certificate. Or the Swish number in the certificate is not enrolled. Will return nothing else.
404 Not found	Returned when the Payment request was not found or it was not created by the Merchant. Will return nothing else.
500 Internal Server Error	Returned if there was some unknown/unforeseen error that occurred on the server, this should normally not happen. Will return nothing else.

6 Create refund request

Merchants can create refund request to MSS. Once MSS receives a “Refund request” call from a merchant, it validates that the Refund request refers to an available Payment request with status PAID. If validation passes, there are two answers that will be returned from MSS. The first answer is synchronous, the second one is asynchronous. Please note the following:

1. MSS directly returns a “Refund response” to the merchant.

2. MSS sends a “Refund confirmation” to the merchant’s callback URL after some delay, default is 10 seconds. The delay is configurable by GetSwish.

In order to create refund request to MSS, Refund request object need to be POST to URL:

HTTPS://mss.swicpc.bankgirot.se/swish-cpcapi/api/v1/refunds/

6.1 Refund request object

The Refund request object is used in all refund operations. The fields marked as mandatory in the list below have to be present in the Create operation.

Property	Type	Mandatory/ Optional	Description
payerPaymentReference	string	O	Payment reference supplied by the Merchant. This could be order id or similar.
originalPaymentReference	string	M	Payment reference to the original payment that this refund is for.
paymentReference	string	O	Payment reference, from the bank, of the refund payment that occurred based on the created refund. Only available if status is PAID.
callbackUrl	string	M	URL that Swish will use to notify caller about the outcome of the Refund. The URL has to use HTTPS.
payerAlias	string	M	The Swish number of the Merchant that makes the refund payment.

payeeAlias	string	O	The Cell phone number of the person that receives the refund payment.
amount	string	M	The amount of money to refund. The amount cannot be less than 1 SEK and not more than 999999999999.99 SEK. Moreover, the amount cannot exceed the remaining amount of the original payment that the refund is for.
currency	string	M	The currency to use. Only supported value currently is SEK.
message	string	O	Merchant supplied message about the refund. Max 50 chars. Allowed characters are the letters a-o¨, A-Ö, the numbers 0-9 and the special characters :;.,?!()”. For MSS, errorCode as defined in section 6.5 can be set in the message property in order to simulate negative test cases.

6.2 Example positive test cases

```
curl -v --request POST https:// mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/refunds \
    --header "Content-Type: application/json" \
    --data @- <<!
{
    "payerPaymentReference": "0123456789",
    "originalPaymentReference": "6D6CD7406ECE4542A80152D909EF9F6B",
    "callbackUrl": "https://example.com/api/swishcb/refunds",
    "payerAlias": "1231234567890",
    "amount": "100",
    "currency": "SEK",
    "message": "Refund for Kingston USB Flash Drive 8 GB"
}
!

< HTTP/1.1 201 Created
< Location: https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/refunds/ABC2D7406ECE4542A80152D909EF9F6B
```

6.3 Example negative test cases

```
curl -v --request POST https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/refunds \
    --header "Content-Type: application/json" \
    --data @- <<!
{
    "payerPaymentReference": "0123456789",
    "originalPaymentReference": "6D6CD7406ECE4542A80152D909EF9F6B",
    "callbackUrl": "https://example.com/api/swishcb/refunds",
    "payerAlias": "1231234567890",
    "amount": "100",
    "currency": "SEK",
    "message": "ACMT07"
}
!

< HTTP/1.1 422 Unprocessable Entity
< Content-Type: application/json
< Transfer-Encoding: chunked
<
[{"errorCode":"ACMT07","errorMessage":"Payee not
Enrolled","additionalInformation":null}]
```

6.4 HTTP status codes

Potential HTTP status codes returned for create refund response:

HTTP status codes	Returned scenarios
201 Created	Returned when Refund was successfully created. Will return a Location header.
400 Bad Request	Returned when Create refund POST operation was malformed.
401 Unauthorized	Returned when there are authentication problems with the certificate. Or the Swish number in the certificate is not enrolled. Will return nothing else.
403 Forbidden	Returned when the payerAlias in the refund object is not the same as Merchants Swish-number.
415 Unsupported Media Type	Returned when Content-Type header is not "application/json". Will return nothing else.
422 Unprocessable	Returned when there are validation errors. Will return an Array of Error

Entity	Objects.
500 Internal Server Error	Returned if there was some unknown/unforeseen error that occurred on the server, this should normally not happen. Will return nothing else.
504 Gateway Timeout	Returned when the Bank validation answers take too long and Swish times out. This rarely happens.

6.5 Error codes

Potential Error codes which can be set on create refund request 'message' to simulate validation failure in “Refund response” (Http status code 422 is returned on the first answer):

Error codes	Description
FF08	PayerPaymentReference is invalid
RP03	Callback URL is missing or does not use Https
PA02	Amount value is missing or not a valid number
AM06	Amount value is too low
RF08	Amount value is too large or amount exceeds the amount of the original payment minus any previous refunds. Note: the remaining available amount is put into the additional information field.
AM03	Invalid or missing Currency
RP01	Payer alias is missing or empty
RP02	Invalid Message text
ACMT07	Payee not Enrolled
ACMT01	Counterpart is not activated
RF02	Original Payment not found or original payment is more than than 13 months old
RF03	Payer alias in the refund does not match the payee alias in the original payment.
RF04	Payer organization number does not match original payment payee organization number.
RF06	The Payee SSN (personnummer) in the original payment is not the same as the SSN for the current Payee. Note: Typically this means that the Mobile number has been transferred to another person.
RF07	Transaction declined
FF10	Bank system processing error

BE18	Invalid contact details error

Potential Error codes which can be set on Create refund request 'message' to simulate failed “Refund confirmation” (HTTP status code 422 is returned for the second answer):

Error codes	Description
DS24	Swish timed out waiting for an answer from the banks after payment was started. Note: If this happens Swish has no knowledge of whether the payment was successful or not. The Merchant should inform its consumer about this and recommend them to check with their bank about the status of this

7 Retrieve refund confirmation callback

Merchants can retrieve refund confirmation callback by sending GET HTTP to URL:

HTTPS://mss.swicpc.bankgirot.se/swish-cpcapi/api/v1/refunds/{id}

The URL is the Location defined in a response of create refund request, check section 7.1 for an example.

7.1 Example retrieve refund confirmation callback

```
curl -v --request GET https://mss.swicpc.bankgirot.se/swish-
cpcapi/api/v1/refunds/ABC2D7406ECE4542A80152D909EF9F6B

< HTTP/1.1 200 OK
{
    "id": "ABC2D7406ECE4542A80152D909EF9F6B",
    "payerPaymentReference": "0123456789",
    "originalPaymentReference": "6D6CD7406ECE4542A80152D909EF9F6B",
    "callbackUrl": "https://example.com/api/swishcb/refunds",
    "payerAlias": "1231234567890",
    "payeeAlias": "07211234567",
    "amount": "100", "currency": "SEK",
    "message": "Refund for Kingston USB Flash Drive 8 GB",
    "status": "PAID",
    "dateCreated": "2015-02-19T22:01:53+01:00",
    "datePaid": "2015-02-19T22:03:53+01:00"
}
```

7.2 HTTP status codes

Potential HTTP status codes returned for retrieve refund confirmation callback:

HTTP status codes	Returned scenarios
200 OK	Returned when refund was found. Will return Refund Object..
401 Unauthorized	Returned when there are authentication problems with the certificate. Or the Swish number in the certificate is not enrolled. Will return nothing else.
404 Not found	Returned when no refund was found or it was not created by the Merchant. Will return nothing else.
500 Internal Server Error	Returned if there was some unknown/unforeseen error that occurred on the server, this should normally not happen. Will return nothing else.

8 Test Tips

In addition to using the ”Message” element for simulating errors in the synchronous and asynchronous responses other methods can be used. These are described below:

- HTTP communication
  - Provide an incorrect address e.g. i.e. remove “s” in paymentrequests – HTTP 404 Not Found
  - Remove client certificate – “Received fatal alert: handshake_failure”
- Payment Request
  - "payeePaymentReference"
    - Provide too long – “FF08","errorMessage":"Payment Reference is invalid"
    - Provide NULL – “FF08","errorMessage":"Payment Reference is invalid"
  - "amount"
    - Provide “,” e.g. 12,09 – “PA02","errorMessage":"Amount value is missing or not a valid number”
    - Provide less than 1 e.g. 0.5 - "AM06","errorMessage":"Specified transaction amount is less than agreed minimum"
    - Provide 3 decimals e.g. 100.777 – “PA02","errorMessage":"Amount value is missing or not a valid number”
  - "payeeAlias"
    - Provide a number that does not match the value in the certificate – “PA01","errorMessage":"Parameter is not correct."
  - "payerAlias"
    - Provide a too long or short number - "BE18","errorMessage":"Payer alias is invalid"
  - "currency"
    - Provide another value than “SEK” - :"AM03","errorMessage":"Invalid or missing Currency"
- Callback confirmation
  - Provide an invalid ID - HTTP/1.1 404 Not Found
- Refund
  - "payerPaymentReference"

        - Provide too long reference – “FF08","errorMessage":"Payment Reference is invalid"
        - Provide NULL – “FF08","errorMessage":"Payment Reference is invalid"
    - "originalPaymentReference"
        - This value is taken from the Payment Request callback element “paymentReference”
        - Use a value that is not valid i.e. change a value - "RF02","errorMessage":"Original Payment not found or original payment is more than than 13 months old"
    - "payerAlias"
        - Provide a number that does not match the value in the certificate – “PA01","errorMessage":"Parameter is not correct."
    - "amount"
        - Provide an amount that is greater than the original payment - "RF08","errorMessage":"Amount value is too large or amount exceeds the amount of the original payment minus any previous refunds"
            - Note – in production the payment balance is updated after each refund but in this simulator only the original amount is used in the validation
        - Provide “,” e.g. 12,09 – “PA02","errorMessage":"Amount value is missing or not a valid number”
        - Provide less than 1 e.g. 0.5 - "AM06","errorMessage":"Specified transaction amount is less than agreed minimum"
        - Provide 3 decimals e.g. 100.777 – “PA02","errorMessage":"Amount value is missing or not a valid number”
    - "currency"
        - Provide another value than “SEK” - :"AM03","errorMessage":"Invalid or missing Currency"