



API Specifications

Network Token ("Standalone")

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Contents

Introduction	3
Certification.....	3
API Version Control.....	3
Publisher Information	3
Gateway Interface.....	4
Uniform Resource Locators (URLs)	4
Security/Authentication.....	4
Network Token Workflows	5
Onboarding Workflow	5
Create Token Workflow	5
Get Cryptogram Workflow.....	6
General Message Format.....	8
Headers	8
Body	8
Server-to-Server Notification.....	9
General.....	9
Notification Format.....	9
Notification IP	9
Description of Objects and Fields	10
Requests and Responses.....	13
Create TRID	13
Create Token.....	15
Get Cryptogram	17
Timeout Handling.....	19
Token Updates	20
Appendix A: HMAC-SHA512 Request Signature	22
Calculating the Signature	22
Appendix B: Response Codes.....	24
Change History.....	25
Need Support?	26

Introduction

This document is a comprehensive guide on how to use the Shift4 Network Token Service as a standalone service using API calls. Implementing this service enables you to retrieve Visa and Mastercard network tokens.

A network token is a secure digital representation of a payment card, used to facilitate transactions between merchants and customers.

Network tokens provide an additional security layer when transmitting sensitive payment information. In addition, using network tokens reduces the risk of fraud, and ensures a smooth and seamless transaction experience for your customers.

Certification

All new implementations must complete a certification process before they can start sending production API requests. This is required in order to ensure the quality of integration and integrity of merchant data. Please note that only test-card data should be used for testing. Additional certifications may be required if the implementation makes use of new features.

Please contact integration.europe@shift4.com for latest test card details and more information.

API Version Control

The information provided in this document is accurate and reliable for standard processing as of its publication date. Any new implementations should thus avoid using earlier versions of the API specification.

The API version number is a sequence-based identifier. Changes in the first part indicate major specification updates, while changes in the second part indicate minor updates.

The revision number reflects smaller changes in the specification as well as the correction of typing errors or other corrections that do not affect the API protocol itself.

Publisher Information

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Gateway Interface

Uniform Resource Locators (URLs)

- Integration URL: <https://api-int.sourcepayments.com/>
- Production URL: <https://api.sourcepayments.com/>

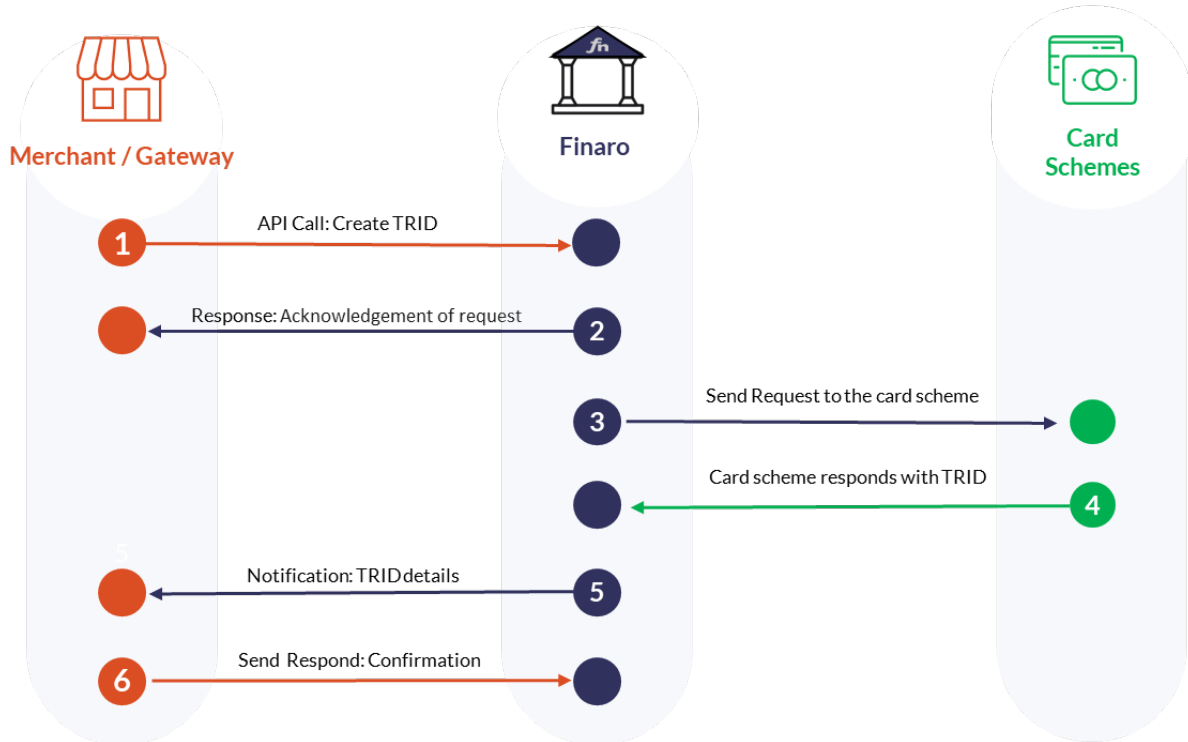
Security/Authentication

All HTTP requests must be sent over a secure TLS (Transport Layer Security) 2.0 channel. The Shift4 Gateway does not authenticate the TLS/SSL (Secure Sockets Layer) session using a client-based certificate, and thus does not employ a regular type of session authentication. Instead, the client is first authenticated by its source IP alongside a secondary authentication check that employs a cipher sent in the request header and used for pre-processing verifications. See [Appendix A: HMAC-SHA512 Request Signature](#) for further details.

Network Token Workflows

The network token service consists of three workflows that are required in order to complete the full creation of a network token for each card you wish to tokenize.

Onboarding Workflow



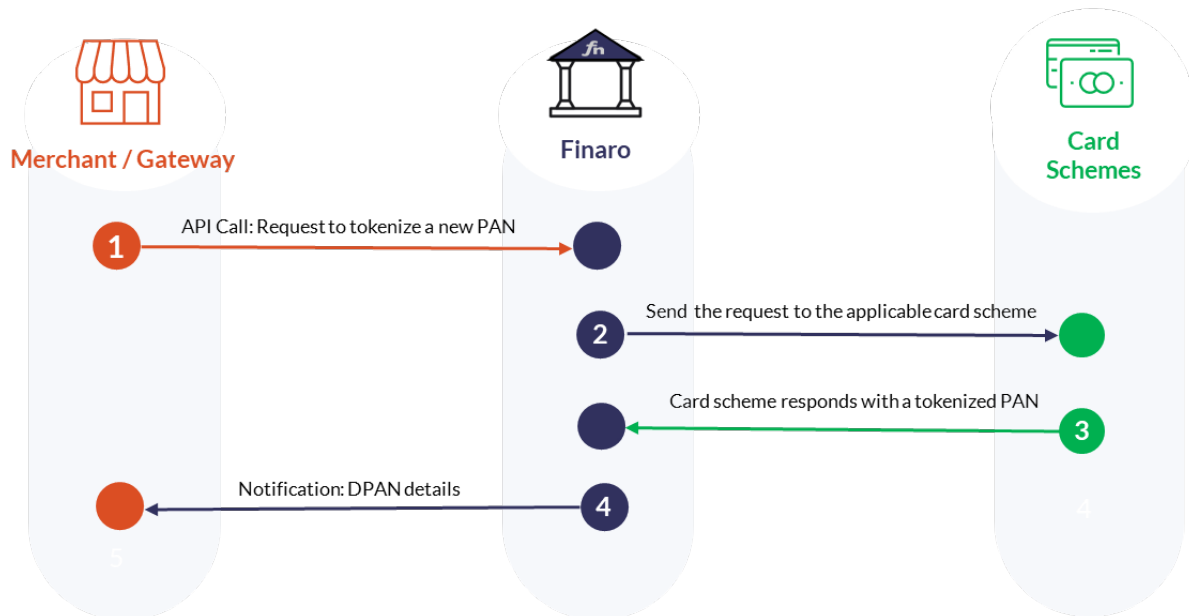
The onboarding workflow is a prerequisite for requesting tokens, and is performed once per merchant with each card scheme (Visa and Mastercard). The workflow results in retrieval of the Token Requestor ID (TRID) which is used for the ongoing creation of network tokens.

Note: If you are a payments service provider who will be managing network tokens for multiple merchants, perform the onboarding workflow for each merchant.



To ensure you are ready to create network tokens when a merchant begins processing, it is recommended to initiate the onboarding flow as soon as you onboard that merchant. In some cases the TRID activation date is not immediate; in the Visa flow, you can only start sending create-token API requests 8 days after the creation of the TRID.

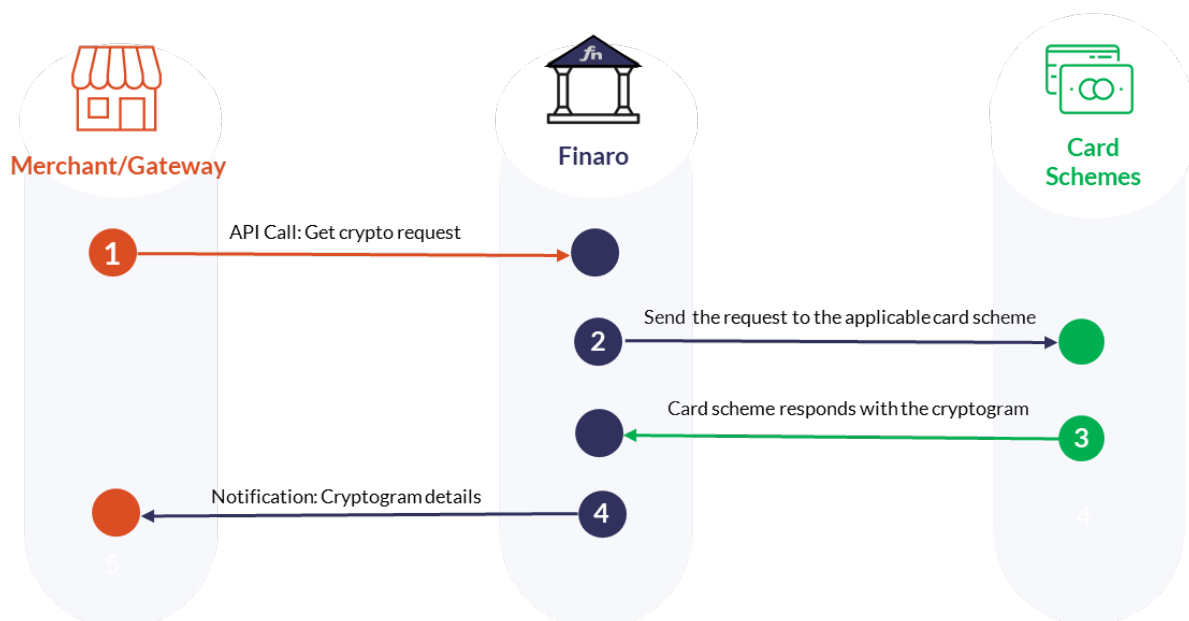
Create Token Workflow



Create Token is the most commonly-used flow of the Network Token service.

1. Merchant/Gateway sends a request to tokenize a new PAN
2. Shift4 sends the request to the applicable card scheme
3. The card scheme returns a tokenized PAN (DPAN) to Shift4
4. Shift4 sends the merchant/gateway a response with the DPAN to be saved and used in future transactions

Get Cryptogram Workflow



In some cases, the scheme or the issuer might require a cryptogram for a specific transaction made with a tokenized PAN. To obtain a cryptogram:

1. Merchant/Gateway sends a Get Cryptogram request
2. Shift4 sends the request to the applicable card scheme
3. The card scheme sends the cryptogram to Shift4
4. Shift4 responds back to the merchant/gateway with the cryptogram

General Message Format

The standalone network token API is a JSON-formatted REST API.



Note: The Network Token Standalone Service API structure and fields may be updated from time to time, including the addition of new objects, parameters, and values. Make sure your system can support such occasional changes.

Headers

Each request should contain the following headers:

Target host

Integration Environment	Host: https://api-int.sourcepayments.com/
Production Environment	Host: https://api.sourcepayments.com/

Content type

Payload content type, for POST and PUT requests.

Content: application/json

Date: datetime in RFC-1123 format. For example: Tue, 8 Feb 2022 04:59:40 GMT

Authentication header

Contains the hashed string that signs the request. See [Appendix A: HMAC-SHA512 Request Signature](#) for more information.

Body

Consists of a valid JSON message.

For more details about the possible objects and fields in a message, see [Description of Objects and Fields](#).

Server-to-Server Notification

General

In the Onboarding workflow, the response is asynchronous, which means the token requestor is sent a response that confirms that the request was received successfully (response code: 202).

The full response with the requested value will be sent separately as a notification. You should respond to this notification with a response of “200: OK”.

Notification Format

The notification format is based on the response format of the relevant request.

Notification IP

To accept notifications in the production environment, make sure to whitelist the following IP addresses:

199.233.202.0/24

199.233.203.0/24



Note: To support the notification service contact your Shift4 Solution Architect and provide your notification URL address.

Description of Objects and Fields

This chapter describes all the API request fields. Refer to the [Requests and Responses chapter](#) for a reference of which parameters are required in every API call.



Note: Field names are case-sensitive.

Root-Level Parameters

Parameter Name	Type	Min,Max	Description
request_id	UUID	32,32	The merchant's unique request ID
scheme	[a-zA-Z]	2,10	Card scheme. Possible values are: <ul style="list-style-type: none"> VISA MASTERCARD
visa_acquirer_id	[a-zA-Z0-9]	2,50	The acquirer ID provided by Visa to each acquirer
relationship_id	[a-zA-Z0-9-]	2,100	ID created by Visa, received as part of the TRID notification in the onboarding flow
merchant_info	Object		Object that holds the merchant information
merchant_address	Object		Object that holds the merchant address
payment_details	Object		Object that holds the card details
card_holder_info	Object		Object that holds the cardholder information
billing_address	Object		Object that holds the billing address of the cardholder
transaction_info	Object		Object that holds the information about the transaction
amount	Object		Object that holds information about the amount of the transaction

merchant_info Object

Parameter Name	Type	Min,Max	Description
merchant_AID	[A-Za-z0-9]	2,50	Acquirer merchant ID
legal_name	[A-Za-z0-9]	2,36	The merchant's legal name

Parameter Name	Type	Min,Max	Description
url	Text	100	URL of the merchant – must be the merchant website URL in valid URL format

merchant_address Object

Parameter Name	Type	Min,Max	Description
city	[A-Za-z0-9]	2,100	City in the merchant's primary address
country_code	[A-Za-z]	2,2	The merchant's 2-letter ISO Country Code. Refer to ISO 3166-1-alpha-2 for a list

payment_details Object

Parameter Name	Type	Min,Max	Description
card_type	[A-Za-z]	3,10	Card type. Possible values are: <ul style="list-style-type: none"> VISA MASTERCARD MAESTRO
pan	[0-9]	13,19	PAN – Primary Account Number (the card number)
expiry_month	[0-9]	2	Card expiration month
expiry_year	[0-9]	2	Card expiration year
security_code	[0-9]	3,4	Card security code (CVV / CVC) as printed on the card

card_holder_info Object

Parameter Name	Type	Min,Max	Description
first_name	[A-Za-z0-9]	2,32	The cardholder's first name
last_name	[A-Za-z0-9]	2,32	The cardholder's last name
email	Text	3,127	The cardholder's email – must be a valid email

billing_address Object

Parameter Name	Type	Min,Max	Description
line_1	[A-Za-z0-9]	4,64	Cardholder billing address street and number

Parameter Name	Type	Min,Max	Description
line_2	[A-Za-z0-9]	4,64	Additional address info
city	[A-Za-z0-9]	4,32	Cardholder city
state	[A-Za-z]	1,3	State or province code
country_code	[A-Za-z]	2,2	The cardholder's 2-letter ISO Country Code. Refer to ISO 3166-1-alpha-2 for a list
postal_code	[A-Za-z0-9]	1,9	Postal code

transaction_info Object

Parameter Name	Type	Min,max	Description
scheme_token_request_type	[A-Za-z]	3,10	Describes the type of future transactions in which the token will be used. Possible values: <ul style="list-style-type: none"> • ECOM • RECURRING • POS • AFT

amount Object

Parameter Name	Type	Min,max	Description
amount	[0-9]	1,10	Total amount of the transaction. The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements. Refer to ISO-4217: Currency Code
currency	[A-Za-z]	3,3	Transaction currency. Indicates the currency used in the transaction. Every currency you wish to use must be preconfigured on the Shift4 platform. Refer to ISO-4217: Currency Code

Requests and Responses

This chapter lists the required parameters for each type of Network Token API call.



Note: In the following tables:

M indicates a mandatory parameter

O indicates an optional parameter

C indicates a parameter that is mandatory in certain cases

Create TRID

[POST] https://api.sourcepayment.com/token-services/{external_account_id}/trid

Request Parameters

URI Parameters

Parameter Name	Description	Mandatory/Optional/Conditional
external_account_id	External Account ID	M

Root-Level Parameters

Parameter Name	Description	Mandatory/Optional/Conditional
request_id	The merchant's unique request ID	M
scheme	Card scheme. Possible values are: <ul style="list-style-type: none"> VISA MASTERCARD 	M
visa_acquirer_id	The acquirer ID provided by Visa to each acquirer	C (for Visa only)
merchant_info	Object that holds the merchant information	
merchant_address	Object that holds the merchant address	

merchant info Object

Parameter Name	Description	Mandatory/Optional/Conditional
merchant_AID	Acquirer merchant ID	M
legal_name	The merchant's legal name	M
url	URL of the merchant in valid URL format	C (for Visa only)

merchant_address Object

Parameter Name	Description	Mandatory/Optional/Conditional
city	City in the merchant's primary address.	C (for Visa only)
country_code	The merchant's 2-letter ISO Country Code. Refer to ISO 3166-1-alpha-2 for a list	C (for Visa only)

Response FieldsRoot-Level Parameters

Parameter Name	Description	Comments
response_details	Object that holds the merchant information	
detailed_error	Object that holds the list of errors	
trid	The token requestor ID	
relationship_id	Unique value generated by Visa	Returned for Visa only
merchant_info	Object that holds the merchant information	

response_details Object

Parameter Name	Description	Comments
request_id	The merchant's unique request ID	Returned for Visa only
response_id	Unique ID generated by Shift4 for each response	Returned for Visa only
response_code	For the full list of response codes refer to Appendix B: Response codes	
response_description	For the full list of response descriptions refer to Appendix B: Response codes	

detailed_error Object

Parameter Name	Description	Comments
{Name of the parameter}	The invalid parameter and the reason for the error	

Create Token

[POST] https://api.sourcepayment.com/token-services/{external_account_id}/{trid}/token

Request Parameters

URI parameters

Parameter Name	Description	Mandatory/Optional/Conditional
external_account_id	External Account ID	M
trid	The token requestor ID	M

Root-Level Parameters

Parameter Name	Description	Mandatory/Optional/Conditional
request_id	The merchant's unique request ID	M
merchant_info	Object that holds the merchant information	
payment_details	Object that holds the card details	
card_holder_info	Object that holds the cardholder information	
billing_address	Object that holds the billing address of the cardholder	

merchant info Object

Parameter Name	Description	Mandatory/Optional/Conditional
legal_name	The merchant's legal name	M

payment details Object

Parameter Name	Description	Mandatory/Optional/Conditional
card_type	Card type. Possible values are: VISA MASTERCARD MAESTRO	M
pan	PAN – Primary Account Number	M
expiry_month	Card expiration month	M
expiry_year	Card expiration year	M

Parameter Name	Description	Mandatory/Optional/Conditional
security_code	Card security code (CVV / CVC) as printed on the card	O

card holder info Object

Parameter Name	Description	Mandatory/Optional/Conditional
first_name	The cardholder's first name	O
last_name	The cardholder's last name	O
email	The cardholder's email – must be a valid email	O

billing address Object

Parameter Name	Description	Mandatory/Optional/Conditional
line_1	Cardholder billing address street number	O
line_2	Additional address info	O
city	Cardholder city	O
state	State or province code	O
country_code	The cardholder's 2-letter ISO Country Code. Refer to ISO 3166-1-alpha-2 for a list	O
postal_code	Postal code	O

Response Fields

Root-Level Parameters

Parameter Name	Description	Comments
response_details	Object that holds the merchant information	
detailed_error	Object that holds the list of errors	
token_details	Object that holds the token information	

response details Object

Parameter Name	Description	Comments
request_id	The merchant's unique request ID	Returned for Visa only

Parameter Name	Description	Comments
response_id	Unique ID generated by Shift4 for each response	Returned for Visa only
response_code	For the full list of response codes refer to Appendix B: Response codes	
response_description	For the full list of response descriptions refer to Appendix B: Response codes	

detailed error Object

Parameter Name	Description	Comments
{Name of the parameter}	The invalid parameter and the reason for the error	

token details Object

Parameter Name	Description	Comments
token		
token_unique_reference	Token unique reference	
expiry_month	Token expiration month	
expiry_year	Token expiration year	

Get Cryptogram

[POST] <https://api.sourcepayment.com>

/tokenservices/{external_account_id}/{token_unique_reference}/crypto

Request Parameters

URI parameters

Parameter Name	Description	Comments
external_account_id	External Account ID	
token_unique_reference	Token unique reference	

Root-Level Parameters

Parameter Name	Description	Mandatory/Optional/Conditional
request_id	The merchant's unique request ID	M
relationship_id	ID created by Visa	C (for Visa only)

Parameter Name	Description	Mandatory/Optional/Conditional
transaction_info	Object that holds the information about the transaction	
amount	Object that holds information about the amount of the transaction	

transaction_info Object

Parameter Name	Description	Mandatory/Optional/Conditional
scheme_token_request_type	Describes the type of future transactions in which the token will be used. Possible values: <ul style="list-style-type: none"> • ECOM • RECURRING • POS • AFT 	M

amount Object

Parameter Name	Description	Mandatory/Optional/Conditional
amount	Total amount of the transaction. The amount value should not include a decimal point. Amounts in currencies that have two, three or no exponents should be formatted according to their currency requirements. Refer to ISO-4217: Currency Code .	M
currency	Transaction currency. Indicates the currency that should be used in the transaction. Every currency you wish to use must be preconfigured on the Shift4 platform. Refer to ISO-4217: Currency Code .	M

Response Fields

Root-Level Parameters

Parameter Name	Description	Comments
response_details	Object that holds the merchant information	

Parameter Name	Description	Comments
detailed_error	Object that holds the list of errors	
cryptogram_info	Object that holds the cryptogram information	

response details Object

Parameter Name	Description	Comments
request_id	The merchant's unique request ID	Returned for Visa only
response_id	Unique ID generated by Shift4 for each response	Returned for Visa only
response_code	For the full list of response codes refer to Appendix B: Response codes	
response_description	For the full list of response descriptions refer to Appendix B: Response codes	

detailed error Object

Parameter Name	Description	Comments
{Name of the parameter}	The invalid parameter and the reason for the error	

cryptogram info Object

Parameter Name	Description	Comments
cryptogram	The cryptogram for this transaction	
token_eci		

Timeout Handling

If a request takes too long to return a response, a timeout is initiated by the Gateway application and result code "017" is returned. If many timeout result codes are received, please contact our support at support.europe@shift4.com.

Token Updates

This functionality allows you to receive a notification when the token's details are updated by the issuer and card scheme. The update is sent as a notification to the notifications URL you specified. Refer to the [Server-to-Server Notification](#) chapter for more information on how to set up the notification service.

Updates may include information about a token expiry date and/or its status.



Note: This feature will become available as of August 2023. Contact your Solution Architect for more information.

Notification Message Format

[PUT] {external_merchant_url}/<trid>/token?token_unique_reference=<token_unique_reference>

Request Parameters

URI parameters

Parameter Name	Description	Comments
trid	Token requestor ID	

Query Parameter

Parameter Name	Description	Comments
token_unique_reference	Token unique reference	

Root-Level Parameters

Parameter Name	Description	Mandatory/Optional/Conditional
request_id	The merchant's unique request ID	M
token_details	Object that holds the token information	

token_details Object

Parameter Name	Description	Mandatory/Optional/Conditional
token		M
scheme	Card scheme. Possible values are: VISA MASTERCARD	M
token_unique_reference	Token unique reference	M

Parameter Name	Description	Mandatory/Optional/Conditional
expiry_month	Token expiration month	M
expiry_year	token expiration year	M
status	token status possible values: INACTIVE ACTIVE SUSPENDED DEACTIVATED	M

Response Parameters

When you receive the notification, our server expects a “200” response. Otherwise we may continue sending the notification multiple times.

URI parameters

Http status	Description	Comments
200	success	

Appendix A: HMAC-SHA512 Request Signature

Every request is associated with a package signature sent as an authentication header in order to ensure the authenticity of data transfer. This package signature, in turn, is calculated on a newline separated list of values using HMAC-SHA512 with the card requestor's unique secret key.

The header template is:

Authorization: HMAC-SHA512 Credential=<clientId>, Signature=<HMAC SHA-512 in hex>



Note: The ClientID and Signature key are provided in your connectivity details for integration and for production

Calculating the Signature

1. Apply the HMAC-SHA512 hashing algorithm to the required headers and the body of the request using the card requestor's secret key.
2. Append the result of step 1 to the request's authentication header according to the above header template.

Signature Calculation Example

Here is an example of how the signature is calculated for the following original example request:

```
POST
```

```
https://api-int.sourcepayments.com/token-services/FaceTest/trid
```

```
Tue, 01 Mar 2023 00:00:00 GMT
```

```
{
  "request_id": "115603c5-732c-47c1-9839-4941df445019",
  "visa_acquirer_id": "123456",
  "scheme": "VISA",
  "merchant_info": {
    "merchant_AID": "TEST",
    "legal_name": "TEST Merchant",
    "url": "https://testmerchant.com/",
    "merchant_address": {
      "city": "sofia",
      "country_code": "BG"
    }
  }
}
```

```
}
```

- Secret value: “testSecret”
- Avoid any unnecessary whitespaces (including new lines) when calculating the authorisation signature

- The result of applying HMAC-SHA512 to the request body and secret is:

```
b83e796a88bb531117d5411599cc9e2405042db95cb1857e2a1c8b560f395d636dd92ca873e8126d34a4ac2fae3abb8bdbe6e1584d52a9c30bc336b40a2cf008
```

- Once you have the hashed value, add it to the request header in the following format:

```
Authorization: HMAC-SHA512
```

```
Credential=myClient123, Signature=
```

```
b83e796a88bb531117d5411599cc9e2405042db95cb1857e2a1c8b560f395d636dd92ca873e8126d34a4ac2fae3abb8bdbe6e1584d52a9c30bc336b40a2cf008
```

Request final content:

```
POST /token-services/external_account_id /trid
```

```
Host: [POST] api.sourcepayment.com
```

```
Content-Type: application/json
```

```
Tue, 01 Mar 2023 00:00:00 GMT
```

```
Authorization: HMAC-SHA512 Credential=myClient123, Signature=
```

```
b83e796a88bb531117d5411599cc9e2405042db95cb1857e2a1c8b560f395d636dd92ca873e8126d34a4ac2fae3abb8bdbe6e1584d52a9c30bc336b40a2cf008
```

Appendix B: Response Codes

This appendix lists all the possible response codes and descriptions that can be returned in the “response_details” object.



Note: Response description is used for reference and may change from time to time.

Result Code	Result Description
000	Request processed successfully
001	Card request received and is in progress
010	The request failed to process. Try again or contact support.
012	Authentication failed. Authentication credentials are invalid.
013	The TRID is not valid or was not created yet. Please try again later or change the TRID in the request
014	[Token/TRID] was not found
015	One or more of the parameters are missing or invalid
017	Timeout

Change History

Version	Subject/Date	Description
1.3	November 2023	Rebranded as Shift4
1.2	July 2023	Added notification-based token update functionality
1.1 rev 1	June 2023	Minor edits and bug fixes
1.1	April 2023	<ul style="list-style-type: none">• Update of mandatory/optional fields• Addition of code samples• Bug fixes and typos corrections
1.0	March 2023	First release

Need Support?

Contact our 24/7 Client Relations Centre for any additional information or technical issue:

EU: +356 2778 0876

UK: +44.20.3608.1288

US: +1.617.715.1977

Email: support.europe@shift4.com