



# SDK Connectivity scenarios

API Core squad

18 June, 2019

## SDK design principles

Build applications on top of APIs that take the complexity out of coding directly against a web service interface. The library provides APIs that hide much of lower-level plumbing, including authentication, request retries, and error handling

– AWS



- **About SDK**
- **SDK pros and cons**
- **SDK topology**
- **Appendix A: SWIFTRef API SDK**
- **Appendix B: TSS API SDK**
- **Appendix C: Tracker API SDK (NR case)**
- **Appendix D: gpi Connector migration proposal**
- **Appendix E: RFC 7523 for integrating with existing identity systems**



# API vs. SDK: Baking a Cake Analogy

### Application Programming Interface

An API is like a recipe used to bake a cake: It's a set of instructions.

You have to source all of the cake ingredients yourself, just like you have to build the components of a system yourself that's using an API to access data. Companies use APIs to give other parties access to their data or systems in a structured way that's consistent for all users. Some progressive companies even use APIs to have internal departments communicate with each other (a trend that's likely to gain much more traction.)



VS.



### Software Development Kit

An SDK is like cake mix: Pre-built functionality that makes baking a cake faster and easier.

SDKs come in many forms, but for mobile development they are typically used to make native phone development easier & faster (for iOS and Android apps, for example).

The Socialize SDK is open-source, meaning it can be completely customized: The cake mix gets you started, then you can substitute whatever ingredients you want to bake the cake.

# SDK pros and cons



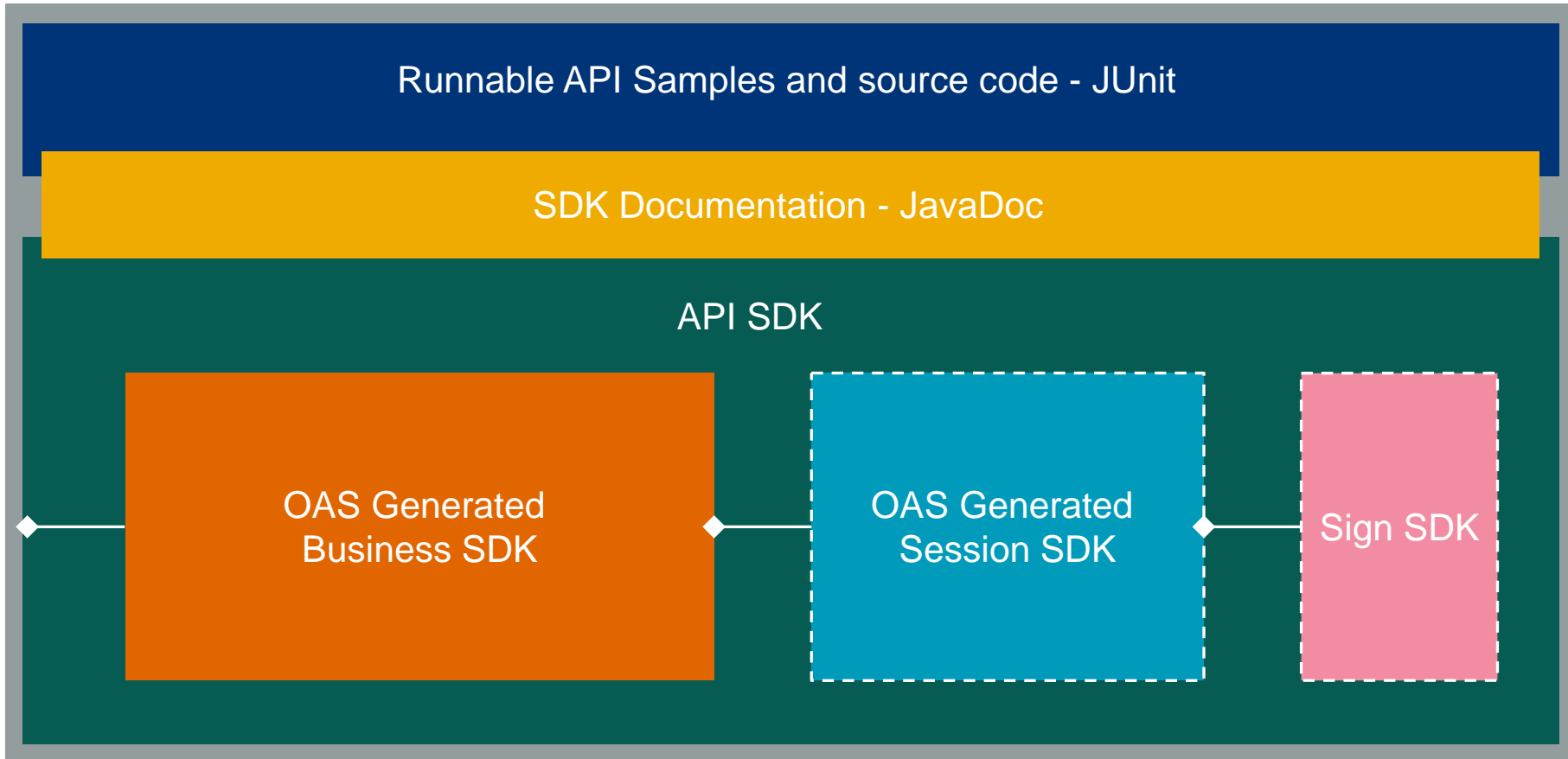
## Benefits

- ✓ Time to First Use (Developer On-boarding)
- ✓ Best client for your API
- ✓ Simplify API design by extracting business logic into the SDK
- ✓ Strongly-typed language representation

## Drawbacks

- ✓ Picking platform and framework winners
- ✓ 3<sup>rd</sup> party framework dependencies
- ✓ Version dependencies between SDK and API
- ✓ SDK carry-on weight
- ✓ Long-term support costs

# SDK topology



# Appendix A: SWIFTRef API SDK



# SWIFTRef API functionality – IBANs, BBANs, BICs, LEIs and National IDs

SMARTBEAR  
SwaggerHub

← swiftref-api 1.0.4-oas3

Info

Tags

Search

SCHEMAS

- SCHEMA IbanValidity
- SCHEMA IbanBic
- SCHEMA IbanDetails
- SCHEMA Iban
- SCHEMA Lei
- SCHEMA BicDetails
- SCHEMA BicValidity
- SCHEMA Address
- SCHEMA ContactDetails
- SCHEMA SwiftService
- SCHEMA SepaReachability
- SCHEMA SepaPaymentChannel
- SCHEMA NationalIdsDetails
- SCHEMA NationalIdDetails
- SCHEMA NationalIds

```
1 openapi: 3.0.0
2 info:
3   title: SWIFTRef API
4   description: SWIFTRef API
5   version: "1.0.4-oas3"
6   contact:
7     name: Deniss Kascejevs
8     url: 'https://www.swift.com'
9     email: API@swift.com
10  paths:
11    '/ibans/{iban}/validity':
12      get:
13        description: Check validity of an IBAN
14        responses:
15          200:
16            description: OK
17          400:
18            description: Invalid IBAN
19          404:
20            description: Not found
21          500:
22            description: Internal server error
23    '/ibans/{iban}/bic':
24      get:
25        description: Get the BIC for an IBAN
26        responses:
27          200:
28            description: OK
29          400:
30            description: Invalid IBAN
31          404:
32            description: Not found
33          500:
34            description: Internal server error
35    '/ibans/{iban}':
36      get:
37        description: Get details for an IBAN
38        responses:
39          200:
40            description: OK
41          400:
42            description: Invalid IBAN
43          404:
44            description: Not found
45          500:
46            description: Internal server error
47    '/bbans/{bban}/iban':
48      get:
49        description: Get the IBAN for a BBAN
50        responses:
51          200:
52            description: OK
53          400:
54            description: Invalid BBAN
55          404:
56            description: Not found
57          500:
58            description: Internal server error
59    '/bics/{bic}':
60      get:
61        description: Get details for a BIC
62        responses:
63          200:
64            description: OK
65          400:
66            description: Invalid BIC
67          404:
68            description: Not found
69          500:
70            description: Internal server error
71    '/bics/{bic}/validity':
72      get:
73        description: Check validity of a BIC
74        responses:
75          200:
76            description: OK
77          400:
78            description: Invalid BIC
79          404:
80            description: Not found
81          500:
82            description: Internal server error
83    '/bics/{bic}/lei':
84      get:
85        description: Get the LEI for a BIC
86        responses:
87          200:
88            description: OK
89          400:
90            description: Invalid BIC
91          404:
92            description: Not found
93          500:
94            description: Internal server error
95    '/leis/{lei}/bic':
96      get:
97        description: Get the BIC for a LEI
98        responses:
99          200:
100           description: OK
101          400:
102            description: Invalid LEI
103          404:
104            description: Not found
105          500:
106            description: Internal server error
107    '/bics/{bic}/national_ids':
108      get:
109        description: Get the National IDs for a BIC
110        responses:
111          200:
112            description: OK
113          400:
114            description: Invalid BIC
115          404:
116            description: Not found
117          500:
118            description: Internal server error
119    '/bics/{bic}/reachability':
120      get:
121        description: Get the Reachability for a BIC
122        responses:
123          200:
124            description: OK
125          400:
126            description: Invalid BIC
127          404:
128            description: Not found
129          500:
130            description: Internal server error
131    '/bics/{bic}/ssis':
132      get:
133        description: Get the SSIS for a BIC
134        responses:
135          200:
136            description: OK
137          400:
138            description: Invalid BIC
139          404:
140            description: Not found
141          500:
142            description: Internal server error
143    '/national_ids/{national_id}':
144      get:
145        description: Get details for a National ID
146        responses:
147          200:
148            description: OK
149          400:
150            description: Invalid National ID
151          404:
152            description: Not found
153          500:
154            description: Internal server error
155    '/national_ids/{national_id}/validity':
156      get:
157        description: Check validity of a National ID
158        responses:
159          200:
160            description: OK
161          400:
162            description: Invalid National ID
163          404:
164            description: Not found
165          500:
166            description: Internal server error
167    '/national_ids/{national_id}/bics':
168      get:
169        description: Get the BICs for a National ID
170        responses:
171          200:
172            description: OK
173          400:
174            description: Invalid National ID
175          404:
176            description: Not found
177          500:
178            description: Internal server error
179  servers:
180    - url: 'https://api.swiftrefdatabeta.com/v1'
181  components:
182    securitySchemes:
183      apiKey:
184        type: apiKey
185        in: header
186        name: X-API-Key
```

SWIFTRef API

1.0.4-oas3 OAS3

SWIFTRef API

[Deniss Kascejevs - Website](#)  
[Send email to Deniss Kascejevs](#)

Authorize

Servers

<https://api.swiftrefdatabeta.com/v1>

ibans

- GET [/ibans/{iban}/validity](#) Check validity of an IBAN
- GET [/ibans/{iban}/bic](#) Get the BIC for an IBAN
- GET [/ibans/{iban}](#) Get details for an IBAN

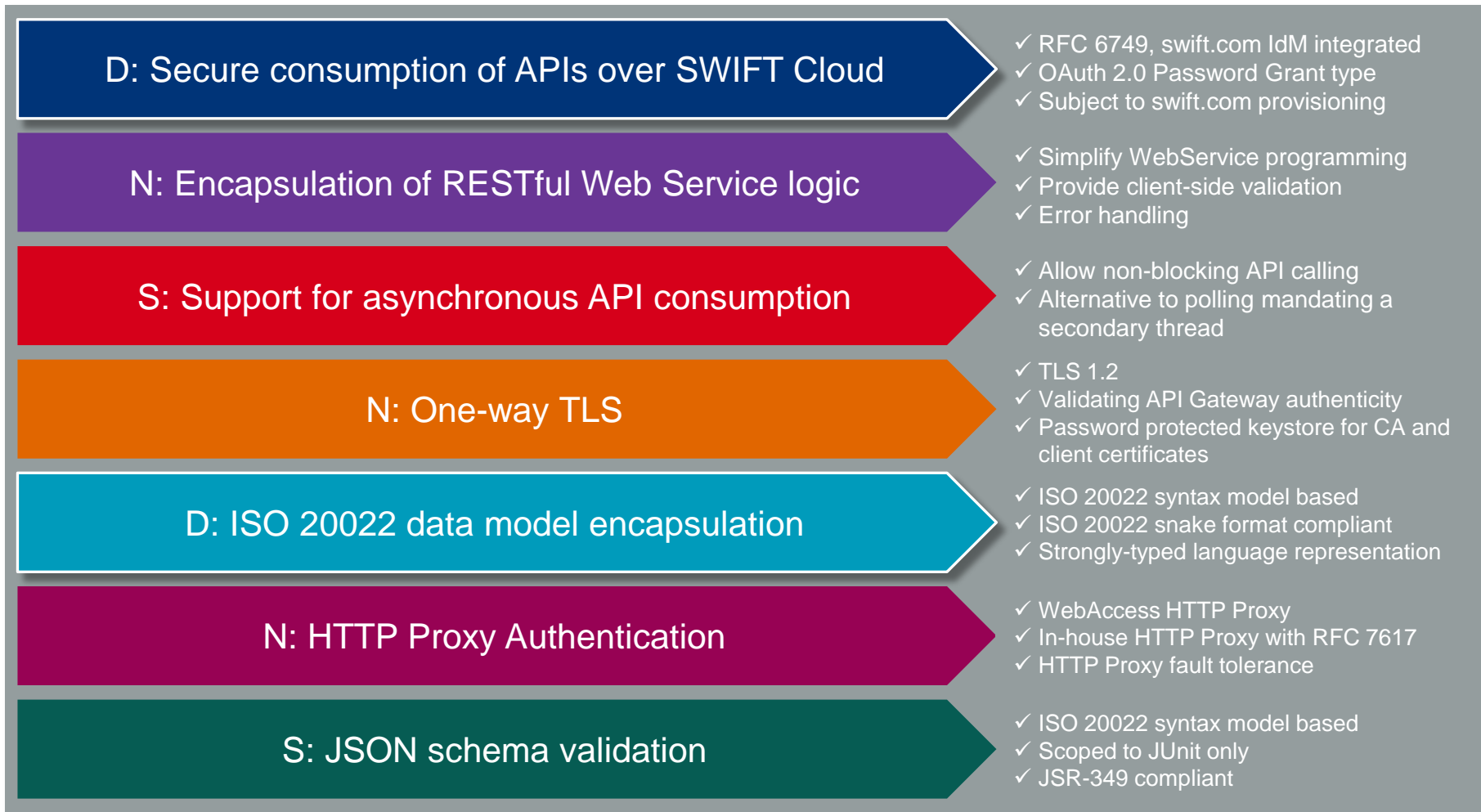
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VALID

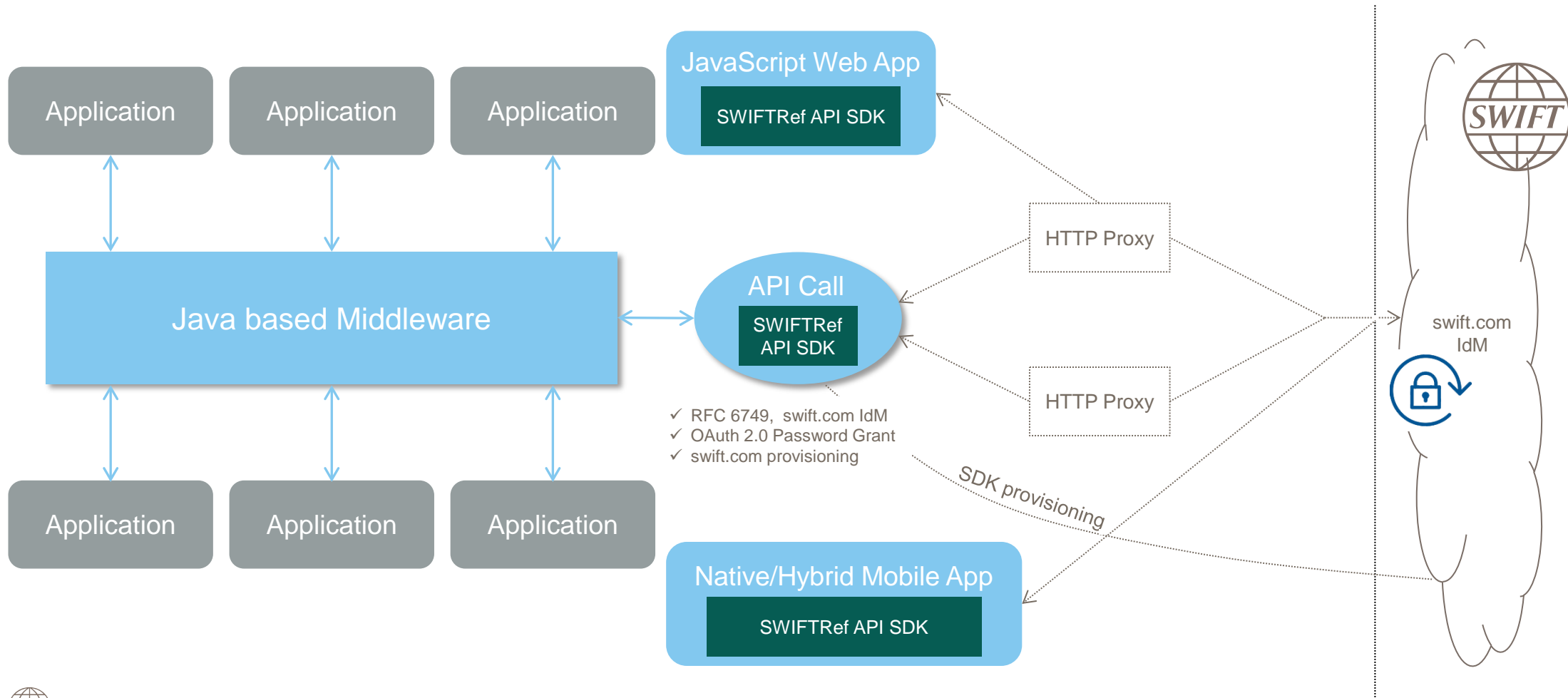




# SWIFTRef API SDK value proposition – Need/Solution/Differentiation/Proof (NSDP)



# SWIFTRef API SDK connectivity



# Appendix B: TSS API SDK



# TSS API functionality – Screening Requests and Statuses

SMARTBEAR  
SwaggerHub

deniscash

TSS v0.4.2-oas3

Export

Info

Search

SCHEMAS

SCHEMA ScreeningRequests1Res

SCHEMA Max15AlphaNumericText

SCHEMA ScreeningRequest1

SCHEMA Max50Text

SCHEMA AnyBICIdentifier

SCHEMA Max35Text

SCHEMA MessageDirection1Code

SCHEMA ScreeningRequestStatus

SCHEMA Max15NumericText

SCHEMA ScreeningRequestStatus

SCHEMA ISODatetime

SCHEMA ScreeningStatus1Code

SCHEMA ScreeningDecision1

1 openapi: 3.0.0

2 info:

3 version: "v0.4.2-oas3"

4 title: Transaction Screening Service

5 description: >-

6 Enables submitting batches of message screening

7 requests and obtaining the

8 outcome of the screening process, up to the decision

9 taken by a user when a

10 message was considered suspect and raised some alert

11 contact:

12 name: Standards & Developer Hub

13 url: 'https://developer.swift.com'

14 email: developer@swift.com

15 license:

16 name: API Restricted License

17 url: 'https://www.swift.com/file/56776/download

18 ?token=8w8DC4eF'

19 paths:

20 /screening-requests/statuses/:

21 get:

22 tags:

23 - screening-requests

24 summary: ScreeningRequests.

25 description: >-

26 Retrieves the statuses of screening requests

27 previously submitted to,

Read Only

Published

Transaction Screening Service

v0.4.2-oas3 OAS3

Enables submitting batches of message screening requests and obtaining the outcome of the screening process, up to the decision taken by a user when a message was considered suspect and raised some alert.

Standards & Developer Hub - Website

Send email to Standards & Developer Hub

API Restricted License

Authorize

Servers

https://virtserver.swaggerhub.com/SWIFT-API/TSS/v0.4.2-oas3 - SwaggerHub API Auto I

screening-requests

GET /screening-requests/statuses/ ScreeningRequests.

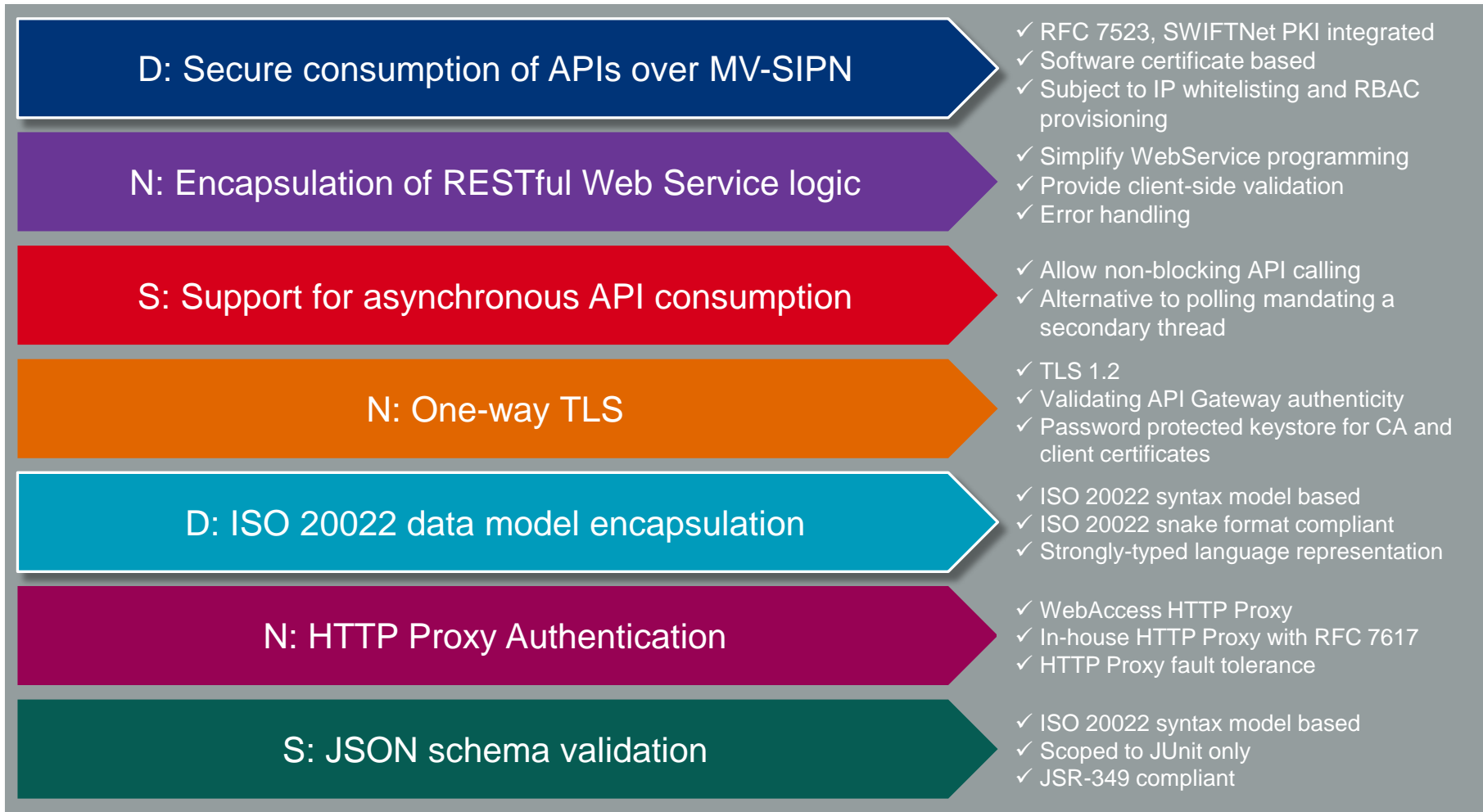
POST /screening-requests/ ScreeningRequests.

Last Saved: 9:41:34 pm - May 24, 2019

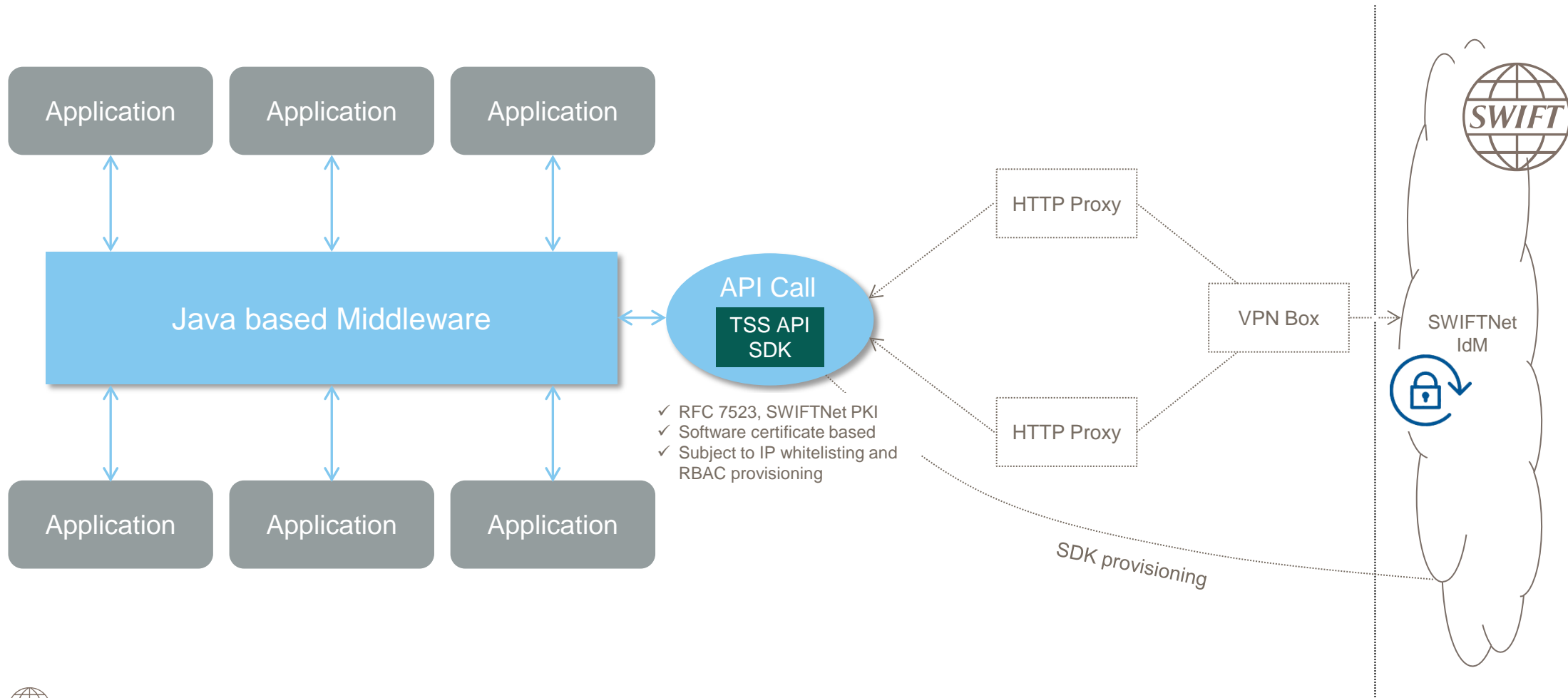
VALID



# TSS API SDK value proposition – Need/Solution/Differentiation/Proof (NSDP)




# TSS API SDK connectivity



# Appendix C: Tracker API SDK (NR case)



# Tracker API functionality – Status Confirmations, Transactions Details and Cancellation

 SMARTBEAR  
SwaggerHub

deniscash

gpi-api 2.0.6.2-oas3

Export

Info

Tags

Search

SCHEMAS

SCHEMA ErrorCode

SCHEMA camt.a01.001.03

SCHEMA camt.a01.002.02

SCHEMA camt.a02.001.03

SCHEMA camt.a02.002.03

SCHEMA camt.a03.001.03

SCHEMA camt.a03.002.03

SCHEMA camt.a04.001.03

SCHEMA camt.a04.002.03

SCHEMA camt.a05.001.03

SCHEMA camt.a05.002.03

SCHEMA camt.a06.001.02

SCHEMA camt.a06.002.02

SCHEMA camt.a07.001.02

SCHEMA camt.a07.002.02

Aa

SAVE

```
119 name: gpi-api
120 tags:
121   - Status Confirmations
122   - Get Payment Transaction Details
123   - Get Payment Transactions
124   - Get Changed Payment Transactions
125 - name: gSRP
126 tags:
127   - Cancel Transaction
128   - Transaction Cancellation Status
129 - name: Admin
130 tags:
131   - Get Invalid Events
132 paths:
133   /status_confirmations:
134     get:
135       summary: Get Status Confirmations
136       description: Get Status Confirmations
137       tags:
138         - Status Confirmations
139       externalDocs:
140         description: API Detailed Specification
141         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
142     post:
143       summary: Post Status Confirmations
144       description: Post Status Confirmations
145       tags:
146         - Status Confirmations
147       externalDocs:
148         description: API Detailed Specification
149         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
150   /get_payment_transaction_details:
151     get:
152       summary: Get Payment Transaction Details
153       description: Get Payment Transaction Details
154       tags:
155         - Get Payment Transaction Details
156       externalDocs:
157         description: API Detailed Specification
158         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
159   /get_payment_transactions:
160     get:
161       summary: Get Payment Transactions
162       description: Get Payment Transactions
163       tags:
164         - Get Payment Transactions
165       externalDocs:
166         description: API Detailed Specification
167         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
168   /get_changed_payment_transactions:
169     get:
170       summary: Get Changed Payment Transactions
171       description: Get Changed Payment Transactions
172       tags:
173         - Get Changed Payment Transactions
174       externalDocs:
175         description: API Detailed Specification
176         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
177   /get_invalid_events:
178     get:
179       summary: Get Invalid Events
180       description: Get Invalid Events
181       tags:
182         - Get Invalid Events
183       externalDocs:
184         description: API Detailed Specification
185         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
186   /cancel_transaction:
187     post:
188       summary: Cancel Transaction
189       description: Cancel Transaction
190       tags:
191         - Cancel Transaction
192       externalDocs:
193         description: API Detailed Specification
194         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
195   /transaction_cancellation_status:
196     get:
197       summary: Transaction Cancellation Status
198       description: Transaction Cancellation Status
199       tags:
200         - Transaction Cancellation Status
201       externalDocs:
202         description: API Detailed Specification
203         url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
204 externalDocs:
205   description: API Detailed Specification
206   url: https://developer.swift.com/sites/default/files/gpi_trck_api_2_0_det_spec-4.pdf
207 servers:
208   - url: https://api-test.swiftnet.sipn.swift.com
209     description: Apigee in SI
```

## gpi API

2.0.6.2-oas3 OAS3

About this document

These technical specifications provide information about how to use Web services to access Payment transaction information. The document describes the APIs in JSON format. The purpose of this document is to provide the necessary information to assess the business use of the API by potential users of the API. This document describes version 2 of the gpi API. The API for Bank to Corporates (g4C) is described in a separate document

Intended audience This document is for the following audience:

- Business analysts to understand the functionality of the API
- Business architects to understand the functionality of the API and how to integrate the use of the API within their organisation
- Software developers of applications using the API to assess the complexity of the API

[Standards & Developer Hub - Website](#)  
[Send email to Standards & Developer Hub](#)  
[API Restricted License](#)  
[API Detailed Specification](#)

Authorize

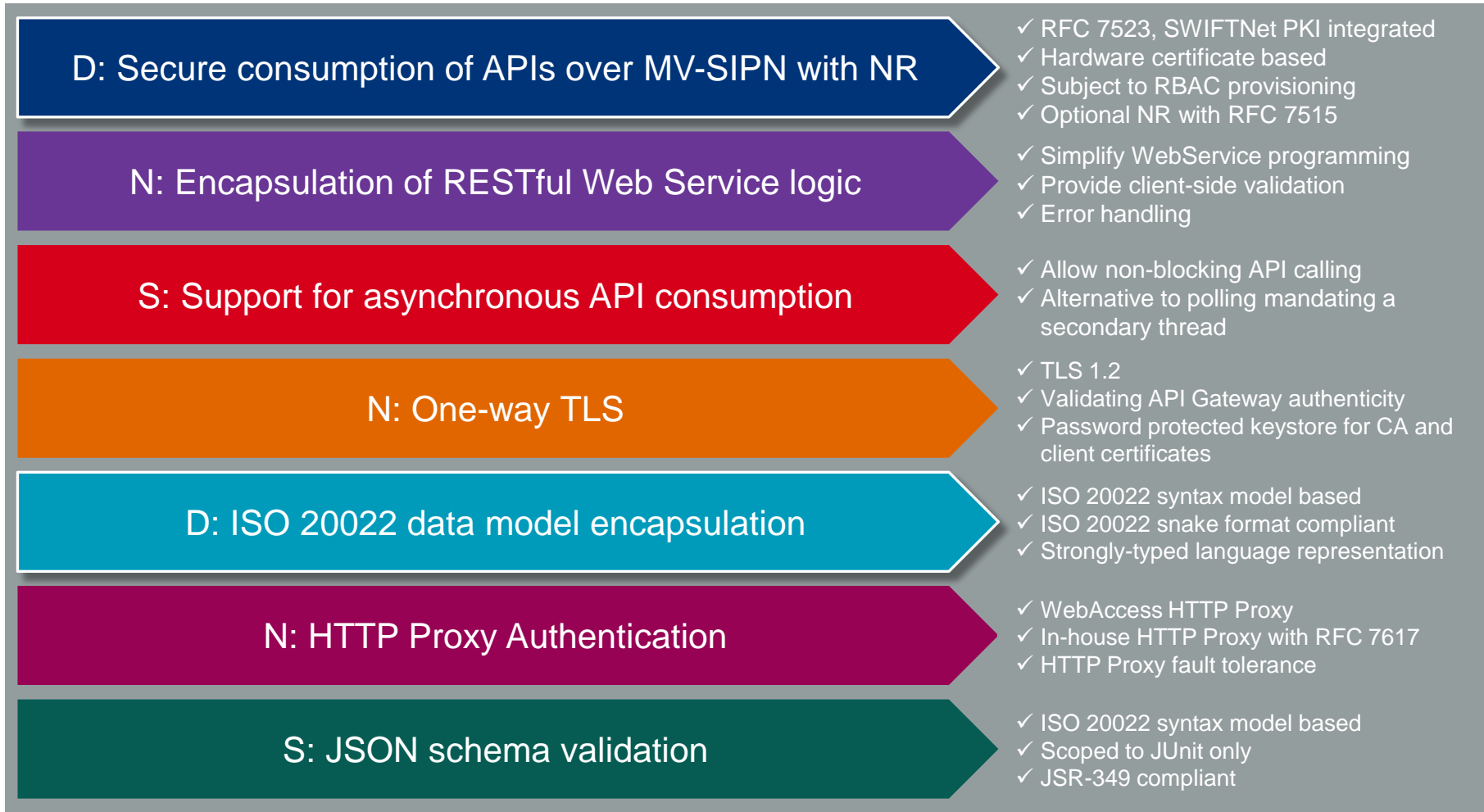
Servers

https://api-test.swiftnet.sipn.swift.com/swift-apitracker-pilot/v2 - Apigee in SI

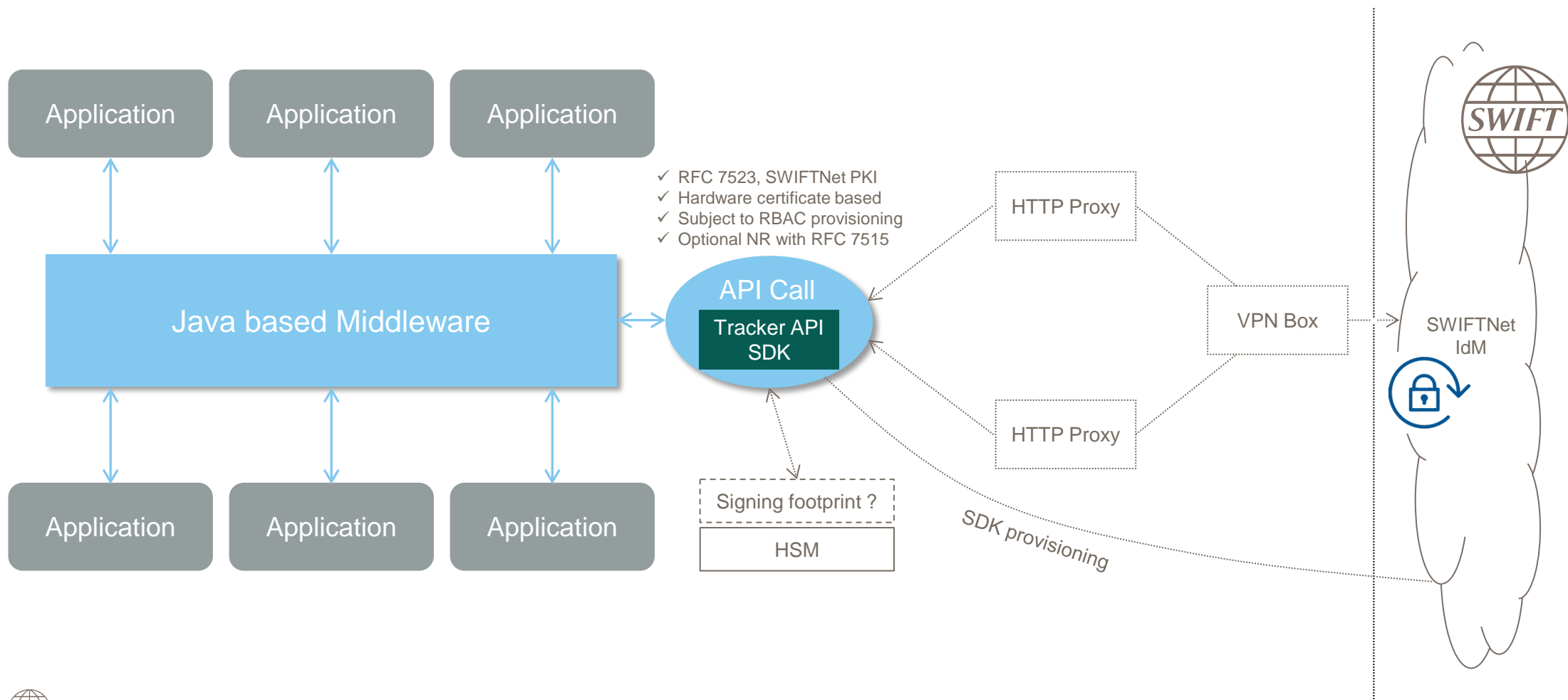
Last Saved: 9:18:48 pm - May 22, 2019 VALID



# Tracker API SDK value proposition – Need/Solution/Differentiation/Proof (NSDP)



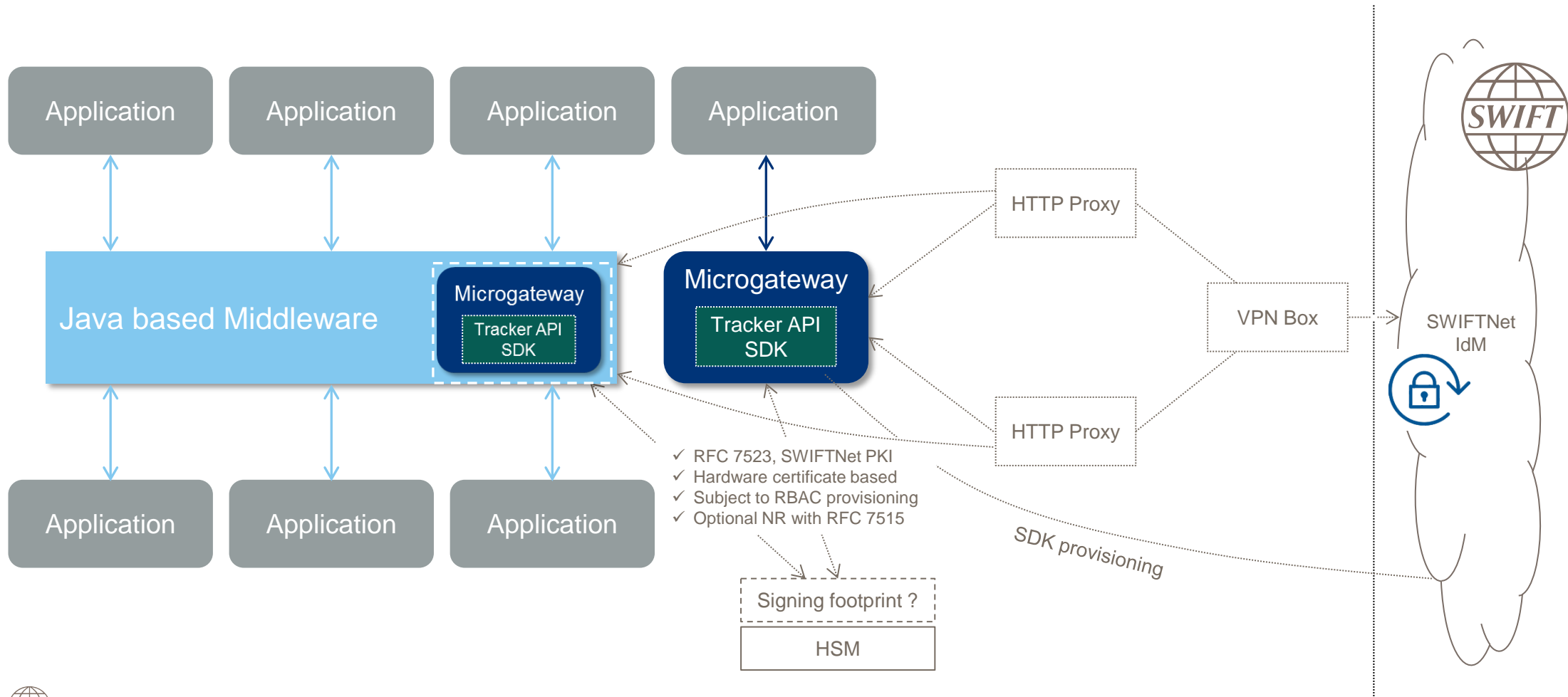
# Tracker API SDK connectivity



# Appendix D: gpi Connector migration proposal



# gpi Connector migration proposal – flexible hosting options exposing the same API contract (TLS/LAU, gpi Connector application level protocol)



# Appendix E: RFC 7523 for integrating with existing identity systems





# RFC 7523 for integrating with existing identity systems

SMARTBEAR  
SwaggerHub

deniscash

OAuth-OnPrem 1.0.0

Export

Info

Search

DEFAULT

POST /token

POST /revoke

MODELS

MODEL accessTokenResponse

MODEL accessTokenError

```
16 # host: "api.prod.sipn.swift.com"
17 # basePath: "/ouath2/v1"
18 schemes:
19 - "https"
20 security:
21 - clientAuth: ☐
22 paths:
23 - /token:
24   post:
25     summary: "Obtain OAuth tokens needed to
26       access APIs."
27     description: "The token endpoint is used
28       to issue OAuth access tokens for the
29       purpose
30       of accessing SWIFT APIs. In addition,
31       refresh tokens may be issued and
32       subsequently exchanged for access tokens
33       using this endpoint.
34       See (RFC7523)for further information
35       about the OAuth 2.0 standard.\n"
36     operationId: "getAccessToken"
37     consumes:
38       - "application/x-www-form-urlencoded"
39     produces:
40       - "application/json"
41     parameters:
42       - name: "grant_type"
```

Last Saved: 8:36:34 pm - Dec 14, 2018

VALID

The token endpoint is used to issue OAuth access tokens for the purpose of accessing SWIFT APIs. In addition, refresh tokens may be issued and subsequently exchanged for access tokens using this endpoint. See (RFC7523)for further information about the OAuth 2.0 standard.

Parameters

Try it out

Name	Description
<b>grant_type</b> <span>required</span> string (formData)	The authorization grant type. Values for grant_type are established as a part of the the OAuth 2.0 standard. The value for the grant type determines which of the following parameters are required.  Available values : urn:ietf:params:oauth:grant-type:jwt-bearer, refresh_token
assertion string(\$base64url) (formData)	signed JWT token (Required for granting token)
refresh_token string (formData)	refresh token (Required for refreshing token)
scope string (formData)	The value of the scope parameter is expressed as a list of space-delimited, case-sensitive strings. Scope values are defined by SWIFT and specific APIs identify the scope that is required to access them. If the value contains multiple space-delimited strings, their order does not matter, and each string adds an additional access range to the requested scope.





[www.swift.com](http://www.swift.com)