**3GPP TSG CT WG3 Meeting #136 *C3-244381***

**Maastricht, NL, 19 - 23 August, 2024 was** **C3-244177**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** | **0355** | **rev** | **1** | **Current version:** |  |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | Updates and corrections to the CAPIF\_API\_Invoker\_Management\_API |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | NBI19 |  | ***Date:*** | 2024-08-21 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | The following issues have been identified in the definition of the CAPIF\_API\_Invoker\_Management\_API:* Some of the provisions of the service description clauses are not clear. In particular:
	+ The case where the CCF returns a "202 Accepted" status code is not correctly specified, especially for the update using PATCH case.
	+ The onboarding deletion service operation description specified that the CCF deletes the API Invoker Profile as part of this procedure, whereas the related stage 2 requirements in TS 23.222 indicate that the CCF can choose to keep the API Invoker Profile stored at the CCF. In other words, the CCF can delete the resource but keep in memory the API Invoker Profile.
* The "securitySchemes" property is missing in the OpenAPI description.
* The "operationId" and "tags" properties are missing for most of the operations in the OpenAPI description.
* Various incorrect terminology, wrong/inconsistent entity/resource names, etc. need to be corrected.
 |
|  |  |
| ***Summary of change:*** | This CR proposes to:* Address all the above-detailed issues.
* Apply an additional generic clean-up and editorial corrections to enhance/refresh and better clarify this API definition.
 |
|  |  |
| ***Consequences if not approved:*** | * The above-detailed issues remain in the specification.
 |
|  |  |
| ***Clauses affected:*** | 5.1, 5.5.1.1, 5.5.2.1, 5.5.2.2.1, 5.5.2.2.2, 5.5.2.3.1, 5.5.2.3.2, 5.5.2.4.1, 5.5.2.4.2, 5.5.2.5.1, 5.5.2.5.2, 8.4.1, 8.4.2, 8.4.2.1, 8.4.2.2, 8.4.2.2.1, 8.4.2.2.2, 8.4.2.2.3.1, 8.4.2.2.4, 8.4.2.3.1, 8.4.2.3.2, 8.4.2.3.3.1, 8.4.2.3.3.2, 8.4.2.3.3.3, 8.4.2.3.4, 8.4.3.1, 8.4.3.2.1, 8.4.3.2.2, 8.4.4.1, 8.4.4.2.1, 8.4.4.2.2, 8.4.4.2.4, 8.4.4.2.5, 8.4.4.2.6, 8.4.4.2.7, 8.4.4.2.8, 8.4.4.3, 8.4.4.3.1 (new clause) , 8.4.4.3.2 (new clause) , 8.4.4.4 (new clause) , 8.4.4.5 (new clause), 8.4.6, A.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ... |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ... |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ... |
|  |  |
| ***Other comments:*** | This CR introduces backwards compatible corrections to the OpenAPI description of the CAPIF\_API\_Invoker\_Management\_API defined in this specification. |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* Start of changes \* \* \* \*

## 5.1 Introduction of Services

The table 5.1-1 lists the CCF APIs below the service name. A service description clause for each API gives a general description of the related API.

Table 5.1-1: List of CAPIF Services

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| CAPIF\_Discover\_Service\_API | Discover\_Service\_API | Request/ Response | API Invoker, CCF |
| Event operations (NOTE) | (NOTE) | API Invoker |
| CAPIF\_Publish\_Service\_API | Publish\_Service\_API | Request/ Response | API Publishing Function, CCF |
| Unpublish\_Service\_API | Request/ Response | API Publishing Function, CCF |
| Update\_Service\_API | Request/ Response | API Publishing Function, CCF |
| Get\_Service\_API | Request/ Response | API Publishing Function, CCF |
| CAPIF\_Events\_API | Subscribe\_Event | Subscribe/Notify  | API Invoker, API Publishing Function, API Management Function, API Exposing Function |
| Update\_Event\_Subscription | Subscribe/Notify  | API Invoker, API Publishing Function, API Management Function, API Exposing Function |
| Notify\_Event | Subscribe/Notify | API Invoker, API Publishing Function, API Management Function, API Exposing Function |
| Unsubscribe\_Event | Subscribe/Notify  | API Invoker, API Publishing Function, API Management Function, API Exposing Function |
| CAPIF\_API\_Invoker\_Management\_API | Onboard\_API\_Invoker | Request/Response | API Invoker |
| Offboard\_API\_Invoker | Request/Response | API Invoker |
| Notify\_Onboarding\_Completion | Subscribe/Notify | API Invoker |
| Update\_API\_Invoker\_Details | Request/Response | API Invoker |
| CAPIF\_Security\_API | Obtain\_Security\_Method | Request/ Response | API Invoker |
| Obtain\_Authorization | Request/ Response | API Invoker |
| Obtain\_API\_Invoker\_Info | Request/ Response | API exposing function |
| Revoke\_Authorization | Request/ Response | API exposing function |
| CAPIF\_Monitoring\_API | Event operations (NOTE) | (NOTE) | API Management Function |
| CAPIF\_Logging\_API\_Invocation\_API | Log\_API\_Invocation | Request/ Response | API exposing function |
| CAPIF\_Auditing\_API | Query\_API\_Invocation\_Log | Request/ Response | API management function |
| CAPIF\_Access\_Control\_Policy\_API | Obtain\_Access\_Control\_Policy | Request/Response | API Exposing Function |
| CAPIF\_API\_Provider\_Management\_API | Register\_API\_Provider | Request/Response | API Management Function |
| Update\_API\_Provider | Request/Response | API Management Function |
| Deregister\_API\_Provider | Request/Response | API Management Function |
| CAPIF\_Routing\_Info\_API | Obtain\_ Routing\_Info | Request/Response | API exposing function |
| NOTE: The service operations of CAPIF Events API are reused by the CAPIF\_Discover\_Service\_API, CAPIF\_Publish\_Service\_API and CAPIF\_Monitoring\_API for events related services. |

Table 5.1-2 summarizes the corresponding APIs defined in this specification.

Table 5.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service Name** | **Clause** | **Description** | **OpenAPI Specification File** | **apiName** | **Annex** |
| CAPIF\_Discover\_Service\_API | 8.1 | CAPIF API discovery service | TS29222\_CAPIF\_Discover\_Service\_API.yaml | service-apis | A.2 |
| CAPIF\_Publish\_Service\_API | 8.2 | CAPIF API Publish Service | TS29222\_CAPIF\_Publish\_Service\_API.yaml | published-apis | A.3 |
| CAPIF\_Events\_API | 8.3 | CAPIF event service | TS29222\_CAPIF\_Events\_API.yaml | capif-events | A.4 |
| CAPIF\_API\_Invoker\_Management\_API | 8.4 | CAPIF API Invoker Management Service | TS29222\_CAPIF\_API\_Invoker\_Management\_API.yaml | api-invoker-management | A.5 |
| CAPIF\_Security\_API  | 8.5 | CAPIF Security Service | TS29222\_CAPIF\_Security\_API.yaml | capif-security | A.6 |
| CAPIF\_Access\_Control\_Policy\_API | 8.6 | CAPIF Access Control Policy API Service | TS29222\_CAPIF\_Access\_Control\_Policy\_API.yaml | access-control-policy | A.7 |
| CAPIF\_Logging\_API\_Invocation\_API | 8.7 | CAPIF Logging API Invocation Service | TS29222\_CAPIF\_Logging\_API\_Invocation\_API.yaml | api-invocation-logs | A.8 |
| CAPIF\_Auditing\_API | 8.8 | CAPIF Auditing API Service | TS29222\_CAPIF\_Auditing\_API.yaml | logs | A.9 |
| CAPIF\_API\_Provider\_Management\_API | 8.9 | CAPIF API Provider Management API Service | TS29222\_CAPIF\_API\_Provider\_Management\_API.yaml | api-provider-management | A.11 |
| CAPIF\_Routing\_Info\_API | 8.10 | CAPIF Routing Information API Service | TS29222\_CAPIF\_Routing\_Info\_API.yaml | capif-routing-info | A.12 |

\* \* \* \* Next changes \* \* \* \*

#### 5.5.1.1 Overview

The CAPIF\_API\_Invoker\_Management\_API, as defined in 3GPP TS 23.222 [2], allows an API Invoker via the CAPIF-1/1e reference points to request the CCF to:

- on-board or off-board itself as a recognized user of the CAPIF framework; and

- update its existing onboarding details at the CCF.

\* \* \* \* Next changes \* \* \* \*

#### 5.5.2.1 Introduction

The service operations defined for the CAPIF\_API\_Invoker\_Management\_API are shown in table 5.5.2.1-1.

Table 5.5.2.1-1: CAPIF\_API\_Invoker\_Management Service Operations

| **Service operation name** | **Description** | **Initiated by** |
| --- | --- | --- |
| Onboard\_API\_Invoker | This service operation is used by an API Invoker to on-board itself as a recognized user of CAPIF. | API Invoker |
| Offboard\_API\_Invoker | This service operation is used by an API Invoker to off-board itself from being a recognized user of CAPIF. | API Invoker |
| Notify\_Onboarding\_Completion | This service operation is used by the CCF to send an on-boarding notification. | CCF |
| Update\_API\_Invoker\_Details | This service operation is used by an API Invoker to update its details. | API Invoker |
| Notify\_Update\_Completion | This service operation is used by CAPIF core function to send an update notification to the API invoker | CCF |

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.2.1 General

This service operation is used by an API Invoker to on-board itself as a recognized user of CAPIF at the CCF (see also clause 8.1 of 3GPP TS 23.222 [2]).

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.2.2 API Invoker on-boarding itself as a recognized user of CAPIF using the Onboard\_API\_Invoker service operation

To on-board itself as a recognized user of the CAPIF, the API Invoker shall send an HTTP POST request message to the CCF. The body of the HTTP POST request message shall include the APIInvokerEnrolmentDetails data structure as specified in clause 8.4.2.2.3.1.

Upon reception of the above described HTTP POST request message, the CCF shall check if it can determine authorization of the request and on-board the API Invoker automatically. Then:

1. if the CCF can determine authorization of the request to on-board the API Invoker automatically:

a. the CCF shall process the HTTP POST request message and determine if the request sent by the API Invoker is authorized or not; and

b. if the API Invoker's request is authorized, the CCF shall:

i. create the API Invoker Profile;

ii. verify the API List present in the HTTP POST request message and derive from it the allowed API List containing the APIs that the API Invoker is allowed to access;

iii. create a new "Individual On-boarded API Invoker" resource; and

iv. return to the API Invoker an HTTP "201 Created" status code containing the API Invoker Profile, the allowed APIs List and additional information within the APIInvokerEnrolmentDetails data structure;

2. if the CCF cannot determine authorization of the request to on-board the API Invoker automatically, the CCF:

a. the CCF shall acknowledge the reception of the on-boarding request to the API Invoker by returning an HTTP "202 Accepted" status code.

b. the CCF shall request the CAPIF administrator to validate the on-boarding request or the API management to validate the on-boarding request by sharing the onboarding information of the API Invoker received in the HTTP POST request message;

c. upon reception of the confirmation of successful validation of the on-boarding request from the CAPIF administrator or the API management, the CCF shall:

i. create the API Invoker Profile;

ii. create a new "Individual On-boarded API Invoker" resource; and

iii. send to the API Invoker a notification, using the procedure defined in clause 5.5.2.4, containing the API Invoker Profile, the allowed APIs List and additional related informationwithin the OnboardingNotification data structure;

and

3. if errors occur when processing the request, the CCF shall respond to the API Invoker with an appropriate error status code as defined in clause 8.4.5.

NOTE 1: How the CCF determines that the CCF can process the request and on-board the API Invoker automatically is out-of-scope of this specification.

NOTE 2: How the CCF determines that the API Invoker's request to on-board is authorized is specified in 3GPP TS 33.122 [16].

NOTE 3: Interactions between the CCF and the CAPIF administrator or the API management is out-of-scope of this specification.

NOTE 4: The onboarding credentials received by the API Invoker from the service provider as specified in 3GPP TS 33.122 [16] are included in the Authorization header field of the HTTP request message as described in IETF RFC 9110 [5].

NOTE 5: After the onboarding operation is completed, the API Invoker no longer needs to maintain the Notification Destination URI and may delete it.

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.3.1 General

This service operation is used by an API Invoker to off-board itself from being a recognized user of CAPIF at the CCF (see also clause 8.2 of 3GPP TS 23.222 [2]).

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.3.2 API Invoker off-boarding itself from being a recognized user of CAPIF using the Offboard\_API\_Invoker service operation

To off-board itself from being a recognized user of the CAPIF, the API Invoker shall send an HTTP DELETE request message to the CCF targeting the corresponding "Individual On-boarded API Invoker" resource as specified in clause 8.4.2.3.3.1.

Upon reception the HTTP DELETE request message, the CCF shall:

1. determine if the request sent by the API Invoker is authorized or not;

2. if the API Invoker's request is authorized, the CCF shall delete the targeted "Individual On-boarded API Invoker" resource;. and

3. if errors occur when processing the request, the CCF shall respond to the API Invoker with an appropriate error status code as defined in clause 8.4.5.

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.4.1 General

This service operation is used by the CCF to send a notification about the completion of the API Invoker's onboarding creation operation to the API Invoker (see also clause 8.2 of 3GPP TS 23.222 [2]).

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.4.2 Notifying API Invoker's onboarding creation completion using Notify\_Onboarding\_Completion service operation

When the CCF determines that the authorization of the API Invoker's onboarding creation cannot be done immediately, the CCF shall send a response acknowledging the request and indicating that it is being processing as defined in clause 5.5.2.2.2 and 5.5.2.5.2.

Once the onboarding creation operation is completed, this procedure is triggered. The CCF shall send an HTTP POST request message using the Notification Destination URI received during the corresponding API Invoker onboarding creation request as defined in clause 5.5.2.2.2 and 5.5.2.5.2. The body of the HTTP POST request message shall include the OnboardingNotification data structure.

Upon reception of the HTTP POST request message, the API Invoker shall process the request, store the received API Invoker's onboarding information and respond with an HTTP "204 No Content" status code.

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.5.1 General

This service operation is used by an API Invoker to update the API Invoker's profile details on the CCF.

\* \* \* \* Next changes \* \* \* \*

##### 5.5.2.5.2 API Invoker updating its details on CAPIF using Update\_API\_Invoker\_Details service operation

To update the API Invoker's onboarding details at the CCF, the service consumer (e.g., API Invoker) shall send a HTTP PUT request message to the CCF targeting the corresponding "Individual On-boarded API Invoker" resource, with the request body including the APIInvokerEnrolmentDetails data structure as specified in clause 8.4.2.3.3.2. The "apiInvokerId" and "onboardingInformation" attributes shall remain unchanged from the previously provided values.. Otherwise, if the "PatchUpdate" feature defined in clause 8.4.6 is supported, the service consumer (e.g., API Invoker) may send instead an HTTP PATCH request message to the CCF targeting the corresponding "Individual On-boarded API Invoker" resource with the request body including the APIInvokerEnrolmentDetailsPatch data structure as specified in clause 8.4.2.3.3.3.

Upon reception of the above described HTTP PUT or PATCH request message:

1. if the CCF decides to update the onboarding details of the API Invoker without validation by the CAPIF administrator, then the CCF:

a. shall determine if the API Invoker is authorized or not;

b. verify that the "apiInvokerId" and "onboardingInformation" attributes are not changed;

c. if the API Invoker's request is authorized and the "apiInvokerId" and "onboardingInformation" attributes are unchanged, the CCF shall:

i. if the request contains an API list:

- create a list of APIs that the API Invoker is allowed to access; and

- update the corresponding "Individual On-boarded API Invoker" resource with the updated information in the request and the created API list;

ii. if the request does not contain an API list, update the corresponding "Individual On-boarded API Invoker" resource with the updated information in the request; and

iii. return either:

- an HTTP "200 OK" status code with the response body including the updated representation of the corresponding "Individual On-boarded API Invoker" resource containing the updated API Invoker's onboarding details within the APIInvokerEnrolmentDetails data structure; or

- an HTTP "204 No Content" status code.

2. otherwise, the CCF shall:

a. acknowledge the reception of the request by returning an HTTP "202 Accepted" status code;

b. verify that the "apiInvokerId" and "onboardingInformation" properties are not changed;

c. if the "apiInvokerId" and "onboardingInformation" are unchanged, then request the CAPIF administrator or the API management to validate the request by sharing the API Invoker's identity information and the updated information received in the HTTP PUT/PATCH request message;

d. upon reception of the confirmation of successful validation of the request from the CAPIF administrator or the API management:

i. update the corresponding "Individual On-boarded API Invoker" resource with the validated information; and

ii. send to the API Invoker a notification, using the procedure defined in clause 5.5.2.6, including the updated "Individual On-boarded API Invoker" resource representation containing the updated API Invoker's onboarding details within the APIInvokerEnrolmentDetails data structure;

ii. return the updated "Individual On-boarded API Invoker" resource representation containing the updated API Invoker's onboarding details and additional related information within the OnboardingNotification data structure;

and

3. if errors occur when processing the request, the CCF shall respond with an appropriate error status code as defined in clause 8.4.5.

NOTE 1: How the CCF determines that the CCF can process the request and update the API list of the API Invoker automatically is out-of-scope of this specification.

NOTE 2: Interactions between the CCF and the CAPIF administrator or the API management is out-of-scope of this specification.

NOTE 3: After the operation is completed the API Invoker no longer needs to maintain the Notification Destination URI and may delete it.

\* \* \* \* Next changes \* \* \* \*

### 8.4.1 API URI

The CAPIF\_API\_Invoker\_Management\_API service shall use the CAPIF\_API\_Invoker\_Management\_API.

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 7.5 with the following clarifications:

- The <apiName>shall be "api-invoker-management".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 8.4.2.

All the resource URIs and the custom operation URIs specified in the clauses below are defined relative to the above API URI.

\* \* \* \* Next changes \* \* \* \*

### 8.4.2 Resources

\* \* \* \* Next changes \* \* \* \*

#### 8.4.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.4.2.1-1 depicts the resource URIs structure for the CAPIF\_API\_Invoker\_Management\_API.



Figure 8.4.2.1-1: Resource URI structure of the CAPIF\_API\_Invoker\_Management\_API

Table 8.4.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.4.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| On-boarded API Invokers | /onboardedInvokers(NOTE) | POST | On-boards a new API Invoker. |
| Individual On-boarded API Invoker | /onboardedInvokers/{onboardingId}(NOTE) | DELETE | Off-boards an existing API Invoker. |
| PATCH | Modify an existing API Invoker's onboarding details. |
| PUT | Update an existing API Invoker's onboarding details. |
| NOTE: The path segment "onboardedInvokers" does not follow the related naming convention defined in clause 7.5.1. The path segment is however kept as currently defined in this specification for backward compatibility considerations. |

\* \* \* \* Next changes \* \* \* \*

#### 8.4.2.2 Resource: On-boarded API Invokers

\* \* \* \* Next changes \* \* \* \*

##### 8.4.2.2.1 Description

The On-boarded API Invokers resource represents all the collection of onboarded API Invokers and corresponding onboarding information at the CCF.

\* \* \* \* Next changes \* \* \* \*

##### 8.4.2.2.2 Resource Definition

Resource URI: **{apiRoot}/api-invoker-management/<apiVersion>/onboardedInvokers**

This resource shall support the resource URI variables defined in table 8.4.2.2.2-1.

Table 8.4.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5. |

\* \* \* \* Next changes \* \* \* \*

###### 8.4.2.2.3.1 POST

This method shall support the URI query parameters specified in table 8.4.2.2.3.1-1.

Table 8.4.2.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 8.4.2.2.3.1-2 and the response data structures and response codes specified in table 8.4.2.2.3.1-3.

Table 8.4.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| APIInvokerEnrolmentDetails | M | 1 | Contains the enrolment details of the API Invoker. |

Table 8.4.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| APIInvokerEnrolmentDetails | M | 1 | 201 Created | Successful case. The API Invoker was successfully on-boarded.The URI of the created "Individual On-boarded API Invoker" resource shall be returned in an HTTP "Location" HTTP header. |
| n/a |  |  | 202 Accepted | Successful case. The CCF accepted the request and is processing it. |
| NOTE: The mandatory HTTP error status codes for the HTTP POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [14] shall also apply. |

Table 8.4.2.2.3.1-4: Headers supported by the 201 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure:{apiRoot}/api-invoker-management/<apiVersion>/onboardedInvokers/{onboardingId} |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.2.2.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

\* \* \* \* Next changes \* \* \* \*

##### 8.4.2.3.1 Description

The "Individual On-boarded API Invoker" resource represents an individual onboarded API Invoker and the corresponding onboarding information managed by the CCF.

\* \* \* \* Next changes \* \* \* \*

##### 8.4.2.3.2 Resource Definition

Resource URI: **{apiRoot}/api-invoker-management/<apiVersion>/onboardedInvokers/{onboardingId}**

This resource shall support the resource URI variables defined in table 8.4.2.3.2-1.

Table 8.4.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5. |
| onboardingId | string | Represents the identifier of the "Individual On-boarded API Invoker" resource. |

\* \* \* \* Next changes \* \* \* \*

###### 8.4.2.3.3.1 DELETE

This method shall support the URI query parameters specified in table 8.4.2.3.3.1-1.

Table 8.4.2.3.3.1-1: URI query parameters supported by the DELETE method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the response codes specified in table 8.4.2.3.3.1-2 and the response data structures and response codes specified in table 8.4.2.3.3.1-3.

Table 8.4.2.3.3.1-2: Data structures supported by the DELETE Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 8.4.2.3.3.1-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | Successful case. The "Individual On-boarded API Invoker" resource is successfully deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative CCF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative CCF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| NOTE: The mandatory HTTP error status codes for the HTTP DELETE method listed in table 5.2.6-1 of 3GPP TS 29.122 [14] shall also apply. |

Table 8.4.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative CCF. |

Table 8.4.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative CCF. |

\* \* \* \* Next changes \* \* \* \*

###### 8.4.2.3.3.2 PUT

This method shall support the URI query parameters specified in table 8.4.2.3.3.2-1.

Table 8.4.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in the table 8.4.2.3.3.2-2 and the response data structures and response codes specified in the table 8.4.2.3.3.2-3.

Table 8.4.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| APIInvokerEnrolmentDetails | M | 1 | Contains the updated representation of the "Individual On-boarded API Invoker" resource. |

Table 8.4.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| APIInvokerEnrolmentDetails | M | 1 | 200 OK | Successful case. The "Individual On-boarded API Invoker" resource is successfully updated and the representation of the updated resource is returned in the response body. |
| n/a |  |  | 202 Accepted | Successful case. The CCF accepted the request and is processing it. |
| n/a |  |  | 204 No Content | Successful case. The "Individual On-boarded API Invoker" resource is successfully updated and no content is returned in the response body. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative CCF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative CCF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| NOTE: The mandatory HTTP error status codes for the HTTP PUT method listed in table 5.2.6-1 of 3GPP TS 29.122 [14] shall also apply. |

Table 8.4.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative CCF. |

Table 8.4.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative CCF. |

\* \* \* \* Next changes \* \* \* \*

###### 8.4.2.3.3.3 PATCH

This method shall support the URI query parameters specified in table 8.4.2.3.3.3-1.

Table 8.4.2.3.3.3-1: URI query parameters supported by the PATCH method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 8.4.2.3.3.3-2 and the response data structures and response codes specified in table 8.4.2.3.3.3-3.

Table 8.4.2.3.3.3-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| APIInvokerEnrolmentDetailsPatch | M | 1 | Contains the requested modifications to the "Individual On-boarded API Invoker" resource. |

Table 8.4.2.3.3.3-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| APIInvokerEnrolmentDetails | M | 1 | 200 OK | Successful case. The "Individual On-boarded API Invoker" resource is successfully modified and the representation of the updated resource is returned in the response body. |
| n/a |  |  | 202 Accepted | Successful case. The CCF accepted the request and is processing it. |
| n/a |  |  | 204 No Content | Successful case. The "Individual On-boarded API Invoker" resource is successfully modified and no content is returned in the response body. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative CCF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI of the resource located in an alternative CCF.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| NOTE: The mandatory HTTP error status codes for the HTTP PATCH method listed in table 5.2.6-1 of 3GPP TS 29.122 [14] shall also apply. |

Table 8.4.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative CCF. |

Table 8.4.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative CCF. |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.2.3.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

\* \* \* \* Next changes \* \* \* \*

#### 8.4.3.1 General

The delivery of notifications shall conform to clause 7.6.

Table 8.4.3.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description(service operation) |
| Notify\_Onboarding\_Completion | {notificationDestination} | POST | Notify API invoker of on-boarding result |
| Notify\_Update\_Completion | {notificationDestination} | POST | Notify API invoker of update result details. |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.3.2.1 Description

The Notify\_Onboarding\_Completion notification is used by the CCF to notify an API Invoker on the on-boarding creation/update result.

\* \* \* \* Next changes \* \* \* \*

##### 8.4.3.2.2 Notification definition

The HTTP POST method shall be used for the Notify\_Onboarding\_Completion and the URI shall be the one provided by the API Invoker during the on-boarding creation/update request.

Callback URI: **{notificationDestination}**

This method shall support the URI query parameters specified in table 8.4.3.2.2-1.

Table 8.4.3.2.2-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 8.4.3.2.2-2 and the response data structures and response codes specified in table 8.4.3.2.2-3.

Table 8.4.3.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| OnboardingNotification | M | 1 | Contains the notification with the on-boarding creation/update result. |

Table 8.4.3.2.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | Successful case. The reception of the notification is acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection.The response shall include a Location header field containing an alternative URI representing the end point of an alternative notification destination towards which the notification should be sent.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection.The response shall include a Location header field containing an alternative URI representing the end point of an alternative notification destination towards which the notification should be sent.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [14]. |
| NOTE: The mandatory HTTP error status codes for the HTTP POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [14] shall also apply. |

Table 8.4.3.2.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI representing the end point of an alternative notification URI towards which the notification should be redirected. |

Table 8.4.3.2.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI representing the end point of an alternative notification URI towards which the notification should be redirected. |

\* \* \* \* Next changes \* \* \* \*

#### 8.4.4.1 General

This clause specifies the application data model supported by the API. Data types listed in clause 7.2 also apply to this API.

Table 8.4.4.1-1 specifies the data types defined specifically for the CAPIF\_API\_Invoker\_Management\_API service.

Table 8.4.4.1-1: CAPIF\_API\_Invoker\_Management\_API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| APIInvokerEnrolmentDetails | Clause 8.4.4.2.2 | Represents the onboarding information of the API Invoker. |  |
| APIInvokerEnrolmentDetailsPatch | Clause 8.4.4.2.8 | Represents the requested modifications to an On-boarded API Invoker data. | PatchUpdate |
| APIList | Clause 8.4.4.2.4 | Represents the list of service APIs that the API Invoker is allowed to invoke. |  |
| OnboardingInformation | Clause 8.4.4.2.5 | Represents on-boarding information of the API Invoker. |  |
| OnboardingNotification | Clause 8.4.4.2.7 | Represents the notification of the on-boarding creation or update result. |  |

Table 8.4.4.1-2 specifies data types re-used by the CAPIF\_API\_Invoker\_Management\_API service.

Table 8.4.4.1-2: CAPIF\_API\_Invoker\_Management\_API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.122 [14] | Used to indicate a date and a time. |  |
| DateTimeRm | 3GPP TS 29.122 [14] | Used to indicate the same as the DateTime data structure but with the OpenAPI "nullable: true" property. |  |
| SupportedFeatures | 3GPP TS 29.571 [19] | Used to negotiate the applicability of optional features defined in table 8.4.6-1. |  |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.1 Introduction

This clause defines the data structures to be used in resource representations.

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.2 Type: APIInvokerEnrolmentDetails

Table 8.4.4.2.2-1: Definition of type APIInvokerEnrolmentDetails

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| apiInvokerId | string | O | 0..1 | Contains the API invoker ID assigned by the CCF to the API Invoker while on-boarding the API Invoker.This attribute shall not be present in the HTTP POST request from the API Invoker to the CCF, to on-board itself. This attribute shall be present in all other HTTP requests and responses. |  |
| onboardingInformation | OnboardingInformation | M | 1 | Contains the API Invoker's on-boarding information necessary for the CCF to on-board the API Invoker. |  |
| notificationDestination | Uri | M | 1 | Contains the URI to which the notifications should be delivered. |  |
| requestTestNotification | boolean | O | 0..1 | Contains the test notification request indication, i.e., whether to send a test notification as defined in in clause 7.6.- Set to "true" to request the CCF to send a test notification.- Set to "false" to request the CCF not to send a test notification.- The default value is "false" if omitted. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Contains the configuration parameters to set up notifications delivery over Websocket protocol as defined in clause 7.6. | Notification\_websocket |
| apiList | APIList | O | 0..1 | Contains a list of APIs.When included by the API Invoker in the HTTP request messages, it lists the APIs that the API Invoker desires to invoke while onboarded. When included by the CCF in the HTTP response messages, it lists the APIs that the API Invoker is allowed to invoke while onboarded. |  |
| apiInvokerInformation | string | O | 0..1 | Contains the generic information related to the API Invoker such as details of the device or the application. |  |
| expTime | DateTime | O | 0..1 | Contains the expiration time of the onboarding.If this attribute is absent, this means that the onboarding shall not expire until an expiration timer is explicitly included or the onboarding is updated or deleted by the service consumer. | ExpirationTime |
| supportedFeatures | SupportedFeatures | C | 0..1 | Used to negotiate the supported optional features of the API as described in clause 7.8.This attribute shall be provided in the HTTP POST request and in the response of successful resource creation. |  |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.4 Type: APIList

Table 8.4.4.2.4-1: Definition of type APIList

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| serviceAPIDescriptions | array(ServiceAPIDescription) | O | 1..N | Contans the definition of the service API. |  |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.5 Type: OnboardingInformation

Table 8.4.4.2.5-1: Definition of type OnboardingInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| apiInvokerPublicKey | string | M | 1 | Contains the Public Key of the API Invoker. |  |
| apiInvokerCertificate | string | O | 0..1 | Contains the API Invoker's generic client certificate.The subject field in the certificate shall be encoded with the API Invoker ID as Common Name as specified in IETF RFC 5280 [29]. |  |
| onboardingSecret | string | O | 0..1 | Contains the API Invoker's onboarding secret, provided by the CCF.  |  |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.6 Type: Void

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.7 Type: OnboardingNotification

Table 8.4.4.2.7-1: Definition of type OnboardingNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| result | boolean | M | 1 | Contains the onboarding result.- Set to "true" to indicate successful on-boarding.- Set to "false" to indicate unsuccessful onboarding.- The default value is "false" if omitted. |  |
| resourceLocation | Uri | C | 0..1 | Contains the URI pointing to the new CAPIF resource created as a result of successful on-boarding, according to the structure:{apiRoot}/api-invoker-management/<apiVersion>/onboardedInvokers/{onboardingId}This attribute shall be present only if the "result" attribute is set to "true". Otherwise it shall not be present.(NOTE) |  |
| apiInvokerEnrolmentDetails | APIInvokerEnrolmentDetails | C | 0..1 | Contains the enrolment details of the API Invoker which are verified by the CAPIF administrator or API management.This attribute shall be present only if the "result" attribute is set to "true". Otherwise it shall not be present. |  |
| apiList | APIList | O | 0..1 | Contains the list of APIs that the API Invoker is allowed to access.This attribute may be present only if the "result" attribute is set to "true". Otherwise it shall not be present. |  |

\* \* \* \* Next changes \* \* \* \*

##### 8.4.4.2.8 Type: APIInvokerEnrolmentDetailsPatch

Table 8.4.4.2.8-1: Definition of type APIInvokerEnrolmentDetailsPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| onboardingInformation | OnboardingInformation | O | 0..1 | Contains the on-boarding information about the API Invoker necessary for the CCF to on-board the API Invoker. |  |
| notificationDestination | Uri | O | 0..1 | Contains the updated URI to which the notifications should be delivered to. |  |
| apiList | APIList | O | 0..1 | Contains the list of APIs that the API Invoker desires to invoke while onboarded. |  |
| apiInvokerInformation | string | O | 0..1 | Contains the generic information related to the API Invoker such as details of the device or the application.  |  |
| expTime | DateTimeRm | O | 0..1 | Contains the expiration time of the onboarding. | ExpirationTime |

\* \* \* \* Next changes \* \* \* \*

#### 8.4.4.3 Simple data types and enumerations

##### 8.4.4.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

##### 8.4.4.3.2 Simple data types

The simple data types defined in table 8.4.4.3.2-1 shall be supported.

Table 8.4.4.3.2-1: Simple data types

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
|  |  |  |  |

\* \* \* \* Next changes \* \* \* \*

#### 8.4.4.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

\* \* \* \* Next changes \* \* \* \*

#### 8.4.4.5 Binary data

##### 8.4.4.5.1 Binary Data Types

Table 8.4.4.5.1-1: Binary Data Types

|  |  |  |
| --- | --- | --- |
| Name | Clause defined | Content type |
|  |  |  |

\* \* \* \* Next changes \* \* \* \*

### 8.4.6 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.4.6-1 lists the supported features for CAPIF\_API\_Invoker\_Management\_API.

Table 8.4.6-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Notification\_test\_event | Indicates the support of the testing of notification connection i according to clause 7.6. |
| 2 | Notification\_websocket | Indicates the support of the delivery of notifications over Websocket according to clause 7.6.This feature requires the support of the "Notification\_test\_event" feature. |
| 3 | PatchUpdate | Indicates the support of the PATCH method for updating an "Individual On-boarded API Invoker" resource. |
| 4 | ExpirationTime | Indicates the support of expiration time for the API invoker onboarding functionality as part of the support of network slice capability exposure application layer framework.This feature enables the following functionalities:- provisioning/updating/deleting the expiration time of an onboarding. |

\* \* \* \* Next changes \* \* \* \*

# A.5 CAPIF\_API\_Invoker\_Management\_API

openapi: 3.0.0

info:

 title: CAPIF\_API\_Invoker\_Management\_API

 version: 1.3.0

 description: |

 API for API invoker management.

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 All rights reserved.

externalDocs:

 description: 3GPP TS 29.222 V18.6.0 Common API Framework for 3GPP Northbound APIs

 url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.222/

servers:

 - url: '{apiRoot}/api-invoker-management/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in clause 7.5 of 3GPP TS 29.222

paths:

 /onboardedInvokers:

 post:

 summary: Request the Creation of a new On-boarded API Invoker.

 operationId: CreateOnboardedAPIInvoker

 tags:

 - On-boarded API Invokers (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetails'

 responses:

 '201':

 description: >

 Created. The API Invoker is successfully on-boarded.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetails'

 headers:

 Location:

 description: >

 Contains the URI of the newly created resource.

 required: true

 schema:

 type: string

 '202':

 description: >

 Accepted. The CCF accepted the Onboarding request and is processing it.

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 callbacks:

 notificationDestination:

 '{$request.body#/notificationDestination}':

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/OnboardingNotification'

 responses:

 '204':

 description: >

 No Content. The onboarding notification is successfully received.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 /onboardedInvokers/{onboardingId}:

 parameters:

 - name: onboardingId

 in: path

 required: true

 schema:

 type: string

 delete:

 description: Deletes an existing Individual On-boarded API Invoker.

 summary: Delete an existing Individual On-boarded API Invoker resource.

 operationId: DeleteIndOnboardedAPIInvoker

 tags:

 - Individual On-boarded API Invoker (Document)

 responses:

 '204':

 description: >

 No Content. The Individual On-boarded API Invoker resource is successfully deleted.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 put:

 summary: Update an existing Individual On-boarded API Invoker resource.

 operationId: UpdateIndOnboardedAPIInvoker

 tags:

 - Individual On-boarded API Invoker (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetails'

 callbacks:

 notificationDestination:

 '{$request.body#/notificationDestination}':

 post:

 description: Notify the API Invoker about the API invoker update completion

 requestBody: # contents of the callback message

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/OnboardingNotification'

 responses:

 '204':

 description: No Content (successful API invoker update notification)

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 responses:

 '200':

 description: >

 OK. The Individual On-boarded API Invoker resource is successfully updated and the

 representation of the updated resource is returned in the response body.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetails'

 '202':

 description: >

 Accepted. The request is accepted and under processing.

 '204':

 description: >

 No Content. The Individual On-boarded API Invoker resource is successfully updated

 and no content is returned in the response body.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 patch:

 operationId: ModifyIndApiInvokeEnrolment

 tags:

 - Individual On-boarded API Invoker (Document)

 requestBody:

 required: true

 content:

 application/merge-patch+json:

 schema:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetailsPatch'

 responses:

 '200':

 description: >

 OK. The Individual On-boarded API Invoker resource is successfully modified and the

 representation of the updated resource is returned in the response body.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetails'

 '202':

 description: >

 Accepted. The request is accepted and under processing.

 '204':

 description: >

 No Content. The Individual On-boarded API Invoker resource is successfully modified

 and no content is returned in the response body.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{tokenUrl}'

 scopes: {}

 schemas:

 OnboardingInformation:

 type: object

 description: Represents the on-boarding information of the API Invoker.

 properties:

 apiInvokerPublicKey:

 type: string

 apiInvokerCertificate:

 type: string

 onboardingSecret:

 type: string

 required:

 - apiInvokerPublicKey

 APIList:

 type: object

 description: Represents a list of APIs with the corresponding information.

 properties:

 serviceAPIDescriptions:

 type: array

 items:

 $ref: 'TS29222\_CAPIF\_Publish\_Service\_API.yaml#/components/schemas/ServiceAPIDescription'

 minItems: 1

 description: >

 Represents the list of service APIs that the API Invoker is allowed to invoke.

 APIInvokerEnrolmentDetails:

 description: Represents the onboarding information of the API Invoker.

 type: object

 properties:

 apiInvokerId:

 type: string

 description: >

 API invoker ID assigned by the CAPIF core function to the API invoker while

 on-boarding the API invoker. Shall not be present in the HTTP POST request

 from the API invoker to the CAPIF core function, to on-board itself. Shall be

 present in all other HTTP requests and responses.

 readOnly: true

 onboardingInformation:

 $ref: '#/components/schemas/OnboardingInformation'

 notificationDestination:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

 requestTestNotification:

 type: boolean

 description: >

 Set to true to request the CCF to send a

 test notification as defined in in clause 7.6.

 Set to false or omitted otherwise.

 websockNotifConfig:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

 apiList:

 $ref: '#/components/schemas/APIList'

 apiInvokerInformation:

 type: string

 description: >

 Generic information related to the API invoker such as details of

 the device or the application.

 expTime:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

 supportedFeatures:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

 required:

 - onboardingInformation

 - notificationDestination

 description: Represents information about the API Invoker that requested to onboard.

 OnboardingNotification:

 type: object

 description: Represents a notification of on-boarding creation or update result.

 properties:

 result:

 type: boolean

 description: Set to "true" to indicate successful on-boarding. Otherwise set to "false".

 resourceLocation:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

 apiInvokerEnrolmentDetails:

 $ref: '#/components/schemas/APIInvokerEnrolmentDetails'

 apiList:

 $ref: '#/components/schemas/APIList'

 required:

 - result

 APIInvokerEnrolmentDetailsPatch:

 type: object

 description: Represents an API Invoker's enrolment details to be updated.

 properties:

 onboardingInformation:

 $ref: '#/components/schemas/OnboardingInformation'

 notificationDestination:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

 apiList:

 $ref: '#/components/schemas/APIList'

 apiInvokerInformation:

 type: string

 description: >

 Generic information related to the API invoker such as details of

 the device or the application.

 expTime:

 $ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTimeRm'

\* \* \* \* End of changes \* \* \* \*