**3GPP TSG-CT WG3 Meeting #120-eC3-221449**

**E-Meeting, 17th – 25th February 2022 (revision of C3-221113)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.222** | **CR** | **0224** | **rev** | **1** | **Current version:** | **17.3.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Support PATCH for the update of an API Provider Domain Registration resource. | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | , Huawei, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NBI17 | | | | |  | ***Date:*** | | | 2021-02-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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 can be 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The CAPIF\_API\_Provider\_Management\_API currently only allows the update of an Individual API Provider Domain Registration resource via a complete resource replacement using an HTTP PUT method. As it is the case for other T8 APIs, enabling the update of an Individual API Provider Domain Registration resource via a partial modification using HTTP PATCH method should also be enabled. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR proposes to:   * Define the HTTP PATCH method on an Individual API Provider Domain Registration resource in order to enable a partial update of the resource. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * Usage of HTTP PATCH for modifying an Individual API Provider Domain Registration resource is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.11.2.3.2, 8.9.2.1, 8.9.2.3.3.1a, 8.9.4.1, 8.9.4.2.x, 8.9.6, A.11 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 new features to the OpenAPI description of the CAPIF\_API\_Provider\_Management\_API API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

##### 5.11.2.3.2 API management function updating API provider domain function details on CAPIF using Update\_API\_Provider service operation

To update the API provider domain profile and its individual functions details on CAPIF domain, the API management function shall send a HTTP PUT message to its resource representation in the CAPIF core function as specified in subclause 8.9.2.3.3.1, requesting to replace all properties in the existing resource, addressed by the URI received in the response to the request that has created the API provider domain profile resource. The property “apiProviderDomainId”, shall remain unchanged from the previously provided values. The body of the HTTP PUT message shall include the APIProviderEnrolmentDetails data structure that need to be updated. If the "PatchUpdate" feature defined in subclause 8.9.6 is supported for modification of the API provider domain profile, the consumer (e.g. API publishing function) may send an HTTP PATCH request message to the concerned service API resource URI in the CAPIF core function. The body of the HTTP PATCH request message shall include the APIProviderEnrolmentDetailsPatch data structure.

Upon receiving the described HTTP PUT or PATCH request message:

1. the CAPIF core function shall process the updates received in the HTTP PUT or PATCH request message and determine if the request sent by API management function is authorized or not;

2. verify that the “apiProviderDomainId” property is same as in the API provider domain resource on CAPIF Core Function.

3. if the API management function is authorized and the property “apiProviderDomainId” matches, then the CAPIF core function shall:

a. replace/modify the representation of the resource identified by the CAPIF Resource URI of the API management function’s HTTP PUT or PATCH request with updated information in the request;

b. update the individual API provider domain function profiles as per the request. CAPIF core function shall create new API provider domain function profiles along with assignment of identities, if the API provider domain functions profiles in the request do not exist in CAPIF; and

c. return a "200 OK" status code with the updated API provider domain information, or a "204 No Content" status code.

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

#### 8.9.2.1 Overview



Figure 8.9.2.1-1: Resource URI structure of the CAPIF\_API\_Provider\_Management\_API

Table 8.9.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.9.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| All API Provider Domains Registrations | /registrations | POST | Registers a new API provider domain by creating an API provider domain with API provider domain functions profiles. |
| Individual API Provider Domain Registration | /registrations/{registrationId} | PUT | Updates an individual API provider domain identified by {registrationId} |
| PATCH | Modifies an individual API provider domain identified by {registrationId} |
| DELETE | Deregisters an API provider domain by deleting the API provider domain and functions, identified by {registrationId}. |

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

###### 8.9.2.3.3.1a PATCH

This method shall support the URI query parameters specified in table 8.9.2.3.3.1-1.

Table 8.9.2.3.3.1a-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 8.9.2.3.3.1a-2 and the response data structures and response codes specified in table 8.9.2.3.3.1a-3.

Table 8.9.2.3.3.1a-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| APIProviderEnrolmentDetails Patch | M | 1 | Modified details of the API provider domain. |

Table 8.9.2.3.3.1a-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| APIProviderEnrolmentDetails | M | 1 | 200 OK | API provider domain’s information updated successfully.  Updated details of the API provider domain is part of the APIProviderEnrolmentDetails, which is provided in the response body. The list of successfully updated individual API provider domain functions, registration update specific failure information of failed API provider domain function registration updates, are included in APIProviderEnrolmentDetails which is provided in the response body. |
| n/a |  |  | 204 No Content | API provider domain’s information modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative CAPIF core function.  Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [14]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative CAPIF core function.  Redirection handling is described in subclause 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] also apply. | | | | |

Table 8.9.2.3.3.1a-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative CAPIF core function. |

Table 8.9.2.3.3.1a-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative CAPIF core function. |

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

#### 8.9.4.1 General

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

Table 8.9.4.1-1 specifies the data types defined specifically for the CAPIF\_API\_Provider\_Management\_API service.

Table 8.9.4.1-1: CAPIF\_API\_Provider\_Management\_API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| APIProviderEnrolmentDetails | Subclause 8.9.4.2.2 | API provider domain’s enrolment details. |  |
| ApiProviderFuncRole | Subclause 8.9.4.3.3 | The role (e.g. AEF, APF, etc.) of an API provider domain function. |  |
| APIProviderFunctionDetails | Subclause 8.9.4.2.3 | API Provider domain function’s details. |  |
| RegistrationInformation | Subclause 8.9.4.2.4 | Registration information of the individual API provider domain function. |  |
| APIProviderEnrolmentDetailsPatch | Subclause 8.9.4.2.x | API provider domain’s enrolment parameter list for modification. | PatchUpdate |

Table 8.9.4.1-2 specifies data types re-used by the CAPIF\_API\_Provider\_Management\_API service.

Table 8.9.4.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| SupportedFeatures | 3GPP TS 29.571 [19] | Used to negotiate the applicability of optional features defined in table 8.4.6-1. |  |

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

##### 8.9.4.2.x Type: APIProviderEnrolmentDetailsPatch

Table 8.9.4.2.x-1: Definition of type APIProviderEnrolmentDetailsPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| apiProvFuncs | array(APIProviderFunctionDetails) | O | 1..N | A list of individual API provider domain functions details. When included by the API management function in the HTTP request message, it lists the API provider domain functions that the API management function intends to register/update in registration or update registration procedure. |  |
| apiProvDomInfo | string | O | 0..1 | Generic information related to the API provider domain such as details of the API provider applications. |  |

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

### 8.9.6 Feature negotiation

General feature negotiation procedures are defined in subclause 7.8. Table 8.9.6-1 lists the supported features for CAPIF\_API\_Invoker\_Management\_API. Table 8.9.6-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| y | PatchUpdate | Indicates the support of the PATCH method for updating an API Provider Domain Registration resource. |

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

##### 8.9.4.2.2 Type: APIProviderEnrolmentDetails

Table 8.9.4.2.2-1: Definition of type APIProviderEnrolmentDetails

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| apiProvDomId | string | O | 0..1 | API provider domain ID assigned by the CAPIF core function to the API management function while registering the API provider domain. Shall not be present in the HTTP POST request from the API management function to the CAPIF core function, to on-board itself. Shall be present in all other HTTP requests and responses. |  |
| regSec | string | M | 1 | Security information necessary for the CAPIF core function to validate the registration of the API provider domain. Shall be present in HTTP request from API management function to CAPIF core function for API provider domain registration. |  |
| apiProvFuncs | array(APIProviderFunctionDetails) | O | 1..N | A list of individual API provider domain functions details. When included by the API management function in the HTTP request message, it lists the API provider domain functions that the API management function intends to register/update in registration or update registration procedure. When included by the CAPIF core function in the HTTP response message, it lists the API domain functions details that are registered or updated successfully. |  |
| apiProvDomInfo | string | O | 0..1 | Generic information related to the API provider domain such as details of the API provider applications. |  |
| suppFeat | SupportedFeatures | O | 0..1 | Used to negotiate the supported optional features of the API as described in subclause 7.8.  This attribute shall be provided in the HTTP POST request and in the response of successful resource creation. |  |
| failReason | string | O | 0..1 | Registration or update specific failure information of failed API provider domain function registrations.  Shall be present in the HTTP response body if atleast one of the API provider domain function registration or update registration fails. |  |

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

## A.11 CAPIF\_API\_Provider\_Management\_API

openapi: 3.0.0

info:

title: CAPIF\_API\_Provider\_Management\_API

description: |

API for API provider domain functions management.

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version: "1.1.0-alpha.2"

externalDocs:

description: 3GPP TS 29.222 V17.2.0 Common API Framework for 3GPP Northbound APIs

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

servers:

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

variables:

apiRoot:

default: https://example.com

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

paths:

/registrations:

post:

description: Registers a new API Provider domain with API provider domain functions profiles.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: API provider domain registered successfully

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/api-provider-management/v1/registrations/{registrationId}'

required: true

schema:

type: string

'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'

/registrations/{registrationId}:

delete:

description: Deregisters API provider domain by deleting API provider domain and functions.

parameters:

- name: registrationId

in: path

description: String identifying an registered API provider domain resource.

required: true

schema:

type: string

responses:

'204':

description: The API provider domain matching registrationId is 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:

description: Updates an API provider domain's registration details.

parameters:

- name: registrationId

in: path

description: String identifying an registered API provider domain resource.

required: true

schema:

type: string

requestBody:

description: Representation of the API provider domain registration details to be updated in CAPIF core function.

required: true

content:

application/json:

schema:

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

responses:

'200':

description: API provider domain registration details updated successfully.

content:

application/json:

schema:

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

'204':

description: No Content

'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:

description: Modify an individual API provider details.

operationId: ModifyIndApiProviderEnrolment

tags:

- Individual API Provider enrolment details

parameters:

- name: registrationId

in: path

required: true

schema:

$ref: string

requestBody:

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: The definition of the service API is modified successfully and a representation of the updated service API is returned in the request body.

content:

application/json:

schema:

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

'204':

description: No Content. The definition of the service API is modified successfully.

'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:

schemas:

APIProviderEnrolmentDetails:

type: object

description: Represents an API provider domain's enrolment details.

properties:

apiProvDomId:

type: string

description: API provider domain ID assigned by the CAPIF core function to the API management function while registering the API provider domain. Shall not be present in the HTTP POST request from the API Management function to the CAPIF core function, to on-board itself. Shall be present in all other HTTP requests and responses.

readOnly: true

regSec:

type: string

description: Security information necessary for the CAPIF core function to validate the registration of the API provider domain. Shall be present in HTTP POST request from API management function to CAPIF core function for API provider domain registration.

apiProvFuncs:

type: array

items:

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

minItems: 1

description: A list of individual API provider domain functions details. When included by the API management function in the HTTP request message, it lists the API provider domain functions that the API management function intends to register/update in registration or update registration procedure. When included by the CAPIF core function in the HTTP response message, it lists the API domain functions details that are registered or updated successfully.

apiProvDomInfo:

type: string

description: Generic information related to the API provider domain such as details of the API provider applications.

suppFeat:

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

failReason:

type: string

description: Registration or update specific failure information of failed API provider domain function registrations.Shall be present in the HTTP response body if atleast one of the API provider domain function registration or update registration fails.

required:

- regSec

APIProviderFunctionDetails:

type: object

description: Represents API provider domain function's details.

properties:

apiProvFuncId:

type: string

description: API provider domain functionID assigned by the CAPIF core function to the API provider domain function while registering/updating the API provider domain. Shall not be present in the HTTP POST request from the API management function to the CAPIF core function, to register itself. Shall be present in all other HTTP requests and responses.

regInfo:

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

apiProvFuncRole:

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

apiProvFuncInfo:

type: string

description: Generic information related to the API provider domain function such as details of the API provider applications.

required:

- regInfo

- apiProvFuncRole

RegistrationInformation:

type: object

description: Represents registration information of an individual API provider domain function.

properties:

apiProvPubKey:

type: string

description: Public Key of API Provider domain function.

apiProvCert:

type: string

description: API provider domain function's client certificate

required:

- apiProvPubKey

ApiProviderFuncRole:

anyOf:

- type: string

enum:

- AEF

- APF

- AMF

- type: string

description: >

This string provides forward-compatiblity with future extensions to the enumeration but is not used to encode content defined in the present version of this API.

description: >

Possible values are

- AEF: API provider function is API Exposing Function.

- APF: API provider function is API Publishing Function.

- AMF: API Provider function is API Management Function.

APIProviderEnrolmentDetailsPatch:

type: object

description: Represents an API provider domain's enrolment details.

properties:

apiProvFuncs:

type: array

items:

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

minItems: 1

description: A list of individual API provider domain functions details. When included by the API management function in the HTTP request message, it lists the API provider domain functions that the API management function intends to register/update in registration or update registration procedure.

apiProvDomInfo:

type: string

description: Generic information related to the API provider domain such as details of the API provider applications.

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