**3GPP TSG CT WG3 Meeting #137 *C3-245xxx***

**Hefei, CN, 14th – 18th October, 2024 was C3-245173**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** | **0021** | **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)*.* |
|  |

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

|  |
| --- |
|  |
| ***Title:***  | Support the storage, retrieval and management of the same Application Data by multiple SEALDD Servers |
|  |  |
| ***Source to WG:*** | Huawei, Nokia |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | SEALDD\_Ph2 |  | ***Date:*** | 2024-10-07 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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:*** | As defined in clause 9.5.2.1 of TS 23.433, the data storage functionality is enhanced to support the provisioning of the application data identifier for a data storage to enable to uniquely identify a data storage across multiple SEALDD Servers. |
|  |  |
| ***Summary of change:*** | This CR proposes to:* Address the above-detailed stage 2 requirements.
 |
|  |  |
| ***Consequences if not approved:*** | * The above-detailed stage 2 requirements are not specified in stage 3.
 |
|  |  |
| ***Clauses affected:*** | 6.2.6.1, 6.2.6.2.2, 6.2.6.3.2, 6.2.8, A.3 |
|  |  |
|  | **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 a backwards compatible new feature to the OpenAPI description of the SDD\_DataStorage API defined in this specification. |
|  |  |
| ***This CR's revision history:*** |  |

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 29.122: "T8 reference point for Northbound Application Programming Interfaces (APIs)".

[3] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[4] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[5] 3GPP TR 21.900: "Technical Specification Group working methods".

[6] 3GPP TS 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

[7] 3GPP TS 23.433: "Service Enabler Architecture Layer for Verticals (SEAL); Data Delivery enabler for vertical applications".

[8] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs; Stage 2".

[9] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs; Stage 3".

[10] 3GPP TS 33.122: "Security aspects of Common API Framework (CAPIF) for 3GPP northbound APIs".

[11] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[12] IETF RFC 9113: "HTTP/2".

[13] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[14] IETF RFC 9457: "Problem Details for HTTP APIs".

[15] 3GPP TS 29.549: "Service Enabler Architecture Layer for Verticals (SEAL); Application Programming Interface (API) specification; Stage 3".

[16] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

[17] 3GPP TS 29.558: "Enabling Edge Applications; Application Programming Interface (API) specification; Stage 3".

[18] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[19] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[20] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[21] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

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

#### 6.2.6.1 General

This clause specifies the application data model supported by the API.

Table 6.2.6.1-1 specifies the data types defined for the SDD\_DataStorage API.

Table 6.2.6.1-1: SDD\_DataStorage API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| AccessCtrlPolicy | 6.2.6.2.6 | Represents the data access control policy. |  |
| AppDataId | 6.2.6.3.2 | Represents identifier of a stored application data that uniquely identifies the stored application data in multiple SEALDD Servers. | SEALDD\_2 |
| DataAccessRight | 6.2.6.3.4 | Represents the data access right. |  |
| DataAccessStats | 6.2.6.2.9 | Represents data access statistics. |  |
| DataDelNotif | 6.2.6.2.13 | Represents a SEALDD Data Storage Delivery Notification. |  |
| DataDelReq | 6.2.6.2.14 | Represents a SEALDD Data Storage Delivery request. |  |
| DataDelSubsc | 6.2.6.2.11 | Represents a SEALDD Data Storage Delivery Subscription. |  |
| DataDelSubscPatch | 6.2.6.2.12 | Represents the requested modification to a SEALDD Data Storage Delivery Subscription. |  |
| DataMngtEvent | 6.2.6.3.5 | Represents the Data Management and/or Status Information events. |  |
| DataMngtNotif | 6.2.6.2.8 | Represents a SEALDD Data Management and/or Status Information Notification. |  |
| DataMngtStats | 6.2.6.2.10 | Represents data management statistics. |  |
| DataMngtSubsc | 6.2.6.2.7 | Represents the stored data management and/or status information subscription related information. |  |
| DataStorage | 6.2.6.2.2 | Represents a SEALDD Data Storage. |  |
| DataStoragePatch | 6.2.6.2.5 | Represents the requested modification to a SEALDD Data Storage. |  |
| DataStorageReq | 6.2.6.4.1 | Represents a SEALDD Data Storage creation or reservation request. |  |
| DelConnEstabReq | 6.2.6.2.15 | Represents a SEALDD Data Storage Delivery connection establishment request. |  |
| DelConnEstabResp | 6.2.6.2.16 | Represents the response to a SEALDD Data Storage Delivery connection establishment request. |  |
| EntityName | 6.2.6.3.3 | Represents the name of a SEALDD entity. |  |
| ReservReqData | 6.2.6.2.3 | Represents a Data Storage reservation request. |  |
| ReservRespData | 6.2.6.2.4 | Represents a Data Storage reservation response. |  |

Table 6.2.6.1-2 specifies data types re-used by the SDD\_DataStorage API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the SDD\_DataStorage API.

Table 6.2.6.1-2: SDD\_DataStorage API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Bytes | 3GPP TS 29.122 [4] | Represents a sequence of bytes. |  |
| ConnInfo | 6.1.6.2.4 | Represents SEALDD Data transmission connection information. |  |
| DateTime | 3GPP TS 29.122 [2] | Represents a date and a time. |  |
| DateTimeRo | 3GPP TS 29.122 [2] | Represents a date and a time with the read-only property. |  |
| DurationSec | 3GPP TS 29.122 [2] | Represents a time duration in seconds. |  |
| ProblemDetails | 3GPP TS 29.122 [2] | Represents error related information. |  |
| SupportedFeatures | 3GPP TS 29.571 [18] | Represents the list of supported feature(s) and used to negotiate the applicability of the optional features. |  |
| TransportProtocol | 3GPP TS 29.558 [17] | Represents the transport layer protocol. |  |
| Uinteger | 3GPP TS 29.571 [18] | Represents an unsigned integer. |  |
| Uri | 3GPP TS 29.122 [2] | Represents a URI. |  |

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

##### 6.2.6.2.2 Type: DataStorage

Table 6.2.6.2.2-1: Definition of type DataStorage

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| data | Bytes | M | 1 | Contains the stored application data. |  |
| ctrlPolicies | array(AccessCtrlPolicy) | O | 1..N | Contains the Storage of policy(ies) for controlling the access to the data. |  |
| expTime | DateTime | O | 0..1 | Contains the expiration time of the stored data. |  |
| mngtSubsc | DataMngtSubsc | O | 0..1 | Contains the stored data management and/or status information subscription related information. |  |
| appDataId | AppDataId | O | 0..1 | Contains the application-level identifier of the stored data, assigned by the service consumer. | SEALDD\_2 |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 6.2.8.This attribute shall be present only when feature negotiation needs to take place. |  |

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

##### 6.2.6.3.2 Simple data types

The simple data types defined in table 6.2.6.3.2-1 shall be supported.

Table 6.2.6.3.2-1: Simple data types

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
| AppDataId | string | Represents identifier of a stored application data that uniquely identifies the stored application data in multiple SEALDD Servers.This identifier shall be generated either based on the identifier of the service consumer that assigns it or using the Universally Unique Identifier (UUID) version 4 as described in IETF RFC 4122 [21]. | SEALDD\_2 |

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

### 6.2.8 Feature negotiation

The optional features listed in table 6.2.8-1 are defined for the SDD\_DataStorage API. They shall be negotiated using the extensibility mechanism defined in clause 6.8 of 3GPP TS 29.549 [15].

Table 6.2.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | SEALDD\_2 | This feature indicates the support of the first set of enhancements to the SEAL Data Delivery Enabler Layer.Within this feature, the following enhancements are covered:- Support the provisioning of the application data identifier for a data storage to enable to uniquely identify a data storage across multiple SEALDD Servers. |

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

# A.3 SDD\_DataStorage API

openapi: 3.0.0

info:

 title: SEALDD Server Data Storage Service

 version: 1.0.0

 description: |

 SEALDD Server Data Storage Service.

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externalDocs:

 description: >

 3GPP TS 29.548 V18.1.0; Service Enabler Architecture Layer for Verticals (SEAL);

 SEAL Data Delivery (SEALDD) Server Services; Stage 3.

 url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.548/

servers:

 - url: '{apiRoot}/sdd-ds/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in clause 6.5 of 3GPP TS 29.549

security:

 - {}

 - oAuth2ClientCredentials: []

paths:

 /storages:

 get:

 summary: Retrieve one or several existing Individual Data Storage resource(s).

 operationId: GetDataStorages

 tags:

 - Data Storages (Collection)

 parameters:

 - name: storage-ids

 in: query

 description: Contains the identifier(s) of the targeted Data Storage resource(s).

 required: false

 schema:

 type: array

 items:

 type: string

 minItems: 1

 - name: supp-feats

 in: query

 description: Contains the list of supported features.

 required: false

 schema:

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

 responses:

 '200':

 description: >

 OK. The requested Individual Data Storage resource shall be returned.

 content:

 application/json:

 schema:

 type: array

 items:

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

 minItems: 0

 '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'

 '406':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/406'

 '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'

 post:

 summary: Request the creation of a Data Storage.

 operationId: CreateDataStorage

 tags:

 - Data Storages (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: >

 Created. The Data Storage is successfully created and a representation of the created

 Individual Data Storage resource shall be returned.

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created Individual Data Storage resource.

 required: true

 schema:

 type: string

 '200':

 description: >

 OK. The Data Storage resource is successfully reserved and Data Storage resource

 reservation related information shall be returned.

 content:

 application/json:

 schema:

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

 '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:

 DataMngtNotif:

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

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: >

 No Content. The Data Management and or Status Information Notification is

 successfully received and acknowledged.

 '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'

 /storages/{storageId}:

 parameters:

 - name: storageId

 in: path

 description: >

 Represents the identifier of the Individual Data Storage resource.

 required: true

 schema:

 type: string

 get:

 summary: Retrieve an existing Individual Data Storage resource.

 operationId: GetIndDataStorage

 tags:

 - Individual Data Storage (Document)

 responses:

 '200':

 description: >

 OK. The requested Individual Data Storage resource shall be returned.

 content:

 application/json:

 schema:

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

 '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'

 '406':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/406'

 '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: Request the update of an existing Individual Data Storage resource.

 operationId: UpdateIndDataStorage

 tags:

 - Individual Data Storage (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The Individual Data Storage resource is successfully updated and a representation

 of the updated resource shall be returned in the response body.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 No Content. The Individual Data Storage 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:

 summary: Request the modification of an existing Individual Data Storage resource.

 operationId: ModifyIndDataStorage

 tags:

 - Individual Data Storage (Document)

 requestBody:

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The Individual Data Storage resource is successfully modified and a representation

 of the updated resource shall be returned in the response body.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 No Content. The Individual Data Storage 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'

 delete:

 summary: Request the deletion of an existing Individual Data Storage resource.

 operationId: DeleteIndDataStorage

 tags:

 - Individual Data Storage (Document)

 responses:

 '204':

 description: >

 No Content. The Individual Data Storage 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'

 /subscriptions:

 post:

 summary: Request the creation of a Data Storage Delivery Subscription.

 operationId: CreateDataDelSubsc

 tags:

 - Data Storage Delivery Subscriptions (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: >

 Created. The Data Storage Delivery Subscription is successfully created and a

 representation of the created Individual Data Storage Delivery Subscription resource

 shall be returned.

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

 Contains the URI of the created Individual Data Storage Delivery Subscription

 resource.

 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'

 callbacks:

 DataDelNotif:

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

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: >

 No Content. The Data Storage Delivery Notification is successfully received

 and acknowledged.

 '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'

 /subscriptions/{subscriptionId}:

 parameters:

 - name: subscriptionId

 in: path

 description: >

 Represents the identifier of the Individual Data Storage Delivery Subscription resource.

 resource.

 required: true

 schema:

 type: string

 get:

 summary: Retrieve an existing Individual Data Storage Delivery Subscription resource.

 operationId: GetIndDataDelSubsc

 tags:

 - Individual Data Storage Delivery Subscription (Document)

 responses:

 '200':

 description: >

 OK. The requested Individual Data Storage Delivery Subscription resource shall be

 returned.

 content:

 application/json:

 schema:

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

 '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'

 '406':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/406'

 '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: Request the update of an existing Individual Data Storage Delivery Subscription resource.

 operationId: UpdateIndDataDelSubsc

 tags:

 - Individual Data Storage Delivery Subscription (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The Individual Data Storage Delivery Subscription resource is successfully

 updated and a representation of the updated resource shall be returned in the

 response body.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 No Content. The Individual Data Storage Delivery Subscription 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:

 summary: Request the modification of an existing Individual Data Storage Delivery Subscription resource.

 operationId: ModifyIndDataDelSubsc

 tags:

 - Individual Data Storage Delivery Subscription (Document)

 requestBody:

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The Individual Data Storage Delivery Subscription resource is successfully modified

 and a representation of the updated resource shall be returned in the response body.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 No Content. The Individual Data Storage Delivery Subscription 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'

 delete:

 summary: Request the deletion of an existing Individual Data Storage Delivery Subscription resource.

 operationId: DeleteIndDataDelSubsc

 tags:

 - Individual Data Storage Delivery Subscription (Document)

 responses:

 '204':

 description: >

 No Content. The Individual Data Storage Delivery Subscription 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'

 /request-del:

 post:

 summary: Enables a service consumer to request SEALDD data storage delivery.

 operationId: DataDeliveryRequest

 tags:

 - SEALDD Data Storage Delivery Request

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: >

 No Content. The SEALDD Data Storage delivery request is successfully received and

 processed.

 '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'

 /establish-del-conn:

 post:

 summary: Enables a service consumer to request SEALDD data storage delivery connection establishment.

 operationId: EstablishDelConn

 tags:

 - SEALDD Data Storage Delivery Connection Establishment Request

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '200':

 description: >

 OK. The SEALDD Data Storage delivery connection establishment request is successfully

 received and processed, and SEALDD Data Storage delivery connection establishment

 related information shall be returned in the response body.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 No Content. The SEALDD Data Storage delivery connection establishment request is

 successfully received and processed.

 '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:

#

# STRUCTURED DATA TYPES

#

 DataStorage:

 description: >

 Represents a SEALDD Data Storage.

 type: object

 properties:

 data:

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

 ctrlPolicies:

 type: array

 items:

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

 minItems: 1

 expTime:

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

 mngtSubsc:

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

 appDataId:

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

 suppFeat:

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

 required:

 - data

 ReservReqData:

 description: >

 Represents a Data Storage reservation request.

 type: object

 properties:

 valServiceId:

 type: string

 dataLength:

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

 suppFeat:

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

 required:

 - valServiceId

 ReservRespData:

 description: >

 Represents a Data Storage reservation response.

 type: object

 properties:

 resourceAddr:

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

 required:

 - resourceAddr

 DataStoragePatch:

 description: >

 Represents the requested modifications to a SEALDD Data Storage.

 type: object

 properties:

 data:

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

 ctrlPolicies:

 type: array

 items:

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

 minItems: 1

 expTime:

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

 mngtSubsc:

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

 AccessCtrlPolicy:

 description: >

 Represents the data access control policy.

 type: object

 properties:

 entityName:

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

 entityId:

 type: string

 rights:

 type: array

 items:

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

 minItems: 1

 required:

 - rights

 anyOf:

 - required: [entityName]

 - required: [entityId]

 DataMngtSubsc:

 description: >

 Represents the stored data management and/or status information subscription related

 information.

 type: object

 properties:

 events:

 type: array

 items:

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

 minItems: 1

 notifUri:

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

 repPeriodicity:

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

 required:

 - events

 - notifUri

 DataMngtNotif:

 description: >

 Represents a SEALDD Data Management and/or Status Information Notification.

 type: object

 properties:

 storageId:

 type: string

 events:

 type: array

 items:

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

 minItems: 1

 accessStats:

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

 mngtStats:

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

 required:

 - storageId

 - events

 anyOf:

 - required: [accessStats]

 - required: [mngtStats]

 DataAccessStats:

 description: >

 Represents data access statistics.

 type: object

 properties:

 genAccessStats:

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

 detAccessStats:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Represents the data access statistics of the stored data detailed per consumer SEALDD

 entity. It contains how many times the stored data was accessed (i.e., retrieved or

 updated) per SEALDD entity.

 The key of the map shall be the name of the SEALDD entity, encoded using the EntityName

 data type as specified in clause 6.2.6.3.3, to which the data access statistics provided

 within the map value are

 related.

 anyOf:

 - required: [genAccessStats]

 - required: [detAccessStats]

 DataMngtStats:

 description: >

 Represents data management statistics.

 type: object

 properties:

 genMngtStats:

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

 detMngtStats:

 type: object

 additionalProperties:

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

 minProperties: 1

 description: >

 Represents the data management statistics of the stored data detailed per consumer

 SEALDD entity. It contains how many times the stored data was accessed for management

 purposes (i.e., data update) per SEALDD entity.

 The key of the map shall be the name of the SEALDD entity, encoded using the EntityName

 data type as specified in clause 6.2.6.3.3, to which the data management statistics

 provided within the map value are related.

 anyOf:

 - required: [genMngtStats]

 - required: [detMngtStats]

 DataDelSubsc:

 description: >

 Represents a SEALDD Data Storage Delivery Subscription.

 type: object

 properties:

 notifUri:

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

 expTime:

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

 suppFeat:

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

 required:

 - notifUri

 DataDelSubscPatch:

 description: >

 Represents the requested modification to a SEALDD Data Storage Delivery Subscription.

 type: object

 properties:

 notifUri:

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

 DataDelNotif:

 description: >

 Represents a SEALDD Data Storage Delivery Notification.

 type: object

 properties:

 subscriptionId:

 type: string

 data:

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

 storageId:

 type: string

 required:

 - subscriptionId

 oneOf:

 - required: [data]

 - required: [storageId]

 DataDelReq:

 description: >

 Represents a SEALDD Data Storage Delivery request.

 type: object

 properties:

 targetId:

 type: string

 sealddServId:

 type: string

 storageId:

 type: string

 data:

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

 suppFeat:

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

 required:

 - targetId

 oneOf:

 - required: [data]

 - required: [storageId]

 DelConnEstabReq:

 description: >

 Represents a SEALDD Data Storage Delivery connection establishment request.

 type: object

 properties:

 targetId:

 type: string

 ddServerConnInfo:

 $ref: 'TS29548\_SDD\_Transmission.yaml#/components/schemas/ConnInfo'

 transProtoc:

 type: array

 items:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/TransportProtocol'

 minItems: 1

 suppFeat:

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

 required:

 - targetId

 DelConnEstabResp:

 description: >

 Represents the response to a SEALDD Data Storage Delivery connection establishment request.

 type: object

 properties:

 ddServerConnInfo:

 $ref: 'TS29548\_SDD\_Transmission.yaml#/components/schemas/ConnInfo'

 transProtoc:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/TransportProtocol'

 suppFeat:

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

# SIMPLE DATA TYPES

#

 AppDataId:

 description: >

 Represents identifier of a stored application data that uniquely identifies the stored

 application data in different SEALDD Servers.

 type: string

#

# ENUMERATIONS

#

 EntityName:

 anyOf:

 - type: string

 enum:

 - SEALDD\_SERVER

 - SEALDD\_CLIENT

 - VAL\_SERVER

 - type: string

 description: >

 This string provides forward-compatibility with future extensions to the enumeration

 and is not used to encode content defined in the present version of this API.

 description: |

 Represents the name of a SEALDD entity.

 Possible values are:

 - SEALDD\_SERVER: Indicates the SEALDD Server.

 - SEALDD\_CLIENT: Indicates the SEALDD Client.

 - VAL\_SERVER: Indicates the VAL Server.

 DataAccessRight:

 anyOf:

 - type: string

 enum:

 - RETRIEVE

 - UPDATE

 - DELETE

 - type: string

 description: >

 This string provides forward-compatibility with future extensions to the enumeration

 and is not used to encode content defined in the present version of this API.

 description: |

 Represents the data access rights.

 Possible values are:

 - RETRIEVE: Indicates that the access right is data storage retrieval.

 - UPDATE: Indicates that the access right is data storage update.

 - DELETE: Indicates that the access right is data storage deletion.

 DataMngtEvent:

 anyOf:

 - type: string

 enum:

 - DATA\_ACCESS\_STATISTICS

 - DATA\_MNGT\_STATISTICS

 - type: string

 description: >

 This string provides forward-compatibility with future extensions to the enumeration

 and is not used to encode content defined in the present version of this API.

 description: |

 Represents the Data Management and (or) Status Information events.

 Possible values are:

 - DATA\_ACCESS\_STATISTICS: Indicates that the Data Management Event is data access statistics

 (i.e., how often the stored data is accessed).

 - DATA\_MNGT\_STATISTICS: Indicates that the Data Management Event is data management

 statistics (i.e., how often the stored data is managed).

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

#

 DataStorageReq:

 description: Represents a SEALDD Data Storage creation or reservation request.

 oneOf:

 - $ref: '#/components/schemas/DataStorage'

 - $ref: '#/components/schemas/ReservReqData'

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