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Usage of the Unified Data Repository Service for Policy Data,
Application Data and Structured Data for Exposure;
Stage 3
(3GPP TS 29.519 version 15.1.0 Release 15)**



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Foreword

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1 Scope

The present specification provides the stage 3 definition for the usage of the Unified Data Repository service (Nudr_DataRepository) of 5G System for Policy Data, Application Data and Structured Data for Exposure.

The Unified Data Repository (UDR) provides the Unified Data Repository service. This service provides a repository for policy data, application data and exposure data.

The stage 3 protocol definition for Nudr Service Based Interface which is common for subscription data, policy data, application data and exposure data is specified in 3GPP TS 29.504 [6].

2 References

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

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- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
- [3] OpenAPI: "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.
- [4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".
- [5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [6] 3GPP TS 29.504: "5G System; Unified Data Repository Services; Stage 3".
- [7] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces Stage 3".
- [8] 3GPP TS 29.551: "5G System; Packet Flow Description Management Service; Stage 3".
- [9] 3GPP TS 29.122: "T8 reference point for Northbound APIs".
- [10] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".
- [11] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".
- [12] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".
- [13] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".
- [14] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".
- [15] 3GPP TS 29.505: "5G System; Usage of the Unified Data Repository services for Subscription Data; Stage 3".
- [16] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

BDT	Background Data Transfer
DNN	Data Network Name
NEF	Network Exposure Function
PCF	Policy Control Function
UPSI	UE Policy Section Identifier
S-NSSAI	Single Network Slice Selection Assistance Information
UDR	Unified Data Repository

4 Overview

The resources, data model and usage defined in the present document are used by the NFs (e.g. PCF, NEF) to access the policy data, application data or exposure data via the Unified Data Repository services as specified in 3GPP TS 29.504 [6].

5 Usage of Nudr_DataRepository Service API for Policy Data

5.1 Introduction

The following subclauses specify the usage of Nudr_DataRepository service for policy data. The principles specified in 3GPP TS 29.504 [6] are followed unless explicitly specified otherwise in the following subclauses.

5.2 Resources

5.2.1 Overview

This clause specifies the resources for the usage of the Unified Data Repository service for Policy Data.

5.2.2 Resource Structure

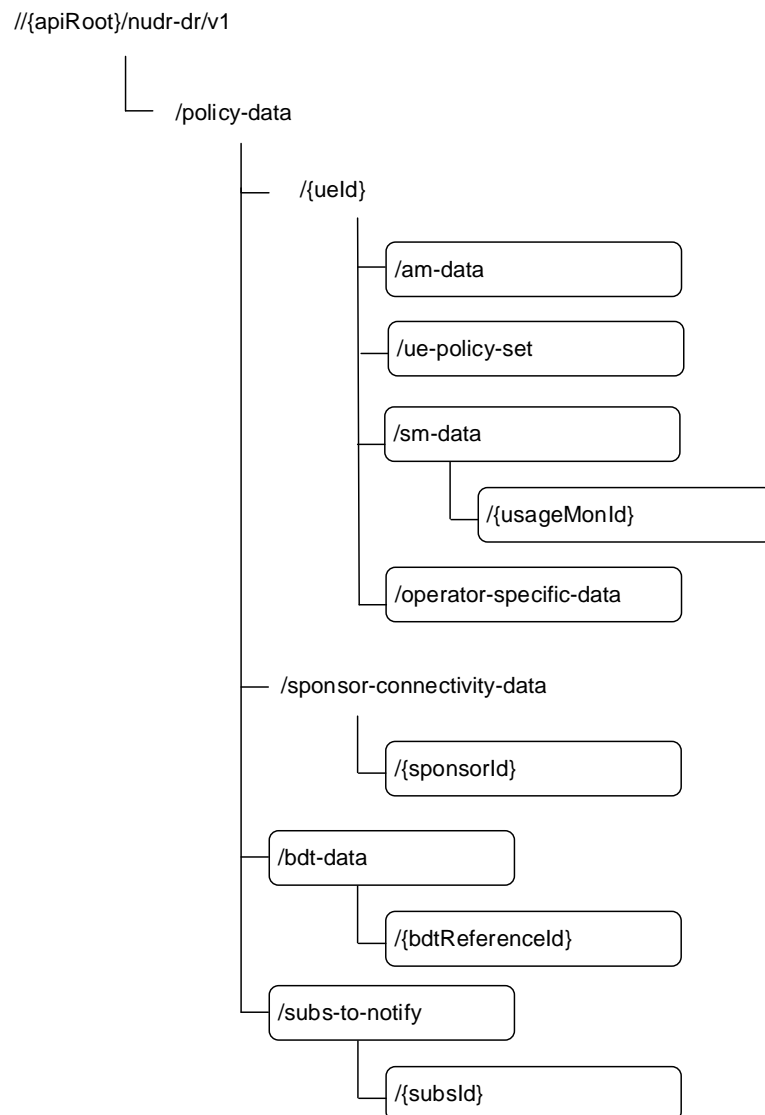


Figure 5.2.2-1: Resource URI structure of the Nudr_DataRepository API for policy data

Table 5.2.2-1 provides an overview of the resources and applicable HTTP methods.

Table 5.2.2-1: Resources and methods overview

Resource name	Resource URI	HTTP method or custom operation	Description
AccessAndMobilityPolicyData	{apiRoot}/nudr-dr/v1/policy-data/{ueId}/am-data	GET	Retrieves the access and mobility policy data for a subscriber.
UEPolicySet	{apiRoot}/nudr-dr/v1/policy-data/{ueId}/ue-policy-set	PUT	Create or modify the UE policy set data for a subscriber.
		PATCH	Modify the UE policy set data for a subscriber.
SessionManagementPolicyData	{apiRoot}/nudr-dr/v1/policy-data/{ueId}/sm-data	GET	Retrieves the session management policy data for a subscriber.
		PATCH	Modify the session management policy data for a subscriber
UsageMonitoringInformation	{apiRoot}/nudr-dr/v1/policy-data/{ueId}/sm-data/{usageMonId}	GET	Retrieve a usage monitoring resource.
		PUT	Create a usage monitoring resource
		DELETE	Delete a usage monitoring resource.
SponsorConnectivityData	{apiRoot}/nudr-dr/v1/policy-data/sponsor-connectivity-data/{sponsorId}	GET	Retrieves the sponsored connectivity information for a given sponsorId
BdtData	{apiRoot}/nudr-dr/v1/policy-data/bdt-data	GET	Retrieves the BDT data collection
IndividualBdtData	{apiRoot}/nudr-dr/v1/policy-data/bdt-data/{bdtReferenceId}	GET	Retrieves the BDT data information associated with a BDT reference Id
		PUT	Creates an BDT data resource associated with an BDT reference Id
		DELETE	Deletes an BDT data resource associated with an BDT reference Id
PolicyDataSubscriptions	{apiRoot}/nudr-dr/v1/policy-data/subs-to-notify	POST	Create a subscription to receive notification of policy data changes.
IndividualPolicyDataSubscription	{apiRoot}/nudr-dr/v1/policy-data/subs-to-notify/{subId}	PUT	Modify a subscription to receive notification of policy data changes.
		DELETE	Delete the subscription identified by {subId}.
OperatorSpecificData	{apiRoot}/nudr-dr/v1/policy-data/{ue-id}/operator-specific-data	GET	Retrieve the operator specific policy data of an UE
		PATCH	Modify the operator specific policy data of an UE
		PUT	Modify the operator specific policy data of an UE

5.2.3 Resource: AccessAndMobilityPolicyData

5.2.3.1 Description

The resource represents all UE related mobility and access policies attributes in the UDR for a given "ueId".

5.2.3.2 Resource definition

Resource URI: **{apiRoot}/nudr-dr/v1/policy-data/{ueId}/am-data**

This resource shall support the resource URI variables defined in table 5.2.3.2-1.

Table 5.2.3.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1
ueId	Represents the Subscription Identifier SUPI or GPSI (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: "(imsi-[0-9]{5,15} nai-.+ msisdn-[0-9]{5,15} extid-.+ .+)"

5.2.3.3 Resource Standard Methods

5.2.3.3.1 GET

This method shall support the URI query parameters specified in table 5.2.3.3.1-1.

Table 5.2.3.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.3.3.1-2 and the response data structures and response codes specified in table 5.2.3.3.1-3.

Table 5.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
AmPolicyData	M	1	200 OK	Upon success, a response body containing access and mobility policies shall be returned.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.4 Resource: UEPolicySet

5.2.4.1 Description

The resource represents UE policy set for a given "ueId" stored in the UDR.

5.2.4.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/{ueId}/ue-policy-set

This resource shall support the resource URI variables defined in table 5.2.4.2-1.

Table 5.2.4.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1
ueId	Represents the Subscription Identifier SUPI or GPSI (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: "(imsi-[0-9]{5,15} nai-.+ msisdn-[0-9]{5,15} extid-.+ .+)"

5.2.4.3 Resource Standard Methods

5.2.4.3.1 PUT

This method shall support the URI query parameters specified in table 5.2.4.3.1-1.

Table 5.2.4.3.1-1: 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 table 5.2.4.3.1-2 and the response data structures and response codes specified in table 5.2.4.3.1-3.

Table 5.2.4.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
UePolicySet	M	1	Create or modify the UE policy set resource for a given subscriber.

Table 5.2.4.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
UePolicySet	M	1	201 Created	Successful case. The resource has been successfully created and a response body containing a representation of the created UePolicySet resource shall be returned.
n/a			204 No Content	Successful case. The resource has been successfully updated and no additional content is to be sent in the response message.
NOTE: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.4.3.2 PATCH

This method shall support the URI query parameters specified in table 5.2.4.3.2-1.

Table 5.2.4.3.1-1: 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 5.2.4.3.2-2 and the response data structures and response codes specified in table 5.2.4.3.2-3.

Table 5.2.4.3.2-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
UePolicySet	M	1	Modify the UE policy set resource for a given subscriber.

Table 5.2.4.3.2-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The resource has been successfully updated and no additional content is to be sent in the response message.
NOTE: The mandatory HTTP error status codes for the PATCH method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.5 Resource: SessionManagementPolicyData

5.2.5.1 Description

The resource represents all PDU session related subscription attributes in the UDR for a given ueId.

5.2.5.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/{ueId}/sm-data

This resource shall support the resource URI variables defined in table 5.2.5.2-1.

Table 5.2.5.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1
ueId	Represents the Subscription Identifier SUPI or GPSI (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: "(imsi-[0-9]{5,15} nai-.+ msisdn-[0-9]{5,15} extid-.+ .+)")

5.2.5.3 Resource Standard Methods

5.2.5.3.1 GET

This method shall support the URI query parameters specified in table 5.2.5.3.1-1.

Table 5.2.5.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
snsai	Snsai	O	0..1	Identifies a Single Network Slice Selection Assistance Information
dnn	Dnn	O	0..1	Identifies an Data Network Name
fields	array(string)	C	1..N	When the NF consumer only retrieves a subset of the resource, the "fields" query parameter shall be included. The "fields" query parameter contains the pointers of the attribute(s) to be retrieved.

This method shall support the request data structures specified in table 5.2.5.3.1-2 and the response data structures and response codes specified in table 5.2.5.3.1-3.

Table 5.2.5.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.5.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
SmPolicyData	M	1	200 OK	Upon success, a response body containing SmPolicyData shall be returned.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

NOTE: This release supports that only one PCF can access to the UDR to retrieve the SM Policy Data under one S-NSSAI and DNN association.

5.2.5.3.2 PATCH

This method shall support the URI query parameters specified in table 5.2.5.3.2-1.

Table 5.2.5.3.2-1: URI query parameters supported by the PATCH method on this resource

Name	Data type	P	Cardinality	Description

This method shall support the request data structures specified in table 5.2.5.3.2-2 and the response data structures and response codes specified in table 5.2.5.3.2-3.

Table 5.2.5.3.2-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
map(UsageMonData)	M	1..N	Modify the session management policy data for a subscriber

Table 5.2.5.3.2-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The resource has been successfully updated and no additional content is to be sent in the response message.
NOTE: The mandatory HTTP error status codes for the PATCH method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.6 Resource: UsageMonitoringInformation

5.2.6.1 Description

The resource represents an individual usage monitoring resource created in the UDR and associated with a ueId and a usageMonId.

5.2.6.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/{ueId}/sm-data/{usageMonId}

This resource shall support the resource URI variables defined in table 5.2.6.2-1.

Table 5.2.6.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6]
ueId	Represents the Subscription Identifier SUPI or GPSI (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: "(imsi-[0-9]{5,15} nai-.+ msisdn-[0-9]{5,15} extid-.+ .+)")
usageMonId	Unique identifier of the individual SM Policy usage monitoring resource.

5.2.6.3 Resource Standard Methods

5.2.6.3.1 PUT

This method shall support the URI query parameters specified in table 5.2.6.3.1-1.

Table 5.2.6.3.1-1: 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 table 5.2.6.3.1-2 and the response data structures and response codes specified in table 5.2.6.3.1-3.

Table 5.2.6.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
UsageMonData	M	1	Create the usage monitoring resource.

Table 5.2.6.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
UsageMonData	M	1	201 Created	Successful case. The resource has been successfully created and a response body is returned containing a representation of the resource.
NOTE: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.6.3.2 DELETE

This method shall support the URI query parameters specified in table 5.2.6.3.2-1.

Table 5.2.6.3.2-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.6.3.2-2 and the response data structures and response codes specified in table 5.2.6.3.2-3.

Table 5.2.6.3.2-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.6.3.2-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The resource has been successfully deleted.
NOTE: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.6.3.3 GET

This method shall support the URI query parameters specified in table 5.2.6.3.3-1.

Table 5.2.6.3.3-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
snsai	Snsai	O	0..1	Identifies a Single Network Slice Selection Assistance Information
dnn	Dnn	O	0..1	Identifies an Data Network Name
fields	array(string)	C	1..N	When the NF consumer only retrieves a subset of the resource, the "fields" query parameter shall be included. The "fields" query parameter contains the pointers of the attribute(s) to be retrieved.

This method shall support the request data structures specified in table 5.2.6.3.3-2 and the response data structures and response codes specified in table 5.2.6.3.3-3.

Table 5.2.6.3.3-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.6.3.3-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
UsageMonData	M	1	200 Ok	Successful case. The usage monitoring data is returned.
n/a			204 No Content	The resource was found but no usage monitoring data is available.

NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.

5.2.7 Resource: SponsorConnectivityData

5.2.7.1 Description

The resource represents sponsored data connectivity related information stored in the UDR for a given sponsorId.

5.2.7.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/sponsor-connectivity-data/{sponsorId}

This resource shall support the resource URI variables defined in table 5.2.7.2-1.

Table 5.2.7.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1.
sponsorId	string and represents the sponsor identity.

5.2.7.3 Resource Standard Methods

5.2.7.3.1 GET

This method shall support the URI query parameters specified in table 5.2.7.3.1-1.

Table 5.2.7.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.7.3.1-2 and the response data structures and response codes specified in table 5.2.7.3.1-3.

Table 5.2.7.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.7.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
SponsorConnectivityData	M	1	200 OK	Upon success, a response body containing Sponsor Connectivity Data shall be returned.
n/a			204 No Content	The resource was found but no Sponsor Connectivity Data is available.

NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.

5.2.8 Resource: BdtData

5.2.8.1 Description

The resource represents background data transfer data stored in the UDR.

5.2.8.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/bdt-data

This resource shall support the resource URI variables defined in table 5.2.8.2-1.

Table 5.2.8.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1

5.2.8.3 Resource Standard Methods

5.2.8.3.1 GET

This method shall support the URI query parameters specified in table 5.2.8.3.1-1.

Table 5.2.8.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.8.3.1-2 and the response data structures and response codes specified in table 5.2.8.3.1-3.

Table 5.2.8.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.8.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
array(BdtData)	M	0..N	200 OK	Upon success, a response body containing the BDT data shall be returned. Each member of the array is an individual BDT data.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.9 Resource: IndividualBdtData

5.2.9.1 Description

The resource represents individual background data transfer data stored in the UDR for a given "bdtReferenceId".

5.2.9.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/bdt-data/{bdtReferenceId}

This resource shall support the resource URI variables defined in table 5.2.9.2-1.

Table 5.2.9.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1
bdtReferenceld	String and represents the transfer policy of background data transfer for provided ASP as defined in 3GPP TS 29.122 [9].

5.2.9.3 Resource Standard Methods

5.2.9.3.1 GET

This method shall support the URI query parameters specified in table 5.2.9.3.1-1.

Table 5.2.9.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.9.3.1-2 and the response data structures and response codes specified in table 5.2.9.3.1-3.

Table 5.2.9.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.9.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
BdtData	M	1	200 OK	Upon success, a response body containing the BDT data shall be returned.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.9.3.2 PUT

This method shall support the URI query parameters specified in table 5.2.9.3.2-1.

Table 5.2.9.3.2-1: 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 table 5.2.9.3.2-2 and the response data structures and response codes specified in table 5.2.9.3.2-3.

Table 5.2.9.3.2-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
BdtData	M	1	Create the BDT data for a given bdtReferenceld.

Table 5.2.9.3.2-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
BdtData	M	1	201 Created	Successful case. The resource has been successfully created.
ProblemDetails	M	1	403 Forbidden	The resource is not allowed to be updated. (NOTE 2)
NOTE 1: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				
NOTE 2: The "cause" attribute within the "ProblemDetails" data structure may be set to "UPDATE_NOT_ALLOWED" as defined in subclause 5.5.3.				

5.2.9.3.3 DELETE

This method shall support the URI query parameters specified in table 5.2.9.3.3-1.

Table 5.2.9.3.3-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.9.3.3-2 and the response data structures and response codes specified in table 5.2.9.3.3-3.

Table 5.2.9.3.3-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.9.3.3-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The resource has been successfully deleted.
NOTE: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.10 Resource: PolicyDataSubscriptions

5.2.10.1 Description

This resource is used to represent subscriptions to notification of policy data modification.

5.2.10.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/subs-to-notify

This resource shall support the resource URI variables defined in table 5.2.10.2-1.

Table 5.2.10.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1.

5.2.10.3 Resource Standard Methods

5.2.10.3.1 POST

This method shall support the URI query parameters specified in table 5.2.10.3.1-1.

Table 5.2.10.3.1-1: 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 5.2.10.3.1-2 and the response data structures and response codes specified in table 5.2.10.3.1-3.

Table 5.2.10.3.1-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
PolicyDataSubscription	M	1	Identifies the subscription to notification of policy data modification.

Table 5.2.10.3.1-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
PolicyDataSubscription	M	1	201 Created	Upon success, a response body containing a representation of each Individual subscription resource shall be returned. The HTTP response shall include a "Location" HTTP header that contains the resource URI of the created resource.
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.11 Resource: IndividualPolicyDataSubscription

5.2.11.1 Description

This resource is used to represent an individual subscription to notification of policy data modification.

5.2.11.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/subs-to-notify/{subId}

This resource shall support the resource URI variables defined in table 5.2.11.2-1.

Table 5.2.11.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1.
subId	The subId identifies an individual policy data subscription to notifications. The value is allocated by the UDR during creation of the PolicyDataSubscriptions resource.

5.2.11.3 Resource Standard Methods

5.2.11.3.1 PUT

This method shall support the URI query parameters specified in table 5.2.11.3.1-1.

Table 5.2.11.3.1-1: 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 table 5.2.11.3.1-2 and the response data structures and response codes specified in table 5.2.11.3.1-3.

Table 5.2.11.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
PolicyDataSubscription	M	1	Updates the subscription to notification of policy data modification.

Table 5.2.11.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
PolicyDataSubscription	M	1	200 OK	The individual subscription resource was updated successfully.
NOTE: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.11.3.2 DELETE

This method shall support the URI query parameters specified in table 5.2.11.3.2-1.

Table 5.2.11.3.2-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.2.11.3.2-2 and the response data structures and response codes specified in table 5.2.11.3.2-3.

Table 5.2.11.3.2-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			The request body shall be empty.

Table 5.2.11.3.2-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Upon success, an empty response body shall be returned.
NOTE: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.12 Resource: OperatorSpecificData

5.2.12.1 Description

This resource represents the UE's operator specific data.

This resource is modelled with the Document resource archetype (see subclause C.1 of 3GPP TS 29.501 [5]).

5.2.12.2 Resource Definition

Resource URI: {apiRoot}/nudr-dr/v1/policy-data/{ueId}/operator-specific-data

This resource shall support the resource URI variables defined in table 5.2.12.2-1.

Table 5.2.12.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1
ueld	Represents the Subscription Identifier SUPI or GPSI (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: "(imsi-[0-9]{5,15} nai-.+ msisdn-[0-9]{5,15} extid-.+ .+)"

5.2.12.3 Resource Standard Methods

5.2.12.3.1 GET

This method is used to retrieve operator specific data from the UDR.

This method shall support the URI query parameters specified in table 5.2.12.3.1-1.

Table 5.2.12.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
fields	array(string)	C	0..N	When the NF consumer only retrieves a subset of the resource, the "fields" query parameter shall be included. The "fields" query parameter contains the pointers of the attribute(s) to be retrieved.

This method shall support the request data structures specified in table 5.2.12.3.1-2 and the response data structures and response codes specified in table 5.2.12.3.1-3.

Table 5.2.12.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 5.2.12.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
map(OperatorSpecificDataContainer)	M	1..N	200 OK	Upon success, a response body containing a map shall be returned. The key of the map is operator specific data element name and the value is the operator specific data of the UE.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.12.3.2 PATCH

This method is used to modify operator specific data in the UDR.

This method shall support the URI query parameters specified in table 5.2.12.3.2-1.

Table 5.2.12.3.2-1: 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 5.2.12.3.2-2 and the response data structures and response codes specified in table 5.2.12.3.2-3.

Table 5.2.12.3.2-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
array(PatchItem)	M	1..N	Contains the delta data to the operator specific data

Table 5.2.12.3.2-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Upon successful modification there is no body in the response message.
ProblemDetails	M	1	403 Forbidden	One or more attributes are not allowed to be modified according to e.g. policy or local configuration. The invalidParams attribute shall contain the JSON pointers of attributes which are not allowed to be modified. The cause attribute shall be set to "UPDATE_NOT_ALLOWED" as defined in subclause 5.5.3.
NOTE: The mandatory HTTP error status codes for the PATCH method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.2.12.3.3 PUT

This method is used to modify operator specific data in the UDR.

This method shall support the URI query parameters specified in table 5.2.12.3.3-1.

Table 5.2.12.3.3-1: 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 table 5.2.12.3.3-2 and the response data structures and response codes specified in table 5.2.12.3.3-3.

Table 5.2.12.3.3-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
map(OperatorSpecificDataContainer)	M	1..N	Contains the delta data to the operator specific data

Table 5.2.12.3.3-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			200 OK	Upon successful modification there is no body in the response message.
ProblemDetails	M	1	403 Forbidden	One or more attributes are not allowed to be modified according to e.g. policy or local configuration. The invalidParams attribute shall contain the JSON pointers of attributes which are not allowed to be modified. The cause attribute shall be set to "UPDATE_NOT_ALLOWED" as defined in subclause 5.5.3.
NOTE: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.3 Notifications

5.3.1 General

This subclause describes the resources to provide notification to NF service consumers which have subscribed to be notified when policy data is changed.

5.3.2 Policy Data Change Notification

The POST method shall be used for policy data change notification and the URI shall be provided during the subscription procedure.

URI: {NotificationUri}

This method shall support the URI query parameters specified in table 5.3.2-1.

Table 5.3.2-1: URI query parameters supported by the POST method

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 5.3.2-2 and the response data structures and response codes specified in table 5.3.2-3.

Table 5.3.2-2: Data structures supported by the POST Request Body

Data type	P	Cardinality	Description
PolicyDataChangeNotification	M	1	Notification of policy data change.

Table 5.3.2-3: Data structures supported by the POST Response Body

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The reception of the notification is acknowledged.
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

5.4 Data Model

5.4.1 General

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

Table 5.4.1-1 specifies the data types defined for the Nudr service based interface protocol.

Table 5.4.1-1: Nudr specific Data Types for Policy Data

Data type	Section defined	Description	Applicability
AmPolicyData	5.4.2.2	Contains the AM policy data for a given subscriber.	
BdtData	5.4.2.9	Contains the background data transfer data.	
PolicyDataChangeNotification	5.4.2.11	Contains changed policy data for which notification was requested.	
PolicyDataSubscription	5.4.2.10	Identifies a subscription to policy data change notification.	
SmPolicyData	5.4.2.5	Contains SM policy data for a subscriber.	
SponsorConnectivityData	5.4.2.8	Contains the sponsored data connectivity related information for a sponsor identifier.	
UePolicySection	5.4.2.3	Contains the UE policy section.	
UePolicySet	5.4.2.4	Contains the UE policy set for a given subscriber.	
UsageMonLevel	5.4.3.3	Indicates the scope of the usage monitoring instance (PDU Session level or per Service)	
UsageMonData	5.4.2.7	Contains remain allowed usage data for a subscriber.	
UsageMonDataLimit	5.4.2.6	Contains usage monitoring control data for a subscriber.	

Table 5.4.1-2 specifies data types re-used by the Nudr service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nudr service based interface.

Table 5.4.1-2: Nudr re-used Data Types for Policy Data

Data type	Reference	Comments	Applicability
BitRate	3GPP TS 29.571 [7]	String representing a bit rate that shall be formatted as follows: pattern: " $^{\wedge}d+(\backslash.d+)?$ (bps Kbps Mbps Gbps Tbps)\$" Examples: "125 Mbps", "0.125 Gbps", "125000 Kbps" In an OpenAPI Specification [3] schema, the format shall be designated as "BitRate".	
Bytes	3GPP TS 29.571 [7]	String with format "byte" as defined in OpenAPI Specification [3], i.e. base64-encoded characters.	
ChargingInformation	3GPP TS 29.512 [12]	The address of the Charging Function.	
DurationSec	3GPP TS 29.571 [7]	Unsigned integer identifying a period of time in units of seconds. In an OpenAPI Specification [3] schema, the format shall be designated as "DurationSec".	
DateTime	3GPP TS 29.571 [7]	String with format "date-time" as defined in OpenAPI Specification [3].	
NetworkAreaInfo	3GPP TS 29.554 [13]	Represents a network area information.	
OperatorSpecificDataContainer	3GPP TS 29.505 [15]	Container for operator specific data	
PatchItem	3GPP TS 29.571 [7]	Data structure used for JSON patch.	
ProblemDetails	3GPP TS 29.571 [7]	Used in error responses to provide more detailed information about an error.	
SupportedFeatures	3GPP TS 29.571 [7]	Used to negotiate the applicability of the optional features	
TransferPolicy	3GPP TS 29.554 [13]	Represents a transfer policy.	
UsageThreshold	3GPP TS 29.122 [9]	Usage Thresholds.	

5.4.2 Structured data types

5.4.2.1 Introduction

This subclause defines the structures to be used in resource representations.

5.4.2.2 Type AmPolicyData

Table 5.4.2.2-1: Definiton of type AmPolicyData

Attribute name	Data type	P	Cardinality	Description
subscCats	array(string)	O	1..N	List of categories associated with the subscriber
uePolicySet	UePolicySet	O	0..1	Contains a list of UPSIs and the UE policy content for each UPSI.

5.4.2.3 Type UePolicySection

Table 5.4.2.3-1: Definiton of type UePolicySection

Attribute name	Data type	P	Cardinality	Description
uePolicySectionInfo	Bytes	M	1	Contains the UE Policy Section Information for the given UPSI
upsi	string	M	1	Identifier for UE Policy Section. The format is represented in 3GPP TS 24.501 [11] subclause D.6.2.

5.4.2.4 Type UePolicySet

Table 5.4.2.4-1: Definiton of type UePolicySet

Attribute name	Data type	P	Cardinality	Description
uePolicySections	map(UePolicySection)	O	1..N	Contains the UE Policy Sections. The UPSI is used as the key in the map.
upsis	array(string)	O	1..N	Identifier for UE Policy Section

5.4.2.5 Type SmPolicyData

Table 5.4.2.5-1: Definiton of type SmPolicyData

Attribute name	Data type	P	Cardinality	Description	Applicability
snsai	Snsai	M	1	S-NSSAI associated with the data	
dnn	Dnn	M	1	DNN associated with the data	
allowedServices	array(string)	O	1..N	List of subscriber's allowed service identifiers	
subscCats	array(string)	O	1..N	List of categories associated with the subscriber	
gbrUl	BitRate	O	0..1	Maximum aggregate UL bitrate that can be provided across all GBR QoS Flows in the DNN	
gbrDl	BitRate	O	0..1	Maximum aggregate DL bitrate that can be provided across all GBR QoS Flows in the DNN	
adcSupport	boolean	O	0..1	Indicates whether application detection and control can be enabled for a subscriber.	
subscSpendinglimits	boolean	O	0..1	Indicates whether the PCF must enforce policies based on subscriber spending limits	
ipv4Index	IpIndex	O	0..1	Information that identifies which IP pool or external server is used to allocate the IPv4 address.	
ipv6Index	IpIndex	O	0..1	Information that identifies which IP pool or external server is used to allocate the IPv6 address.	
offline	boolean	O	0..1	Indicates the online charging is applicable to the PDU session.	
online	boolean	O	0..1	Indicates the offline charging is applicable to the PDU session.	
chfInfo	ChargingInformation	O	0..1	The address of the Charging Function	
usageMonDataLimits	map(UsageMonDataLimit)	O	1..N	Contains a list of usage monitoring profiles associated with the subscriber. The monitoring key is used as the key in the map.	
usageMonData	map(UsageMonData)	O	1..N	Contains the remaining allowed usage data associated with the subscriber. The monitoring key is used as the key in the map.	
mpsPriority	integer	O	0..1	Indicates subscription to the MPS priority service; priority applies to all traffic on the PDU Session	
imsSignallingprio	integer	O	0..1	Indicates subscription to the IMS signalling priority service; priority only applies to IMS signalling traffic	
mpsPrioritylevel	integer	O	0..1	Relative priority level for the multimedia priority services	

5.4.2.6 Type UsageMonDataLimit

Table 5.4.2.6-1: Definition of type UsageMonDataLimit

Attribute name	Data type	P	Cardinality	Description
monKey	string	M	1	Identifies the usage monitoring control instance.
umLevel	UsageMonLevel	O	0..1	Indicates the scope of the usage monitoring instance (PDU Session level or per Service)
startDate	DateTime	O	0..1	Start date and time when the usage monitoring instance applies
endDate	DateTime	O	0..1	End date and time when the usage monitoring instance applies
usageLimit	UsageThresold	O	0..1	Maximum allowed traffic volume/time usage for a usage monitoring instance.
resetPeriod	DateTime	O	0..1	Time period to reset the accumulated consumed usage for a periodic usage monitoring instance (postpaid subscriptions)

5.4.2.7 Type UsageMonData

Table 5.4.2.7-1: Definition of type UsageMonData

Attribute name	Data type	P	Cardinality	Description	Applicability
monKey	string	M	1	Identifier to a usage monitoring control instance that includes one or more PCC rules	
umLevel	UsageMonLevel	O	0..1	Indicates the scope of the usage monitoring instance (PDU Session level or per Service)	
allowedUsage	UsageThresold	O	0..1	Remaining allowed traffic volume usage and/or resource time usage.	

5.4.2.8 Type SponsorConnectivityData

Table 5.4.2.8-1: Definition of type SponsorConnectivityData

Attribute name	Data type	P	Cardinality	Description
asplds	array(string)	M	1..N	Identifies a list of Application Service Provider Identifiers associated with the sponsor identity.

5.4.2.9 Type BdtData

Table 5.4.2.9-1: Definition of type BdtData

Attribute name	Data type	P	Cardinality	Description
aspld	string	M	1	This IE contains an identity of an application service provider.
transPolicy	TransferPolicy	M	1	This IE contains the transfer policy.
nwAreaInfo	NetworkAreaInfo	O	0..1	This IE represents a network area information.

5.4.2.10 Type PolicyDataSubscription

Table 5.4.2.10-1: Definition of type PolicyDataSubscription

Attribute name	Data type	P	Cardinality	Description
notificationUri	Uri	M	1	URI provided by the NF service consumer indicating where to receive the subscribed notifications from the UDR.
monitoredResourceUris	array(Uri)	M	1..N	A set of URIs that identify the resources for which a modification triggers a notification.
supportedFeatures	SupportedFeatures	M	1	Used to negotiate the applicability of the optional features.

5.4.2.11 Type PolicyDataChangeNotification

Table 5.4.2.11-1: Definition of type PolicyDataChangeNotification

Attribute name	Data type	P	Cardinality	Description
amPolicyData	AmPolicyData	O	0..1	Access and Mobility Policy Data, if changed and notification was requested.
uePolicySet	UePolicySet	O	0..1	UE Policy Set, if changed and notification was requested.
smPolicyData	SmPolicyData	O	0..1	Session Management Policy Data, if changed and notification was requested.
usageMonData	UsageMonData	O	0..1	Usage Monitoring Data, if changed and notification was requested.
sponsorConnectivityData	SponsorConnectivityData	O	0..1	Sponsor data connectivity profile information, if changed and notification was requested.
bdtData	BdtData	O	0..1	Background Data Transfer Data, if changed and notification was requested.

5.4.3 Simple data types and enumerations

5.4.3.1 Introduction

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

5.4.3.2 Simple data types

The simple data types defined in table 5.4.3.2-1 shall be supported.

Table 5.4.3.2-1: Simple data types

Type Name	Type Definition	Description	Applicability
IpIndex	integer	Information that identifies which IP pool or external server is used to allocate the IP address.	

5.4.3.3 Enumeration: UsageMonLevel

The enumeration represents the usage monitoring level. It shall comply with the provisions defined in table 5.4.3.3-1.

Table 5.4.3.3-1: Enumeration UsageMonLevel

Enumeration value	Description
SESSION_LEVEL	The usage monitoring is applicable for PDU session level.
SERVICE_LEVEL	The usage monitoring is applicable for service level.

5.5 Error handling

5.5.1 General

For the Nudr_DataRepository service API for Policy Data, HTTP error responses shall be supported as specified in subclause 4.8 of 3GPP TS 29.501 [2]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following subclauses are applicable for the Nudr_DataRepository service API for Policy Data.

5.5.2 Protocol Errors

No specific procedures for the Nudr_DataRepository service API for Policy Data are specified.

5.5.3 Application Errors

The application errors defined for the Nudr_DataRepository service API for Policy Data are listed in table 5.5.3-1. The PCF shall include in the HTTP status code a "ProblemDetails" data structure with the "cause" attribute indicating the application error as listed in table 5.5.3-1.

Table 5.5.3-1: Application errors

Application Error	HTTP status code	Description
UPDATE_NOT_ALLOWED	403 Forbidden	Indicates that The resource is not allowed to be updated.

5.6 Feature negotiation

The optional features in table 6.1.8-1 of 3GPP TS 29.504 [6] are defined for the Nudr_DataRepository API. They shall be negotiated using the extensibility mechanism defined in subclause 6.6 of 3GPP TS 29.500 [4].

6 Usage of Nudr_DataRepository Service API for Application Data

6.1 Introduction

The following subclauses specify the usage of Nudr_DataRepository service for application data. The principles specified in 3GPP TS 29.504 [6] are followed unless explicitly specified otherwise in the following subclauses.

6.2 Resources

6.2.1 Overview

This clause specifies the resources for the usage of the Unified Data Repository service for Application Data.

6.2.2 Resource Structure

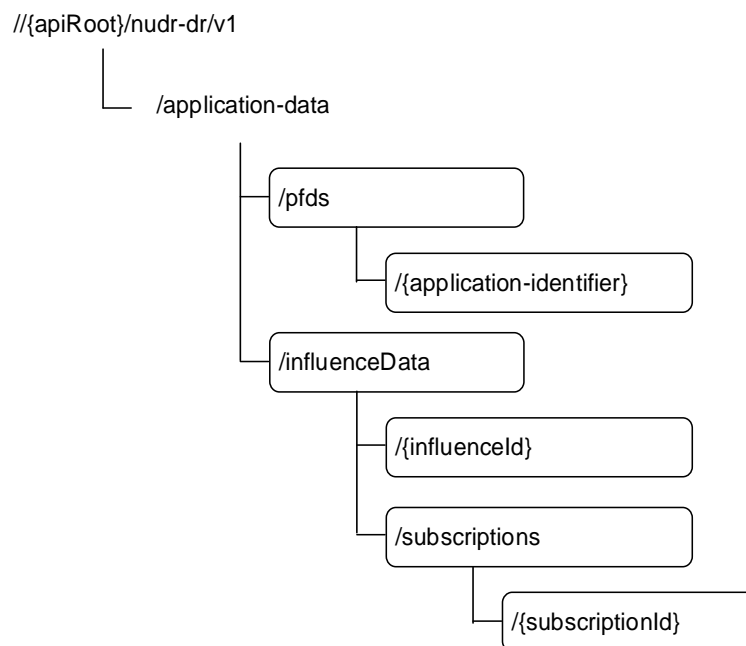


Figure 6.2.2-1: Resource URI structure of the Nudr_DataRepository API for application data

Table 6.2.2-1 provides an overview of the resources and applicable HTTP methods.

Table 6.2.2-1: Resources and methods overview

Resource name	Resource URI	HTTP method or custom operation	Description
PFD Data	{apiRoot}/nudr-dr/v1/application-data/pfds	GET	Retrieve PFDs for application identifier(s) identified by query parameter(s) Retrieve PFDs for all application identifier(s) if no query parameter is included in the resource URI the application data for a subscriber
Individual PFD Data	{apiRoot}/nudr-dr/v1/application-data/pfds/{application-identifier}	GET	Retrieve the corresponding PFDs of the specified application identifier
		DELETE	Delete the corresponding PFDs of the specified application identifier
		PUT	Create or update the corresponding PFDs for application identifier
Influence Data	{apiRoot}/nudr-dr/v1/application-data/influenceData	GET	Retrieve the Session Influence Data of a given S-NSSAI and DNN or Internal Group Identifier.
Individual Influence Data	{apiRoot}/nudr-dr/v1/application-data/influenceData/{influenceld}	PUT	Create an Influence Data identified by {influenceld}, or modify all of the properties of an individual Influence Data identified by {influenceld}
		PATCH	Modify part of the properties of an individual Influence Data identified by {influenceld}
		DELETE	Delete an individual Influence Data identified by {influenceld}
Influence Data Subscription	{apiRoot}/nudr-dr/v1/application-data/InfluenceData/subscriptions	POST	Create a new Individual Influence Data Subscription.
		GET	Read all the subscriptions.
Individual Influence Data Subscription	{apiRoot}/nudr-dr/v1/application-data/InfluenceData/subscriptions/{subscriptionId}	GET	Get an existing Influence Data Subscription identified by {subscriptionId}.
		PUT	Modify an existing Influence Data Subscription identified by {subscriptionId}.
		DELETE	Delete an Individual Influence Data Subscription identified by {subscriptionId}.

6.2.3 Resource: PFD Data

6.2.3.1 Description

The PFD Data resource represents all the PFD Datas to the Nudr_DataManagement Service at a given UDR.

6.2.3.2 Resource definition

Resource URI: **{apiRoot}/nudr-dr/v1/application-data/pfds**

Table 6.2.3.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See subclause 6.1

6.2.3.3 Resource Standard Methods

6.2.3.3.1 GET

This method shall support the URI query parameters specified in table 6.2.3.3.1-1.

Table 6.2.3.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
appld	array(ApplicationId)	O	0..N	Contains the information of the application identifier(s) for the querying PFD Data resource. If none appld is included in the URI, it applies to all application identifier(s) for the querying PFD Data resource.

This method shall support the request data structures specified in table 6.2.3.3.1-2 and the response data structures and response codes specified in table 6.2.3.3.1-3.

Table 6.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
array(PfdDataForApp)	M	0..N	200 OK	A representation of PFDs for request applications is returned.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

6.2.4 Resource: Individual PFD Data

6.2.4.1 Description

The Individual PFD Data resource represents Individual PFD Datas to the Nudr_DataManagement Service at a given UDR.

6.2.4.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/application-data/pfds/{application-identifier}

This resource shall support the resource URI variables defined in table 6.2.4.2-1.

Table 6.2.4.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See subclause 6.1
application-identifier	Indicate the application identifier for the request pfd(s). It shall apply the format of Data type ApplicationId.

6.2.4.3 Resource Standard Methods

6.2.4.3.1 GET

This method shall support the URI query parameters specified in table 6.2.4.3.1-1.

Table 6.2.4.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 6.2.4.3.1-2 and the response data structures and response codes specified in table 6.2.4.3.1-3.

Table 6.2.4.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.4.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
PfdDataForApp	M	1	200 OK	A representation of PFDs for the request application identified by the application-identifier is returned.
NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

6.2.4.3.2 DELETE

This method shall support the URI query parameters specified in table 6.2.4.3.2-1.

Table 6.2.4.3.2-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 6.2.4.3.2-2 and the response data structures and response codes specified in table 6.2.4.3.2-3.

Table 6.2.4.3.2-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.4.3.2-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No content	Successful case. The Individual PFD Data resource related to the application-identifier was deleted.
NOTE: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

6.2.4.3.3 PUT

This method shall support the URI query parameters specified in table 6.2.4.3.3-1.

Table 6.2.4.3.3-1: 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 table 6.2.4.3.3-2 and the response data structures and response codes specified in table 6.2.4.3.3-3.

Table 6.2.4.3.3-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
PfdDataForApp	M	1	Contains the information for the creation of a new PFD Data resource.

Table 6.2.4.3.3-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
PfdDataForApp	M	1	200 OK	Successful case. The creation or upgrade of an Individual PFD Data resource related to the application identifier is confirmed and a representation of that resource is returned.
NOTE: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

6.2.5 Resource: Influence Data

6.2.5.1 Description

The Influence Data resource represents a Traffic Influence Data to the Nudr_DataManagement Service at a given UDR.

6.2.5.2 Resource definition

Resource URI: `{apiRoot}/nudr-dr/v1/application-data/influenceData`

This resource shall support the resource URI variables defined in table 6.2.5.2-1.

Table 6.2.5.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See subclause 6.1

6.2.5.3 Resource Standard Methods

6.2.5.3.1 GET

This method shall support the URI query parameters specified in table 6.2.5.3.1-1.

Table 6.2.5.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
influenceId	array(string)	O	0..N	Each element identifies a service.
dnns	array(Dnn)	O	0..N	Each element identifies a DNN.
snsais	array(SliceInfo)	O	0..N	Each element identifies a slice.
internalGroupIds	array(string)	O	0..N	Each element identifies a group of users.
supi	array(Supi)	O	0..N	Each element identifies a user.
NOTE: At least one of the above attribute shall be provided.				

This method shall support the request data structures specified in table 6.2.5.3.1-2 and the response data structures and response codes specified in table 6.2.5.3.1-3.

Table 6.2.5.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.5.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
map(TrafficInfluData)	M	0..N	200 OK	The Traffic Influence Data stored in the UDR are returned.

6.2.6 Resource: Individual Influence Data

6.2.6.1 Description

The Individual Influence Data resource represents an Individual Traffic Influence Data to the Nudr_DataManagement Service at a given UDR.

6.2.6.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/application-data/influenceData/{influenceId}

This resource shall support the resource URI variables defined in table 6.2.6.2-1.

Table 6.2.6.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See subclause 6.1
influenceId	The Identifier of an Individual Influence Data to be updated. It shall apply the format of Data type string.

6.2.6.3 Resource Standard Methods

6.2.6.3.1 PUT

This method shall support the URI query parameters specified in table 6.2.6.3.1-1.

Table 6.2.6.3.1-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 6.2.6.3.1-2 and the response data structures and response codes specified in table 6.2.6.3.1-3.

Table 6.2.6.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
TrafficInfluData	M	1	The Traffic Influence Data to be stored in the UDR.

Table 6.2.6.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			200 OK	The update of an Individual Traffic Influence Data resource is confirmed.

6.2.6.3.2 PATCH

This method shall support the URI query parameters specified in table 6.2.6.3.2-1.

Table 6.2.6.3.2-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 6.2.6.3.2-2 and the response data structures and response codes specified in table 6.2.6.3.2-3.

Table 6.2.6.3.2-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
TrafficInfluDataPatch	M	1	The Traffic Influence Data to be updated in the UDR.

Table 6.2.6.3.2-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			200 OK	The update of an Individual Traffic Influence Data resource is confirmed.

6.2.6.3.3 DELETE

This method shall support the URI query parameters specified in table 6.2.6.3.3-1.

Table 6.2.6.3.3-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 6.2.6.3.3-2 and the response data structures and response codes specified in table 6.2.6.3.3-3.

Table 6.2.6.3.3-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.6.3.3-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The Individual Influence Data was deleted successfully.

6.2.7 Resource: Influence Data Subscription

6.2.7.1 Description

The Influence Data Subscription resource represents all Influence Data subscriptions to the Nudr_DataManagement Service at a given UDR.

6.2.7.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/application-data/influenceData/subscription

This resource shall support the resource URI variables defined in table 6.2.7.2-1.

Table 6.2.7.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See subclause 6.1

6.2.7.3 Resource Standard Methods

6.2.7.3.1 POST

This method shall support the URI query parameters specified in table 6.2.7.3.1-1.

Table 6.2.7.3.1-1: 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 6.2.7.3.1-2 and the response data structures and response codes specified in table 6.2.7.3.1-3.

Table 6.2.7.3.1-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
TrafficInfluSub	M	1	Parameters to register a subscription to Traffic Influence Data

Table 6.2.7.3.1-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
TrafficInfluSub	M	1	201 Created	The subscription was created successfully.

6.2.7.3.2 GET

This method shall support the URI query parameters specified in table 6.2.7.3.2-1.

Table 6.2.7.3.2-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
afServiceId	string	C	0..1	Identifies a service.
dnn	Dnn	C	0..1	Identifies a DNN. (NOTE)
snssai	SliceInfo	C	0..1	Identifies a slice. (NOTE)
externalGroupId	ExternalGroupId	C	0..1	Identifies a group of users. (NOTE)
externalId	ExternalId	C	0..1	Identifies a user. (NOTE)
gpsi	Gpsi	C	0..1	Identifies a user. (NOTE)

NOTE: One of afServiceId, snssai and DNN, individual UE identifier (i.e. "gpsi" or "externalId"), or External Group Identifier (i.e. "externalGroupId") shall be included.

This method shall support the request data structures specified in table 6.2.7.3.2-2 and the response data structures and response codes specified in table 6.2.7.3.2-3.

Table 6.2.7.3.2-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.7.3.2-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
array(TrafficInfluSub)	M	0..N	200 OK	The subscription information as request in the request URI query parameter(s) are returned.

6.2.8 Resource: Individual Influence Data Subscription

6.2.8.1 Description

The Individual Influence Data Subscription resource represents a single Influence Data subscription to the Nudr_DataManagement Service at a given UDR.

6.2.8.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/application-data/influenceData/subscription/{subscriptionId}

This resource shall support the resource URI variables defined in table 6.2.8.2-1.

Table 6.2.8.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See subclause 6.1
subscriptionId	String identifying a subscription to the Individual Influence Data Subscription

6.2.8.3 Resource Standard Methods

6.2.8.3.1 GET

This method shall support the URI query parameters specified in table 6.2.8.3.1-1.

Table 6.2.8.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 6.2.8.3.1-2 and the response data structures and response codes specified in table 6.2.8.3.1-3.

Table 6.2.8.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.8.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
TrafficInfluSub	M	1	200 OK	The subscription information is returned.

6.2.8.3.2 PUT

This method shall support the URI query parameters specified in table 6.2.8.3.2-1.

Table 6.2.8.3.2-1: 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 table 6.2.8.3.2-2 and the response data structures and response codes specified in table 6.2.8.3.2-3.

Table 6.2.8.3.2-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
TrafficInfluSubPatch	M	1	Modify an existing subscription to Traffic Influence Data.

Table 6.2.8.3.2-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
TrafficInfluSub	M	1	200 OK	The subscription was updated successfully.

6.2.8.3.3 DELETE

This method shall support the URI query parameters specified in table 6.2.8.3.3-1.

Table 6.2.8.3.3-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 6.2.8.3.3-2 and the response data structures and response codes specified in table 6.2.8.3.3-3.

Table 6.2.8.3.3-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.8.3.3-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The subscription was terminated successfully.

6.3 Notifications

6.3.1 General

Notifications shall comply with subclause 6.2 of 3GPP TS 29.500 [4] and subclause 4.6.2.3 of 3GPP TS 29.501 [2].

Table 6.3.1-1: Notifications

Custom operation URI	Mapped HTTP method	Description
{pfdUpdateNotifyUri}	POST	One of notification reference provided by the service consumer during the retrieval or subscription of the PFD Data or the Individual PFD Data. Or the callbackReference of one of the service consumer selected in the same group as discovered during the NRF discovery procedure.
{InfluenceDataUpdateNotifyUri}	POST	One of notification reference provided by the service consumer during the retrieval or subscription of the AF Influence Data or the Individual Influence Data. Or the callbackReference of one of the service consumer selected in the same group as discovered during the NRF discovery procedure.

6.3.2 PFDs Update Notification

6.3.2.1 Description

The PFDs Update Notification is used by the UDR to report one or several observed PFD(s) to a NF service consumer that has subscribed to such Notifications.

6.3.2.2 Operation Definition

URI: {pfdUpdateNotifyUri}

The operation shall support the URI variables defined in table 6.3.2.2-1, the request data structures specified in table 6.3.2.2-2 and the response data structure and response codes specified in table 6.3.2.2-3.

Table 6.3.2.2-1: URI variables

Name	Definition
pfdUpdateNotifyUri	String formatted as URI as Data type Uri. One of notification reference provided by the service consumer during the retrieval or subscription of the PFD Data or the Individual PFD Data. Or the callbackReference of one of the service consumer selected in the same group as discovered during the NRF discovery procedure.

Table 6.3.2.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
map(PfdData)	M	1..N	Provides Information about observed PFD(s).

Table 6.3.2.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The receipt of the Notification is acknowledged.

6.3.3 Influence Data Update Notification

6.3.3.1 Description

The Influence Update Notification is used by the UDR to report one or several observed Influence Data(s) to a NF service consumer that has subscribed to such Notifications.

6.3.3.2 Operation Definition

URI: {InfluenceDataUpdateNotifyUri}

The operation shall support the URI variables defined in table 6.3.3.2-1, the request data structures specified in table 6.3.3.2-2 and the response data structure and response codes specified in table 6.3.3.2-3.

Table 6.3.3.2-1: URI variables

Name	Definition
InfluenceDataUpdateNotifyUri	One of notification reference provided by the service consumer during the retrieval or subscription of the AF Influence Data or the Individual Influence Data. Or the callbackReference of one of the service consumer selected in the same group as discovered during the NRF discovery procedure.

Table 6.3.3.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
array(InfluenceData)	M	1..N	Provides Information about observed Influence Data (s).

Table 6.3.3.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The receipt of the Notification is acknowledged.

6.4 Data Model

6.4.1 General

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

Table 6.4.1-1 specifies the data types defined for the Nudr_DataRepository Service API for Application Data service based interface protocol.

Table 6.4.1-1: Nudr specific Data Types for Application Data

Data type	Section defined	Description	Applicability

Table 6.4.1-2 specifies data types re-used by the Nudr_DataRepository Service API for Application Data service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nudr_DataRepository Service API for Application Data service based interface.

Table 6.4.1-2: Nudr re-used Data Types for Application Data

Data type	Reference	Comments	Applicability
ApplicationId	3GPP TS 29.571 [7]	Indicates an application identifier.	
DateTime	3GPP TS 29.571 [7]	Indicates a date and time.	
Dnai	3GPP TS 29.571 [7]	Identifies a Data network access identifier.	
Dnn	3GPP TS 29.571 [7]	Identifies a Data Network Name.	
EthFlowDescription	3GPP TS 29.514 [16]	Contains the Ethernet data flow information.	
FlowInfo	3GPP TS 29.122 [9]	Contains the flow information.	
NetworkAreaInfo	3GPP TS 29.554 [13]	Describes a network area information	
PfdDataForApp	3GPP TS 29.551 [8]	Identifies the PFDs for one application identifier	
Snsai	3GPP TS 29.571 [7]	Identifies a Single Network Slice Selection Assistance Information	
Supi	3GPP TS 29.571 [7]	Identifies a SUPI that shall contain either an IMSI or an NAI	
TrafficRoute	3GPP TS 29.522 [14]	Identifies the N6 traffic routing requirement.	
Uri	3GPP TS 29.571 [7]	Identifies a URI.	

6.4.2 Structured data types

6.4.2.1 Introduction

This subclause defines the structures to be used in resource representations.

6.4.2.2 Type TrafficInfluData

Table 6.4.2.2-1: Definition of type TrafficInfluData

Attribute name	Data type	P	Cardinality	Description	Applicability
intTransId	string	O	0..1	Identifies a transaction generated by the NEF.	
appReloInd	boolean	O	0..1	Identifies whether an application can be relocated once a location of the application has been selected.	
dnn	Dnn	O	0..1	Identifies a DNN	
ethTrafficFilters	array(EthFlowDescription)	O	1..N	Identifies Ethernet packet filters. (NOTE)	
snssai	Snssai	O	0..1	The identification of slice.	
interGroupId	string	O	0..1	Identifies a group of users.	
supi	Supi	O	0..1	Identifies a user.	
trafficFilters	array(FlowInfo)	O	1..N	Identifies IP packet filters. (NOTE)	
trafficRoutes	array(TrafficRoute)	M	1..N	Identifies the N6 traffic routing requirement.	
validStartTime	DateTime	O	0..1	Identifies when the traffic routings are start to be applicable.	
validEndTime	DateTime	O	0..1	Identifies when the traffic routings are not applicable.	
nwAreaInfo	NetworkAreaInfo	O	0..1	Identifies a network area information that the request applies only to the traffic of UE(s) located in this specific zone.	
NOTE: Either "trafficFilters" or "ethTrafficFilters" shall be included if applicable.					

6.4.2.3 Type TrafficInfluDataPatch

Table 6.4.2.3-1: Definition of type TrafficInfluDataPatch

Attribute name	Data type	P	Cardinality	Description	Applicability
intTransId	string	O	0..1	Identifies a transaction generated by the NEF.	
appReloInd	boolean	O	0..1	Identifies whether an application can be relocated once a location of the application has been selected.	
dnn	Dnn	O	0..1	Identifies a DNN.	
snssai	Snssai	O	0..1	The identification of slice	
internalGroupId	string	O	0..1	Identifies a group of users.	
ethTrafficFilters	array(EthFlowDescription)	O	1..N	Identifies Ethernet packet filters. (NOTE)	
supi	Supi	O	0..1	Identifies a user.	
trafficFilter	array(FlowInfo)	O	1..N	Identifies a IP packet filter (NOTE)	
trafficRoutes	array(TrafficRoute)	O	0..N	Identifies the N6 traffic routing requirement.	
validStartTime	DateTime	O	0..1	Identifies when the traffic routings are start to be applicable.	
validEndTime	DateTime	O	0..1	Identifies when the traffic routings are not applicable.	
nwAreaInfo	NetworkAreaInfo	O	0..1	Identifies a network area information that the request applies only to the traffic of UE(s) located in this specific zone.	
NOTE: Either "trafficFilters" or "ethTrafficFilters" shall be included if applicable.					

6.4.2.4 Type TrafficInfluSub

Table 6.4.2.4-1: Definition of type TrafficInfluSub

Attribute name	Data type	P	Cardinality	Description	Applicability
dnns	array(Dnn)	O	0..N	Each element identifies a DNN.	
snssais	array(Snssai)	O	0..N	Each element identifies a slice.	
internalGroupIds	array(string)	O	0..N	Each element identifies a group of users.	
supis	array(Supi)	O	0..N	Each element identifies the user.	

NOTE: At least one of the above attribute shall be provided.

6.4.2.5 Type TrafficInfluSubPatch

Table 6.4.2.5-1: Definition of type TrafficInfluSubPatch

Attribute name	Data type	P	Cardinality	Description	Applicability
dnns	array(Dnn)	O	0..N	Each element identifies the DNNs.	
snssais	array(Snssai)	O	0..N	Each element identifies the slices.	
internalGroupIds	array(string)	O	0..N	Each element identifies a group of users.	
supis	array(Supi)	O	0..N	Each element identifies the users.	

NOTE: At least one of the above attribute shall be provided.

6.5 Error handling

6.5.1 General

HTTP error handling shall be supported as specified in subclause 5.2.4 of 3GPP TS 29.500 [4].

For the Nudr_DataRepository Service API for Application Data, HTTP error responses shall be supported as specified in subclause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4]. In addition, the requirements in the following subclauses shall apply.

6.5.2 Protocol Errors

In this Release of the specification, there are no additional protocol errors applicable for the Nudr_DataRepository Service API for Application Data.

6.5.3 Application Errors

The application errors defined for the Nudr_DataRepository Service API for Application Data are listed in table 6.5.3-1. The PCF shall include in the HTTP status code a "ProblemDetails" data structure with the "cause" attribute indicating the application error as listed in table 6.5.3-1.

Table 6.5.3-1: Application errors

Application Error	HTTP status code	Description

6.6 Feature negotiation

The optional features in table 6.1.8-1 of 3GPP TS 29.504 [6] are defined for the Nudr_DataRepository API. They shall be negotiated using the extensibility mechanism defined in subclause 6.6 of 3GPP TS 29.500 [4].

7 Usage of Nudr_DataRepository Service API for Structured Data for Exposure

7.1 Introduction

The following subclauses specify the usage of Nudr_DataRepository service for exposure data. The principles specified in 3GPP TS 29.504 [6] are followed unless explicitly specified otherwise in the following subclauses.

7.2 Resources

7.2.1 Overview

This clause specifies the resources for the usage of the Unified Data Repository service for Structured Data for Exposure.

7.2.2 Resource Structure

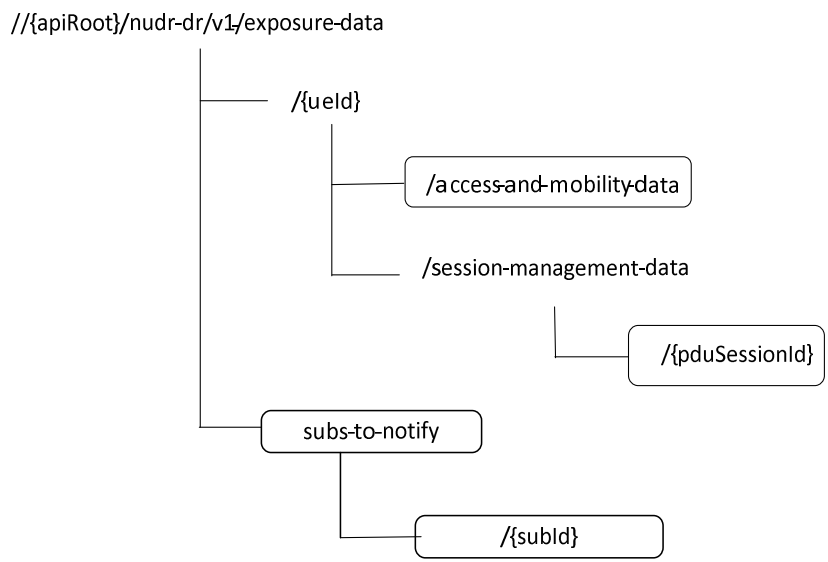


Figure 7.2.2-1: Resource URI structure of the Nudr_DataRepository API for exposure data

Table 7.2.2-1 provides an overview of the resources and applicable HTTP methods.

Table 7.2.2-1: Resources and methods overview

Resource name	Resource URI	HTTP method	Description
AccessAndMobilityData	exposure-data/{ueld}/access-and-mobility-data	PUT	Creates and updates the access and mobility exposure data for a UE
		GET	Retrieves the access and mobility exposure data for a UE
		DELETE	Deletes the access and mobility exposure data for a UE
PduSessionManagementData	exposure-data/{ueld}/session-management-data/{pduSessionId}	PUT	Creates and updates the session management data for a UE and for an individual PDU session
		GET	Retrieves the session management data for a UE and for an individual PDU session
		DELETE	Deletes the session management data for a UE and for an individual PDU session
ExposureDataSubscriptions	{apiRoot}/nudr-dr/v1/exposure-data/subs-to-notify	POST	Create a subscription to receive notification of exposure data changes.
IndividualExposureDataSubscription	{apiRoot}/nudr-dr/v1/exposure-data/subs-to-notify/{subId}	PUT	Modify a subscription to receive notification of exposure data changes.
		DELETE	Delete the subscription identified by {subId}.

7.2.3 Resource: AccessAndMobilityData

7.2.3.1 Description

This resource represents the exposure data related to access and mobility.

7.2.3.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/exposure-data/{ueld}/access-and-mobility-data

This resource shall support the resource URI variables defined in table 7.2.3.2-1.

Table 7.2.3.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1.
ueld	Represents the SUPI or GPSI. pattern: "(imsi-[0-9]{5,15} nai-.+ msisdn-[0-9]{5,15} extid-.+ .+)".

7.2.3.3 Resource Standard Methods

7.2.3.3.1 PUT

This method shall support the URI query parameters specified in table 7.2.3.3.1-1.

Table 7.2.3.3.1-1: 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 table 7.2.3.3.1-2 and the response data structures and response codes specified in table 7.2.3.3.1-3.

Table 7.2.3.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
AccessAndMobilityData	M	1	Access and mobility data for the UE is created.

Table 7.2.3.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
AccessAndMobilityData	M	1	201 Created	Upon success, a response body is returned containing a representation of the access and mobility data.
NOTE: The HTTP status code for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.3.3.2 GET

This method shall support the URI query parameters specified in table 7.2.3.3.2-1.

Table 7.2.3.3.2-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
supp-feat	SupportedFeatures	O	0..1	see 3GPP TS 29.500 [4] subclause 6.6

This method shall support the request data structures specified in table 7.2.3.3.2-2 and the response data structures and response codes specified in table 7.2.3.3.2-3.

Table 7.2.3.3.2-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 7.2.3.3.2-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
AccessAndMobilityData	M	1	200 OK	The response body contains the access and mobility data.
NOTE: The HTTP status code for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.3.3.3 DELETE

This method shall support the URI query parameters specified in table 7.2.3.3.3-1.

Table 7.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 7.2.3.3.3-2 and the response data structures and response codes specified in table 7.2.3.3.3-3.

Table 7.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 7.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Upon success, an empty response body shall be returned.
NOTE: The HTTP status code for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.4 Resource: PduSessionManagementData

7.2.4.1 Description

This resource represents the exposure data related to session and management data for a given subscriber and a given PDU session.

7.2.4.2 Resource definition

Resource URI: {apiRoot}/nudr-dr/v1/exposure-data/{ueId}/session-management-data/{pduSessionId}

This resource shall support the resource URI variables defined in table 7.2.4.2-1.

Table 7.2.4.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1
ueId	Represents the SUPI or GPSI. pattern: "(imsi-[0-9]{5,15} nai-+ msisdn-[0-9]{5,15} extid-+ .+)")
pduSessionId	Identifies an individual PDU session

7.2.4.3 Resource Standard Methods

7.2.4.3.1 PUT

This method shall support the URI query parameters specified in table 7.2.4.3.1-1.

Table 7.2.4.3.1-1: 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 table 7.2.4.3.1-2 and the response data structures and response codes specified in table 7.2.4.3.1-3.

Table 7.2.4.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
PduSessionManagementData	M	1	Session management data for a UE and a PDU session is created.

Table 7.2.4.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response Codes	Description
PduSessionManagementData	M	1	201 Created	Upon success, a response body is returned containing a representation of the session management data.
NOTE: The HTTP status code for the PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.4.3.2 GET

This method shall support the URI query parameters specified in table 7.2.4.3.2-1.

Table 7.2.5.3.2-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description
ipv4-addr	Ipv4Addr	O	0..1	UE IPv4 address.
ipv6-prefix	Ipv6Prefix	O	0..1	UE IPv6 prefix.
dnn	Dnn	O	0..1	Identifies a DNN
fields	array(string)	C	1..N	When the NF consumer only retrieves a subset of the resource, the "fields" query parameter shall be included. The "fields" query parameter contains the pointers of the attribute(s) to be retrieved.
supp-feat	SupportedFeatures	O	0..1	see 3GPP TS 29.500 [4] subclause 6.6

This method shall support the request data structures specified in table 7.2.4.3.2-2 and the response data structures and response codes specified in table 7.2.4.3.2-3.

Table 7.2.4.3.2-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 7.2.4.3.2-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response Codes	Description
PduSessionManagementData	M	1	200 OK	The response body contains the session management data.
NOTE: The HTTP status code for the GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.4.3.3 DELETE

This method shall support the URI query parameters specified in table 7.2.4.3.3-1.

Table 7.2.4.3.3-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 7.2.4.3.3-2 and the response data structures and response codes specified in table 7.2.4.3.3-3.

Table 7.2.4.3.3-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 7.2.4.3.3-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Upon success, an empty response body shall be returned.
NOTE: The HTTP status code for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.5 Resource: ExposureDataSubscriptions

7.2.5.1 Description

This resource is used to represent subscriptions to notifications of exposure data modifications.

7.2.5.2 Resource Definition

Resource URI: {apiRoot}/nudr-dr-exposure-data/v1/subs-to-notify

This resource shall support the resource URI variables defined in table 7.2.5.2-1.

Table 7.2.5.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1

7.2.5.3 Resource Standard Methods

7.2.5.3.1 POST

This method shall support the URI query parameters specified in table 7.2.5.3.1-1.

Table 7.2.5.3.1-1: 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 7.2.5.3.1-2 and the response data structures and response codes specified in table 7.2.5.3.1-3.

Table 7.2.5.3.1-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
ExposureDataSubscription	M	1	Identifies an individual subscription to notifications of exposure data modifications.

Table 7.2.5.3.1-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
ExposureDataSubscription	M	1	201 Created	Upon success, a response body containing a representation of the Individual subscription resource shall be returned. The HTTP response shall include a "Location" HTTP header that contains the resource URI of the created resource.
NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.6 Resource: IndividualExposureDataSubscription

7.2.6.1 Description

This resource represents an individual subscription to notifications of exposure data modifications.

7.2.6.2 Resource Definition

Resource URI: {apiRoot}/nudr-dr-exposure-data/v1/subs-to-notify/{subId}

This resource shall support the resource URI variables defined in table 7.2.6.2-1.

Table 7.2.6.2-1: Resource URI variables for this resource

Name	Definition
apiRoot	See 3GPP TS 29.504 [6] subclause 6.1.1
subId	The subId is a string that identifies an individual subscription to notifications. The value is allocated by the UDR during creation of the IndividualSubscriptionDataSubscription resource.

7.2.6.3 Resource Standard Methods

7.2.6.3.1 PUT

This method shall support the URI query parameters specified in table 7.2.6.3.1-1.

Table 7.2.6.3.1-1: 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 table 7.2.6.3.1-2 and the response data structures and response codes specified in table 7.2.6.3.1-3.

Table 7.2.6.3.1-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
ExposureDataSubscription	M	1	Identifies an individual subscription to notifications of exposure data modifications.

Table 7.2.6.3.1-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a	M	1	200 OK	The individual subscription resource was updated successfully.
NOTE: The mandatory HTTP error status codes for the PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.2.6.3.2 DELETE

This method shall support the URI query parameters specified in table 7.2.6.3.2-1.

Table 7.2.6.3.1-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description
n/a				

This method shall support the request data structures specified in table 7.2.6.3.2-2 and the response data structures and response codes specified in table 7.2.6.3.2-3.

Table 7.2.6.3.2-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			The request body shall be empty.

Table 7.2.6.3.2-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Upon success, an empty response body shall be returned.
NOTE: The mandatory HTTP error status codes for the DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

7.3 Data Model

7.3.1 General

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

Table 7.3.1-1 specifies the data types defined for the Nudr service based interface protocol.

Table 7.3.1-1: Nudr specific Data Types for Exposure Data

Data type	Section defined	Description	Applicability
AccessAndMobilityData	7.3.2.2		
ExposureDataChangeNotification	7.3.2.5	Contains changed exposure data for one UE for which Notification was requested.	
ExposureDataSubscription	7.3.2.4	Subscription to Notifications about Exposure Data	
PduSessionManagementData	7.3.2.3		
PduSessionStatus	7.3.3.2.1	Represents the state of the PDU session, i.e. active or released.	

Table 7.3.1-2 specifies data types re-used by the Nudr service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the N_{<NF>} service based interface.

Table 7.3.1-2: Nudr re-used Data Types for Exposure Data

Data type	Reference	Comments	Applicability
AccessType	3GPP TS 29.571 [7]	Identifies the access type, i.e. 3GPP access or Non-3GPP access.	
CmlInfo	3GPP TS 29.518 [10]	Describes the connectivity management state of a UE.	
DateTime	3GPP TS 29.571 [7]		
Dnai	3GPP TS 29.571 [7]	Identifies a Data network access identifier.	
Dnn	3GPP TS 29.571 [7]	Identifies a Data Network Name.	
Ipv4Addr	3GPP TS 29.571 [7]	The IPv4 Address.	
Ipv6Prefix	3GPP TS 29.571 [7]	The Ipv6 Address Prefix.	
PduSessionId	3GPP TS 29.571 [7]	Identifies a PDU session.	
PlmnId	3GPP TS 29.571 [7]	Identifies a PLMN.	
RatType	3GPP TS 29.571 [7]	Identifies a RAT type.	
RmlInfo	3GPP TS 29.518 [10]	Describes the registration management state of a UE.	
RouteToLocation	3GPP TS 29.571 [7]	A traffic route to/from an DNAI	
TimeZone	3GPP TS 29.571 [7]	Identifies a time zone.	
SmsSupport	3GPP TS 29.518 [10]	Indicates the supported SMS delivery of a UE.	
SupportedFeatures	3GPP TS 29.571 [11]	Used to negotiate the applicability of the optional features	
UeReachability	3GPP TS 29.518 [10]	Describes the reachability of the UE.	
Uri	3GPP TS 29.571 [7]		
UserLocation	3GPP TS 29.571 [7]	Identifies the user location.	
VarUeld	3GPP TS 29.571 [7]	String represents the SUPI or GPSI.	

7.3.2 Structured data types

7.3.2.1 Introduction

This subclause defines the structures to be used in resource representations.

7.3.2.2 Type AccessAndMobilityData

Table 7.3.2.2-1: Definition of type AccessAndMobilityData

Attribute name	Data type	P	Cardinality	Description	Applicability
location	UserLocation	O	0..1	Current location for the UE, which can be a combination of E-UTRA, NR and non-3GPP access location.	
locationTs	DateTime	O	0..1	Indicates when the location was last updated.	
timeZone	TimeZone	O	0..1	Current time zone for the UE.	
timeZoneTs	DateTime	O	0..1	Indicates when the timeZone was last updated.	
accessType	AccessType	O	0..1	Current access type for the UE (3GPP access or non-3GPP access).	
accessTypeTs	DateTime	O	0..1	Indicates when the accessType was last updated.	
regStates	array(RmInfo)	O	1..N	Describes the registration management state of the UE.	
regStatesTs	DateTime	O	0..1	Indicates when the regStates were last updated.	
connStates	array(CmInfo)	O	1..N	Describes the connectivity management state of the UE.	
connStatesTs	DateTime	O	0..1	Indicates when the connStates were last updated.	
reachabilityStatus	UeReachability	O	0..1	Describes the reachability of the UE.	
reachabilityStatusTs	DateTime	O	0..1	Indicates when the reachabilityStatus was last updated.	
smsOverNasStatus	SmsSupport	O	0..1	Indicates the supported SMS delivery of the UE.	
smsOverNasStatusTs	DateTime	O	0..1	Indicates when the smsOverNasStatus was last updated.	
roamingStatus	boolean	O	0..1	True: The serving PLMN of the UE is different from the HPLMN of the UE; False: The serving PLMN of the UE is the HPLMN of the UE.	
roamingStatusTs	DateTime	O	0..1	Indicates when the roamingStatus was last updated.	
currentPlmn	PlmnId	O	0..1	The identity of the PLMN serving the UE.	
currentPlmnTs	DateTime	O	0..1	Indicates when the currentPlmn was last updated.	
ratTypes	array(RatType)	O	1..N	RAT type(s)	
ratTypesTs	DateTime	O	0..1	Indicates when the ratTypes was last updated.	

7.3.2.3 Type PduSessionManagementData

Table 7.3.2.3-1: Definition of type PduSessionManagementData

Attribute name	Data type	P	Cardinality	Description	Applicability
pduSessionStatus	PduSessionStatus	O	0..1	Status of the PDU session.	
pduSessionStatusTs	DateTime	O	0..1	Indicates when the pduSessionStatus was last updated	
dnai	Dnai	O	0..1	DNAI	
dnaiTs	DateTime	O	0..1	Indicates when the dnai was last updated	
n6TrafficRoutingInfo	array(RouteToLocation)	O	1..N	N6 traffic routing information.	
n6TrafficRoutingInfoTs	DateTime	O	0..1	Indicates when the n6TrafficRoutingInfo was last updated	
ipv4Addr	Ipv4Addr	O	0..1	UE IPv4 address.	
ipv6Prefix	array(Ipv6Prefix)	O	1..N	UE IPv6 prefix.	
IpAddrTs	DateTime	O	0..1	Indicates when the ipv4Addr and Ipv6Prefix were last updated	
dnn	Dnn	O	0..1	DNN	

7.3.2.4 Type: ExposureDataSubscription

Table 7.3.2.4-1: Definition of type ExposureDataSubscription

Attribute name	Data type	P	Cardinality	Description
notificationUri	Uri	M	1	URI provided by the NF service consumer indicating where to receive subscribed notifications from the UDR.
monitoredResourceUris	array(Uri)	M	1..N	A set of URIs that identify the resources for which a modification triggers a notification.
supportedFeatures	SupportedFeatures	M	1	Used to negotiate the applicability of the optional features.

7.3.2.5 Type: ExposureDataChangeNotification

Table 7.3.2.5-1: Definition of type ExposureDataChangeNotification

Attribute name	Data type	P	Cardinality	Description
ueld	string	O	0..1	User identity of modified data.
accessAndMobilityData	AccessAndMobilityData	O	0..1	Access and Mobility Data for the UE.
pduSessionManagementData	array(PduSessionManagementData)	O	1..N	PDU Session Management Data for one or several PDU sessions of the UE.

7.3.3 Simple data types and enumerations

7.3.3.1 Introduction

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

7.3.3.2 Simple data types

The simple data types defined in table 7.3.3.2-1 shall be supported.

Table 7.3.3.2-1: Simple data types

Type Name	Type Definition	Description	Applicability
Dnai	string		

7.3.3.2.1 Enumeration: PduSessionStatus

Table 7.3.3.2.1-1: Enumeration PduSessionStatus

Enumeration value	Description	Applicability
"ACTIVE"		
"RELEASED"		

7.4 Error handling

7.4.1 General

For the Nudr_DataRepository service API for Exposure Data, HTTP error responses shall be supported as specified in subclause 4.8 of 3GPP TS 29.501 [2]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following subclauses are applicable for the Nudr_DataRepository service API for Exposure Data.

7.4.2 Protocol Errors

No specific procedures for the Nudr_DataRepository service API for Exposure Data are specified.

7.4.3 Application Errors

The application errors defined for the Nudr_DataRepository service API for Exposure Data are listed in table 7.4.3-1.

Table 7.4.3-1: Application errors

Application Error	HTTP status code	Description

7.5 Feature negotiation

The optional features in table 6.1.8-1 of 3GPP TS 29.504 [6] are defined for the Nudr_DataRepository API. They shall be negotiated using the extensibility mechanism defined in subclause 6.6 of 3GPP TS 29.500 [4].

7.6 Notifications

7.6 General

This subclause describes the resources to provide Notification to NF service consumers which have subscribed to be notified when data is changed.

7.6 Exposure Data Change Notification

The POST method shall be used for Data Change Notifications and the URI shall be as provided during the subscription procedure.

Resource URI: {callbackReference}

Support of URI query parameters is specified in table 7.6.2-1.

Table 7.6.2-1: URI query parameters supported by the POST method

Name	Data type	P	Cardinality	Description
n/a				

Support of request data structures is specified in table 7.6.2-2 and of response data structures and response codes is specified in table 7.6.2-3.

Table 7.6.2-2: Data structures supported by the POST Request Body

Data type	P	Cardinality	Description
Array(ExposureDataChangeNotification)	M	1..N	Each element in the array provides the changed exposure data for one user.

Table 7.6.2-3: Data structures supported by the POST Response Body

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Upon success, an empty response body shall be returned.
NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Annex A (normative): OpenAPI specification

A.1 General

The present Annex contains an OpenAPI [3] specification of HTTP messages and content bodies used by the Nudr_DataRepository service for Policy Data, Application Data and Exposure Data.

In case of conflicts between the main body of the present document and the present Annex, the information in the main body shall be applicable.

A.2 Nudr_DataRepository API for Policy Data

For the purpose of referencing entities in the Open API file defined in this Annex, it shall be assumed that this Open API file is contained in a physical file named "TS29519_Policy_Data.yaml".

```

openapi: 3.0.0
info:
  version: '-'
  title: 'Unified Data Repository Service API file for policy data'
  description: 'The API version is defined in 3GPP TS 29.504'

paths:
  /policy-data/{ueId}/am-data:
    parameters:
      - name: ueId
        in: path
        required: true
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    get:
      responses:
        '200':
          description: Upon success, a response body containing access and mobility policies shall
            be returned.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/AmPolicyData'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  /policy-data/{ueId}/ue-policy-set:
    parameters:
      - name: ueId
        in: path
        required: true
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    put:
      requestBody:
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/UePolicySet'
      responses:
        '201':
          description: Successful case. The resource has been successfully created and a response
            body containing a representation of the created UePolicySet resource shall be returned.
        '204':
          description: Successful case. The resource has been successfully updated and no additional
            content is to be sent in the response message.
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'

```

```

'411':
  $ref: 'TS29571_CommonData.yaml#/components/responses/411'
'413':
  $ref: 'TS29571_CommonData.yaml#/components/responses/413'
'415':
  $ref: 'TS29571_CommonData.yaml#/components/responses/415'
'500':
  $ref: 'TS29571_CommonData.yaml#/components/responses/500'
'503':
  $ref: 'TS29571_CommonData.yaml#/components/responses/503'
default:
  $ref: 'TS29571_CommonData.yaml#/components/responses/default'
patch:
  requestBody:
    content:
      application/merge-patch+json:
        schema:
          $ref: '#/components/schemas/UePolicySet'
  responses:
    '204':
      description: Successful case. The resource has been successfully updated and no additional
content is to be sent in the response message.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/{ueId}/sm-data:
get:
  parameters:
    - name: ueId
      in: path
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - name: snssai
      in: query
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    - name: dnn
      in: query
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    - name: fields
      in: query
      description: attributes to be retrieved
      required: false
      schema:
        type: array
        items:
          type: string
  responses:
    '200':
      description: Upon success, a response body containing SmPolicyData shall be returned.
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/SmPolicyData'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '414':
      $ref: 'TS29571_CommonData.yaml#/components/responses/414'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'

```

```

    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  patch:
    parameters:
      - name: ueId
        in: path
        required: true
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    requestBody:
      content:
        application/merge-patch+json:
          schema:
            type: object
            additionalProperties:
              $ref: '#/components/schemas/UsageMonData'
    responses:
      '204':
        description: Successful case. The resource has been successfully updated and no
additional content is to be sent in the response message.
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/{ueId}/sm-data/{usageMonId}:
  get:
    parameters:
      - name: ueId
        in: path
        required: true
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
      - name: usageMonId
        in: path
        required: true
        schema:
          type: string
      - name: snssai
        in: query
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      - name: dnn
        in: query
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      - name: fields
        in: query
        description: attributes to be retrieved
        required: false
        schema:
          type: array
          items:
            type: string
    responses:
      '200':
        description: Successful case. The usage monitoring data is returned.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/UsageMonData'
      '204':
        description: The resource was found but no usage monitoring data is available.
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '414':

```

```

    $ref: 'TS29571_CommonData.yaml#/components/responses/414'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
put:
  parameters:
    - name: ueId
      in: path
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - name: usageMonId
      in: path
      required: true
      schema:
        type: string
  requestBody:
    content:
      application/json:
        schema:
          $ref: '#/components/schemas/UsageMonData'
  responses:
    '201':
      description: Successful case. The resource has been successfully created and a response
body is returned containing a representation of the resource.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  parameters:
    - name: ueId
      in: path
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - name: usageMonId
      in: path
      required: true
      schema:
        type: string
  responses:
    '204':
      description: Successful case. The resource has been successfully deleted.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/policy-data/sponsor-connectivity-data/{sponsorId}:
  parameters:
    - name: sponsorId
      in: path
      required: true
      schema:
        type: string
  get:
    responses:
      '200':
        description: Upon success, a response body containing Sponsor Connectivity Data shall be
returned.

```

```

    content:
      application/json:
        schema:
          $ref: '#/components/schemas/SponsorConnectivityData'
    '204':
      description: The resource was found but no Sponsor Connectivity Data is available.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/bdt-data:
  get:
    responses:
      '200':
        description: Upon success, a response body containing the BDT data shall be returned.
        content:
          application/json:
            schema:
              type: array
              items:
                $ref: '#/components/schemas/BdtData'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '412':
        $ref: 'TS29571_CommonData.yaml#/components/responses/412'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/bdt-data/{bdtReferenceId}:
  parameters:
    - name: bdtReferenceId
      in: path
      required: true
      schema:
        type: string
  get:
    responses:
      '200':
        description: Upon success, a response body containing the BDT data shall be returned.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/BdtData'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  put:
    requestBody:
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/BdtData'
    responses:
      '201':
        description: Successful case. The resource has been successfully created.
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '411':

```

```

    $ref: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    $ref: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  responses:
    '204':
      description: Successful case. The resource has been successfully deleted.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/subs-to-notify:
  post:
    requestBody:
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/PolicyDataSubscription'
    responses:
      '201':
        description: Upon success, a response body containing a representation of each Individual
subscription resource shall be returned.
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  callbacks:
    policyDataChangeNotification:
      '{$request.body#/notificationUri}':
        post:
          requestBody:
            required: true
            content:
              application/json:
                schema:
                  type: array
                  items:
                    $ref: '#/components/schemas/PolicyDataChangeNotification'
                  minItems: 1
          responses:
            '204':
              description: No Content, Notification was succesfull
            '400':
              $ref: 'TS29571_CommonData.yaml#/components/responses/400'
            '411':
              $ref: 'TS29571_CommonData.yaml#/components/responses/411'
            '413':
              $ref: 'TS29571_CommonData.yaml#/components/responses/413'
            '415':
              $ref: 'TS29571_CommonData.yaml#/components/responses/415'
            '500':
              $ref: 'TS29571_CommonData.yaml#/components/responses/500'
            '503':
              $ref: 'TS29571_CommonData.yaml#/components/responses/503'
            default:

```

```

    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/subs-to-notify/{subsId}:
  parameters:
    - name: subsId
      in: path
      required: true
      schema:
        type: string
  put:
    requestBody:
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/PolicyDataSubscription'
    responses:
      '200':
        description: The individual subscription resource was updated successfully.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/PolicyDataSubscription'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  delete:
    responses:
      '204':
        description: Upon success, an empty response body shall be returned.
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/policy-data/{ueId}/operator-specific-data:
  get:
    parameters:
      - name: ueId
        in: path
        description: UE Id
        required: true
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
      - name: fields
        in: query
        description: attributes to be retrieved
        required: false
        schema:
          type: array
          items:
            type: string
    responses:
      '200':
        description: Expected response to a valid request
        content:
          application/json:
            schema:
              type: object
              additionalProperties:
                $ref:
'TS29505_Subscription_Data.yaml#/components/schemas/OperatorSpecificDataContainer'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'

```



```

    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '414':
      $ref: 'TS29571_CommonData.yaml#/components/responses/414'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

patch:
  parameters:
    - name: ueId
      in: path
      description: UE Id
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
  requestBody:
    content:
      application/json-patch+json:
        schema:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/PatchItem'
        required: true
  responses:
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      $ref: 'TS29571_CommonData.yaml#/components/responses/403'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

put:
  parameters:
    - name: ueId
      in: path
      description: UE Id
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
  requestBody:
    required: true
    content:
      application/json:
        schema:
          type: object
          additionalProperties:
            $ref:
'TS29505_Subscription_Data.yaml#/components/schemas/OperatorSpecificDataContainer'
  responses:
    '200':
      description: OK
      content:
        application/json:
          schema:
            $ref:
'TS29505_Subscription_Data.yaml#/components/schemas/OperatorSpecificDataContainer'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      $ref: 'TS29571_CommonData.yaml#/components/responses/403'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':

```

```

    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

```

components:

schemas:

AmPolicyData:

```

  description: Contains the AM policy data for a given subscriber.
  type: object
  properties:
    subscCats:
      type: array
      items:
        type: string
    uePolicySet:
      $ref: '#/components/schemas/UePolicySet'

```

UePolicySet:

```

  description: Contains the UE policy set for a given subscriber.
  type: object
  properties:
    uePolicySections:
      type: object
      additionalProperties:
        $ref: '#/components/schemas/UePolicySection'
    upsis:
      type: array
      items:
        type: string

```

UePolicySection:

```

  description: Contains the UE policy section.
  type: object
  properties:
    uePolicySectionInfo:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    upsi:
      type: string
  required:
    - uePolicySectionInfo
    - upsi

```

SmPolicyData:

```

  description: Contains the SM policy data for a given subscriber.
  type: object
  properties:
    snssai:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnn:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    allowedServices:
      type: array
      items:
        type: string
    subscCats:
      type: array
      items:
        type: string
    gbrUl:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    gbrDl:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    adcSupport:
      type: boolean
    subscSpendinglimits:
      type: boolean
    ipv4Index:
      $ref: '#/components/schemas/IpIndex'
    ipv6Index:
      $ref: '#/components/schemas/IpIndex'
    offline:
      type: boolean
    online:
      type: boolean
    chfInfo:
      $ref: 'TS29512_CommonData.yaml#/components/schemas/ChargingInformation'
    usageMonDataLimits:

```

```

    type: object
    additionalProperties:
      $ref: '#/components/schemas/UsageMonDataLimit'
  usageMonData:
    type: object
    additionalProperties:
      $ref: '#/components/schemas/UsageMonData'
  mpsPriority:
    type: integer
  imsSignallingprio:
    type: integer
  mpsPrioritylevel:
    type: integer
  required:
    - snssai
    - dnn
UsageMonDataLimit:
  description: Contains usage monitoring control data for a subscriber.
  type: object
  properties:
    monKey:
      type: string
    umLevel:
      $ref: '#/components/schemas/UsageMonLevel'
    startDate:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    endDate:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    usageLimit:
      $ref: 'TS29122_CommonData.yaml#/components/schemas/UsageThresold'
    resetPeriod:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  required:
    - monKey
UsageMonData:
  description: Contains remain allowed usage data for a subscriber.
  type: object
  properties:
    monKey:
      type: string
    umLevel:
      $ref: '#/components/schemas/UsageMonLevel'
    allowedUsage:
      $ref: 'TS29122_CommonData.yaml#/components/schemas/UsageThresold'
  required:
    - monKey
SponsorConnectivityData:
  description: Contains the sponsored data connectivity related information for a sponsor
  identifier.
  type: object
  properties:
    aspIds:
      type: array
      items:
        type: string
  required:
    - aspIds
BdtData:
  description: Contains the background data transfer data.
  type: object
  properties:
    aspId:
      type: string
    transPolicy:
      $ref: 'TS29554_CommonData.yaml#/components/schemas/TransferPolicy'
    nwAreaInfo:
      $ref: 'TS29554_CommonData.yaml#/components/schemas/NetworkAreaInfo'
  required:
    - aspIds
    - transPolicy
PolicyDataSubscription:
  description: Identifies a subscription to policy data change notification.
  type: object
  properties:
    notificationUri:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    monitoredResourceUris:
      type: array

```

```

    items:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    supportedFeatures:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  required:
    - notificationUri
    - monitoredResourceUris
    - supportedFeatures
  PolicyDataChangeNotification:
    description: Contains changed policy data for which notification was requested.
    type: object
  properties:
    amPolicyData:
      $ref: '#/components/schemas/AmPolicyData'
    uePolicySet:
      $ref: '#/components/schemas/UePolicySet'
    smPolicyData:
      $ref: '#/components/schemas/SmPolicyData'
    usageMonData:
      $ref: '#/components/schemas/UsageMonData'
    SponsorConnectivityData:
      $ref: '#/components/schemas/SponsorConnectivityData'
    bdtData:
      $ref: '#/components/schemas/BdtData'
  IpIndex:
    type: integer
  UsageMonLevel:
    anyOf:
      - type: string
      enum:
        - SESSION_LEVEL
        - SERVICE_LEVEL
      - type: string

```

A.3 Nudr_DataRepository API for Application Data

For the purpose of referencing entities in the Open API file defined in this Annex, it shall be assumed that this Open API file is contained in a physical file named "TS29519_Application_Data.yaml".

```

openapi: 3.0.0
info:
  version: "-"
  title: 'Unified Data Repository Service API file for Application Data'
  description: 'The API version is defined in 3GPP TS 29.504'

paths:
  /application-data/pfds:
    get:
      parameters:
        - name: appId
          in: query
          description: Contains the information of the application identifier(s) for the querying
          PFD Data resource.If none appId is included in the URI, it applies to all application identifier(s)
          for the querying PFD Data resource.
          required: false
          schema:
            type: array
            items:
              $ref: 'TS29571_CommonData.yaml#/components/schemas/ApplicationId'
      responses:
        '200':
          description: A representation of PFDs for request applications is returned.
          content:
            application/json:
              schema:
                type: array
                items:
                  $ref: 'TS29551_Nnef_PFDmanagement.yaml#/components/schemas/PfdDataForApp'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '414':
          $ref: 'TS29571_CommonData.yaml#/components/responses/414'

```

```

    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/application-data/pfds/{application-identifier}:
get:
  parameters:
    - name: application-identifier
      in: path
      description: Indicate the application identifier for the request pfd(s).It shall apply the
format of Data type ApplicationId.
      required: true
      schema:
        type: string
  responses:
    '200':
      description: A representation of PFDs for the request application identified by the
application-identifier is returned.
      content:
        application/json:
          schema:
            $ref: 'TS29551_Nnef_PFDmanagement.yaml#/components/schemas/PfdDataForApp'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '414':
      $ref: 'TS29571_CommonData.yaml#/components/responses/414'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  parameters:
    - name: application-identifier
      in: path
      description: Indicate the application identifier for the request pfd(s).It shall apply the
format of Data type ApplicationId.
      required: true
      schema:
        type: string
  responses:
    '204':
      description: Successful case.The Individual PFD Data resource related to the application-
identifier was deleted.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
put:
  requestBody:
    required: true
    content:
      application/json:
        schema:
          $ref: 'TS29551_Nnef_PFDmanagement.yaml#/components/schemas/PfdDataForApp'
  parameters:
    - name: application-identifier
      in: path
      description: Indicate the application identifier for the request pfd(s).It shall apply the
format of Data type ApplicationId.
      required: true
      schema:
        type: string

```

```

responses:
  '200':
    description: Successful case.The creation or upgrade of an Individual PFD Data resource
related to the application-identifier is confirmed and a representation of that resource is
returned.
    content:
      application/json:
        schema:
          $ref: 'TS29551_Nnef_PFDmanagement.yaml#/components/schemas/PfdDataForApp'
  '204':
    $ref: 'TS29571_CommonData.yaml#/components/responses/204'
  '400':
    $ref: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '404':
    $ref: 'TS29571_CommonData.yaml#/components/responses/404'
  '411':
    $ref: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    $ref: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '501':
    $ref: 'TS29571_CommonData.yaml#/components/responses/501'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/application-data/influenceData:
  get:
    parameters:
      - name: influenceIds
        in: query
        description: Each element is identifier of an Individual Influence Data to be updated.It
shall apply the format of Data type string.
        required: false
        schema:
          type: array
          items:
            type: string
      - name: dnns
        in: query
        description: Each element identifies a DNN.
        required: false
        schema:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      - name: snssais
        in: query
        description: Each element identifies a slice.
        required: false
        schema:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      - name: internalGroupIds
        in: query
        description: Each element identifies a group of users.
        required: false
        schema:
          type: array
          items:
            type: string
      - name: supis
        in: query
        description: Each element identifies the user.
        required: false
        schema:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    responses:
      '200':
        description: The Traffic Influence Data stored in the UDR are returned..

```

```

    content:
      application/json:
        schema:
          type: object
          items:
            $ref: '#/components/schemas/TrafficInfluData'
'400':
  $ref: 'TS29571_CommonData.yaml#/components/responses/400'
'401':
  $ref: 'TS29571_CommonData.yaml#/components/responses/401'
'404':
  $ref: 'TS29571_CommonData.yaml#/components/responses/404'
'414':
  $ref: 'TS29571_CommonData.yaml#/components/responses/414'
'500':
  $ref: 'TS29571_CommonData.yaml#/components/responses/500'
'503':
  $ref: 'TS29571_CommonData.yaml#/components/responses/503'
default:
  $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/application-data/influenceData/{influenceId}:
  put:
    requestBody:
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/TrafficInfluData'
    parameters:
      - name: influenceId
        in: path
        description: The Identifier of an Individual Influence Data to be updated.It shall apply
the format of Data type string.
        required: true
        schema:
          type: string
    responses:
      '200':
        description: The update of an Individual Traffic Influence Data resource is confirmed.
      '204':
        $ref: 'TS29571_CommonData.yaml#/components/responses/204'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        $ref: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  patch:
    requestBody:
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/TrafficInfluDataPatch'
    parameters:
      - name: influenceId
        in: path
        description: The Identifier of an Individual Influence Data to be updated.It shall apply
the format of Data type string.
        required: true
        schema:
          type: string
    responses:
      '200':

```

```

    description: The update of an Individual Traffic Influence Data resource is confirmed.
  '204':
    $ref: 'TS29571_CommonData.yaml#/components/responses/204'
  '400':
    $ref: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '404':
    $ref: 'TS29571_CommonData.yaml#/components/responses/404'
  '411':
    $ref: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    $ref: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '501':
    $ref: 'TS29571_CommonData.yaml#/components/responses/501'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  parameters:
    - name: influenceId
      in: path
      description: The Identifier of an Individual Influence Data to be updated.It shall apply
the format of Data type string.
      required: true
      schema:
        type: string
  responses:
    '204':
      description: The Individual Influence Data was deleted successfully.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/application-data/influenceData/subscription:
  post:
    requestBody:
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/TrafficInfluSub'
    responses:
      '201':
        description: The subscription was created successfully.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/TrafficInfluSub'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'

```



```

    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  get:
    parameters:
      - name: afServiceId
        in: query
        description: Identifies a service.
        required: false
        schema:
          type: string
      - name: dnn
        in: query
        description: Identifies a DNN.
        required: false
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      - name: snssai
        in: query
        description: Identifies a slice.
        required: false
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      - name: externalGroupId
        in: query
        description: Identifies a group of users.
        required: false
        schema:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/ExternalGroupId'
      - name: externalId
        in: query
        description: Identifies a user.
        required: false
        schema:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/ExternalId'
      - name: gpsi
        in: query
        description: Identifies a user.
        required: false
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    responses:
      '200':
        description: The subscription information as request in the request URI query parameter(s)
        are returned.
        content:
          application/json:
            schema:
              type: object
              items:
                $ref: '#/components/schemas/TrafficInfluSub'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '414':
        $ref: 'TS29571_CommonData.yaml#/components/responses/414'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/application-data/influenceData/subscription/{subscriptionId}:
  get:
    parameters:
      - name: subscriptionId
        in: path
        description: String identifying a subscription to the Individual Influence Data
        Subscription
        required: true
        schema:
          type: string
    responses:
      '200':
        description: The subscription information is returned.
        content:

```

```

    application/json:
      schema:
        $ref: '#/components/schemas/TrafficInfluSub'
  '400':
    $ref: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '404':
    $ref: 'TS29571_CommonData.yaml#/components/responses/404'
  '414':
    $ref: 'TS29571_CommonData.yaml#/components/responses/414'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
put:
  requestBody:
    required: true
    content:
      application/json:
        schema:
          $ref: '#/components/schemas/TrafficInfluSubPatch'
  parameters:
    - name: subscriptionId
      in: path
      description: String identifying a subscription to the Individual Influence Data
Subscription
  required: true
  schema:
    type: string
  responses:
    '200':
      description: Successful case.The creation or upgrade of an Individual PFD Data resource
related to the application-identifier is confirmed and a representation of that resource is
returned.
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/TrafficInfluSub'
    '204':
      $ref: 'TS29571_CommonData.yaml#/components/responses/204'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '501':
      $ref: 'TS29571_CommonData.yaml#/components/responses/501'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  parameters:
    - name: subscriptionId
      in: path
      description: String identifying a subscription to the Individual Influence Data
Subscription
  required: true
  schema:
    type: string
  responses:
    '204':
      description: The subscription was terminated successfully.
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':

```

```

    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '404':
    $ref: 'TS29571_CommonData.yaml#/components/responses/404'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

components:
  schemas:
    TrafficInfluData:
      type: object
      properties:
        intTransId:
          type: string
          description: Identifies a transaction generated by the NEF.
        appReloInd:
          type: boolean
          description: Identifies whether an application can be relocated once a location of the
application has been selected.
        dnn:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
        ethTrafficFilters:
          type: array
          items:
            $ref: 'TS29514_CommonData.yaml#/components/schemas/EthFlowDescription'
          minItems: 1
          description: Identifies Ethernet packet filters. Either "trafficFilters" or
"ethTrafficFilters" shall be included if applicable.
        snssai:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
        interGroupId:
          type: string
          description: Identifies a group of users.
        supi:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Supi'
        trafficFilters:
          type: array
          items:
            $ref: 'TS29122_CommonData.yaml#/components/schemas/FlowInfo'
          minItems: 1
          description: Identifies IP packet filters. Either "trafficFilters" or "ethTrafficFilters"
shall be included if applicable.
        trafficRoutes:
          type: array
          items:
            $ref: 'TS29122_CommonData.yaml#/components/schemas/TrafficRoute'
          minItems: 1
          description: Identifies the N6 traffic routing requirement.
        validStartTime:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
        validEndTime:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
        nwAreaInfo:
          $ref: 'TS29554_CommonData.yaml#/NetworkAreaInfo'
      required:
        - trafficRoutes
    TrafficInfluDataPatch:
      type: object
      properties:
        intTransId:
          type: string
          description: Identifies a transaction generated by the NEF.
        appReloInd:
          type: boolean
          description: Identifies whether an application can be relocated once a location of the
application has been selected.
        dnn:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
        ethTrafficFilters:
          type: array
          items:
            $ref: 'TS29514_CommonData.yaml#/components/schemas/EthFlowDescription'
          minItems: 1
          description: Identifies Ethernet packet filters. Either "trafficFilters" or
"ethTrafficFilters" shall be included if applicable.

```

```

snssai:
  $ref: 'TS29571_CommonData.yam#/components/schemas/Snssai'
internalGroupId:
  type: string
  description: Identifies a group of users.
supi:
  $ref: 'TS29571_CommonData.yam#/components/schemas/Supi'
trafficFilters:
  type: array
  items:
    $ref: 'TS29122_CommonData.yaml#/components/schemas/FlowInfo'
  minItems: 1
  description: Identifies IP packet filters. Either "trafficFilters" or "ethTrafficFilters"
shall be included if applicable.
trafficRoutes:
  type: array
  items:
    $ref: 'TS29122_CommonData.yam#/components/schemas/TrafficRoute'
  minItems: 0
  description: Identifies the N6 traffic routing requirement.
validStartTime:
  $ref: 'TS29571_CommonData.yam#/components/schemas/DateTime'
validEndTime:
  $ref: 'TS29571_CommonData.yam#/components/schemas/DateTime'
nwAreaInfo:
  $ref: 'TS29554_CommonData.yaml#/NetworkAreaInfo'
TrafficInfluSub:
  type: object
  properties:
    dnns:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      minItems: 0
      description: Each element identifies a DNN.
    snssais:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 0
      description: Each element identifies a slice.
    internalGroupIds:
      type: array
      items:
        type: string
        minItems: 0
        description: Each element identifies a group of users.
    supis:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Supi'
        minItems: 0
        description: Each element identifies the user.
TrafficInfluSubPatch:
  type: object
  properties:
    dnns:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
        minItems: 0
        description: Each element identifies a DNN.
    snssais:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
        minItems: 0
        description: Each element identifies a slice.
    internalGroupIds:
      type: array
      items:
        type: string
        minItems: 0
        description: Each element identifies a group of users.
    supi:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Supi'

```

```

minItems: 0
description: Each element identifies the user.

```

A.4 Nudr_DataRepository API for Exposure Data

For the purpose of referencing entities defined in the Open API file defined in this Annex, it shall be assumed that this Open API file is contained in a physical file termed "TS29519_Exposure_Data.yaml".

```

openapi: 3.0.0
info:
  version: '-'
  title: 'Unified Data Repository Service API file for structured data for exposure'
  description: 'The API version is defined in 3GPP TS 29.504'
paths:
  /exposure-data/{ueId}/access-and-mobility-data:
    put:
      summary: Creates and updates the access and mobility exposure data for a UE
      operationId: CreateAccessAndMobilityData
      tags:
        - AccessAndMobilityData
      parameters:
        - name: ueId
          in: path
          description: UE id
          required: true
          schema:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
      requestBody:
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/AccessAndMobilityData'
      responses:
        '201':
          description: Upon success, a response body is returned containing a representation of the
          access and mobility data
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'
    get:
      summary: Retrieves the access and mobility exposure data for a UE
      operationId: QueryAccessAndMobilityData
      tags:
        - AccessAndMobilityData
      parameters:
        - name: ueId
          in: path
          description: UE id
          required: true
          schema:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
        - name: supp-feat
          in: query
          description: Supported Features
          schema:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      responses:
        '200':
          description: The response body contains the access and mobility data
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/AccessAndMobilityData'

```

```

'400':
  $ref: 'TS29571_CommonData.yaml#/components/responses/400'
'401':
  $ref: 'TS29571_CommonData.yaml#/components/responses/401'
'414':
  $ref: 'TS29571_CommonData.yaml#/components/responses/414'
'500':
  $ref: 'TS29571_CommonData.yaml#/components/responses/500'
'503':
  $ref: 'TS29571_CommonData.yaml#/components/responses/503'
default:
  $ref: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  summary: Deletes the access and mobility exposure data for a UE
  operationId: DeleteAccessAndMobilityData
  tags:
    - AccessAndMobilityData
  parameters:
    - name: ueId
      in: path
      description: UE id
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
  responses:
    '204':
      description: Upon success, an empty response body shall be returned
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/exposure-data/{ueId}/session-management-data/{pduSessionId}:
  put:
    summary: Creates and updates the session management data for a UE and for an individual PDU
session
  operationId: CreateSessionManagementData
  tags:
    - PduSessionManagementData
  parameters:
    - name: ueId
      in: path
      description: UE id
      required: true
      schema:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - name: pduSessionId
      in: path
      description: PDU session id
      required: true
      schema:
        type: integer
  requestBody:
    content:
      application/json:
        schema:
          $ref: '#/components/schemas/PduSessionManagementData'
  responses:
    '201':
      description: Upon success, a response body is returned containing a representation of the
session management data
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'

```

```

    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  get:
    summary: Retrieves the session management data for a UE and for an individual PDU session
    operationId: QuerySessionManagementData
    tags:
      - PduSessionManagementData
    parameters:
      - name: ueId
        in: path
        description: UE id
        required: true
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
      - name: pduSessionId
        in: path
        description: PDU session id
        required: true
        schema:
          type: integer
      - name: ipv4-addr
        in: query
        description: IPv4 Address of the UE
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      - name: ipv6-prefix
        in: query
        description: IPv6 Address Prefix of the UE
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
      - name: dnn
        in: query
        description: DNN of the UE
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      - name: fields
        in: query
        description: attributes to be retrieved
        required: false
        schema:
          type: array
          items:
            type: string
      - name: supp-feat
        in: query
        description: Supported Features
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    responses:
      '200':
        description: The response body contains the session management data
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/PduSessionManagementData'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '414':
        $ref: 'TS29571_CommonData.yaml#/components/responses/414'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  delete:
    summary: Deletes the session management data for a UE and for an individual PDU session
    operationId: DeleteSessionManagementData
    tags:
      - PduSessionManagementData
    parameters:
      - name: ueId
        in: path
        description: UE id

```

```

    required: true
    schema:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
  - name: pduSessionId
    in: path
    description: PDU session id
    required: true
    schema:
      type: integer
responses:
  '204':
    description: Upon success, an empty response body shall be returned
  '400':
    $ref: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/subs-to-notify:
  post:
    requestBody:
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/ExposureDataSubscription'
responses:
  '201':
    description: Created
    content:
      application/json:
        schema:
          $ref: '#/components/schemas/ExposureDataSubscription'
  '400':
    $ref: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '411':
    $ref: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    $ref: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
callbacks:
  exposureDataChangeNotification:
    '{$request.body#/notificationUri}':
      post:
        requestBody:
          required: true
          content:
            application/json:
              schema:
                type: array
                items:
                  $ref: '#/components/schemas/ExposureDataChangeNotification'
                minItems: 1
        responses:
          '204':
            description: No Content, Notification was succesfull
          '400':
            $ref: 'TS29571_CommonData.yaml#/components/responses/400'
          '401':
            $ref: 'TS29571_CommonData.yaml#/components/responses/401'
          '411':
            $ref: 'TS29571_CommonData.yaml#/components/responses/411'
          '413':
            $ref: 'TS29571_CommonData.yaml#/components/responses/413'
          '415':

```



```

    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'
/subs-to-notify/{subId}:
  put:
    summary: updates a subcription for notifications
    parameters:
      - name: subId
        in: path
        description: Subscription id
        required: true
        schema:
          type: string
    requestBody:
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/ExposureDataSubscription'
    responses:
      '200':
        description: Resource was succesfully modified.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/ExposureDataSubscription'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '414':
        $ref: 'TS29571_CommonData.yaml#/components/responses/414'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  delete:
    summary: Deletes a subcription for notifications
    parameters:
      - name: subId
        in: path
        description: Subscription id
        required: true
        schema:
          type: string
    responses:
      '204':
        description: Resource was succesfully deleted.
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
components:
  schemas:
    AccessAndMobilityData:
      type: object
      properties:
        location:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
        locationTs:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
        timeZone:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
        timeZoneTs:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
        accessType:

```

```

    $ref: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
  regStates:
    type: array
    items:
      $ref: 'TS29518_Namf_EventExposure.yaml#/components/schemas/RmInfo'
  regStatesTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  connStates:
    type: array
    items:
      $ref: 'TS29518_Namf_EventExposure.yaml#/components/schemas/CmInfo'
  connStatesTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  reachabilityStatus:
    $ref: 'TS29518_Namf_EventExposure.yaml#/components/schemas/UeReachability'
  reachabilityStatusTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  smsOverNasStatus:
    $ref: 'TS29518_Namf_EventExposure.yaml#/components/schemas/SmsSupport'
  smsOverNasStatusTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  roamingStatus:
    type: boolean
    description: True The serving PLMN of the UE is different from the HPLMN of the UE; False
The serving PLMN of the UE is the HPLMN of the UE.
  roamingStatusTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  currentPlmn:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'

  currentPlmnTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  ratType:
    type: array
    items:
      $ref: 'TS29517_CommonData.yaml#/components/schemas/RatType'
  ratTypesTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
PduSessionManagementData:
  type: object
  properties:
    pduSessionStatus:
      $ref: '#/components/schemas/PduSessionStatus'
    pduSessionStatusTs:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    dnai:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnai'
    dnaiTs:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    n6TrafficRoutingInfo:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/RouteToLocation'

    n6TrafficRoutingInfoTs:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  ipv4Addr:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
  ipv6Prefix:
    type: array
    items:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
    minItems: 0
    description: UE IPv6 prefix.
  IpAddrTs:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  dnn:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
ExposureDataSubscription:
  type: object
  properties:
    notificationUri:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    monitoredResourceUris:
      type: array
      items:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    minItems: 1

```

```
supportedFeatures:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
required:
- notificationUri
- monitoredResourceUris
- supportedFeatures
ExposureDataChangeNotification:
  type: object
  properties:
    ueId:
      type: string
      description: User identity of modified data
    accessAndMobilityData:
      $ref: '#/components/schemas/AccessAndMobilityData'
    pduSessionManagementData:
      type: array
      items:
        $ref: '#/components/schemas/PduSessionManagementData'
      minItems: 1
PduSessionStatus:
  anyOf:
- type: string
  enum:
    - "ACTIVE"
    - "RELEASED"
- type: string
  description: >
    This string provides forward-compatibility 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
    - "ACTIVE"
    - "RELEASED"
```

Annex B (informative): Change history

Change history							
Date	Meeting #	TSG Doc.	CR	Rev	Cat	Subject/Comment	New
2018-01	CT3#94					TS skeleton of Usage of the Unified Data Repository service for Policy Data and Structured Data for exposure	0.0.0
2018-01	CT3#94					Inclusion of C3-180352, C3-180326, C3-180327	0.1.0
2018-03	CT3#95					Inclusion of C3-181145, C3-181288, C3-181289, C3-181313	0.2.0
2018-04	CT3#96					Inclusion of C3-182402, C3-182476, C3-182456, C3-182404, C3-182457, C3-182458	0.3.0
2018-05	CT3#97					Inclusion of C3-183872, C3-183705, C3-183704, C3-183873, C3-183732, C3-183706 C3-183874, C3-183709, C3-183876, C3-183263, C3-183877, C3-183712, C3-183715 and editorial changes by Rapporteur	0.4.0
2018-06	CT#80	CP-181033				TS sent to plenary for approval	1.0.0
2018-06	CT#80	CP-181033				TS approved by plenary	15.0.0
2018-09	CT#81	CP-182015	0006		F	Scope and Overview	15.1.0
2018-09	CT#81	CP-182015	0007		F	Introduction subclauses 5.1, 6.1 and 7.1	15.1.0
2018-09	CT#81	CP-182015	0008		F	Resource overview subclauses 5.2.1, 6.2.1 and 7.2.1	15.1.0
2018-09	CT#81	CP-182015	0009	3	F	Nudr reused data types	15.1.0
2018-09	CT#81	CP-182015	0010	6	B	AM policy data resource definition	15.1.0
2018-09	CT#81	CP-182015	0011	8	B	SM policy data resource definition	15.1.0
2018-09	CT#81	CP-182015	0012	3	B	Sponsored data connectivity profiles	15.1.0
2018-09	CT#81	CP-182015	0014	5	B	Background Data Transfer data	15.1.0
2018-09	CT#81	CP-182015	0015	4	B	Policy data change subscription	15.1.0
2018-09	CT#81	CP-182015	0016	5	B	Data change notification	15.1.0
2018-09	CT#81	CP-182015	0017	2	F	Error handling subcaluses	15.1.0
2018-09	CT#81	CP-182015	0018	1	F	Feature negotiation	15.1.0
2018-09	CT#81	CP-182015	0019	1	F	Resource PFD Datas and Data types definition	15.1.0

2018-09	CT#81	CP-182015	0020	1	F	OpenAPI schema for Policy Data	15.1.0
2018-09	CT#81	CP-182015	0021	3	F	Stage 2 Alignments for Structured Data for Exposure	15.1.0
2018-09	CT#81	CP-182015	0022	4	B	Subscription for Structured Data for Exposure	15.1.0
2018-09	CT#81	CP-182015	0023	3	F	Get query parameters for structured data for exposure	15.1.0
2018-09	CT#81	CP-182015	0024	5	F	HTTP error responses for structured data for exposure	15.1.0
2018-09	CT#81	CP-182015	0025	1	F	Description of Structured data types	15.1.0
2018-09	CT#81	CP-182032	0026	3	B	Resource Structure for policy data	15.1.0
2018-09	CT#81	CP-182015	0027		F	n6 Traffic Routing Information encoding	15.1.0
2018-09	CT#81	CP-182015	0028	1	F	Removal of ExternalDocs section in OpenApi file for Exposure Data	15.1.0
2018-09	CT#81	CP-182015	0029	1	F	VarUeld used in TS 29.519	15.1.0
2018-09	CT#81	CP-182015	0034	1	F	OpenAPI schema for PolicyData	15.1.0
2018-09	CT#81	CP-182015	0035	3	F	External information stored in UDR for Application Data	15.1.0
2018-09	CT#81	CP-182015	0036		F	Clean up the Editor Note in applicatoin data	15.1.0
2018-09	CT#81	CP-182015	0037	4	F	Correction the data type of application data	15.1.0
2018-09	CT#81	CP-182015	0038	3	B	Introduce the operator policy data	15.1.0
2018-09	CT#81	CP-182015	0039	2	B	OpenAPI of Application data	15.1.0
2018-09	CT#81	CP-182015	0040	1	F	Update of resource structure of application data 29.519	15.1.0
2018-09	CT#81	CP-182015	0041	1	F	Ethernet packet filter for traffic influence data of applicatoin data 29.519	15.1.0

History

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