

# ETSI TS 129 504 V17.9.0 (2023-01)



**5G;  
5G System;  
Unified Data Repository Services;  
Stage 3  
(3GPP TS 29.504 version 17.9.0 Release 17)**

<https://standards.iteh.ai/catalog/standards/sist/a82ddd6d-f56e-42b0-8591-905ff49bd9d0/etsi-ts-129-504-v17-9-0-2023-01>



---

**Reference**RTS/TSGC-0429504vh90

---

---

**Keywords**5G

---

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

---

**Important notice**

---

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://standards-portal.etsi.org/People/CommitteeSupportStaff.aspx> 42b0-859f-

If you find a security vulnerability in the present document, please report it through our

Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

---

**Notice of disclaimer & limitation of liability**

---

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

---

**Copyright Notification**

---

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2023.  
All rights reserved.

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

---

# Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

---

# Modal verbs terminology

In the present document **"shall"**, **"shall not"**, **"should"**, **"should not"**, **"may"**, **"need not"**, **"will"**, **"will not"**, **"can"** and **"cannot"** are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

**"must"** and **"must not"** are **NOT** allowed in ETSI deliverables except when used in direct citation.

# Contents

|                                                                        |    |
|------------------------------------------------------------------------|----|
| Intellectual Property Rights .....                                     | 2  |
| Legal Notice .....                                                     | 2  |
| Modal verbs terminology.....                                           | 2  |
| Foreword.....                                                          | 6  |
| 1 Scope .....                                                          | 8  |
| 2 References .....                                                     | 8  |
| 3 Definitions and abbreviations.....                                   | 9  |
| 3.1 Definitions .....                                                  | 9  |
| 3.2 Abbreviations .....                                                | 9  |
| 4 Overview .....                                                       | 9  |
| 5 Services offered by the UDR.....                                     | 10 |
| 5.1 Introduction .....                                                 | 10 |
| 5.2 Nudr_DataRepository Service.....                                   | 11 |
| 5.2.1 Service Description.....                                         | 11 |
| 5.2.1.1 Service and operation description .....                        | 11 |
| 5.2.1.2 Service operation and data access authorization .....          | 11 |
| 5.2.2 Service Operations .....                                         | 12 |
| 5.2.2.1 Introduction .....                                             | 12 |
| 5.2.2.2 Query.....                                                     | 12 |
| 5.2.2.2.1 General .....                                                | 12 |
| 5.2.2.2.2 Data retrieval .....                                         | 12 |
| 5.2.2.2.3 Retrieval of subset of a resource.....                       | 13 |
| 5.2.2.3 Create .....                                                   | 14 |
| 5.2.2.3.1 General .....                                                | 14 |
| 5.2.2.3.2 Data Creation using PUT .....                                | 15 |
| 5.2.2.3.3 Data Creation using POST .....                               | 15 |
| 5.2.2.4 Delete .....                                                   | 16 |
| 5.2.2.4.1 General .....                                                | 16 |
| 5.2.2.4.2 Deleting Data.....                                           | 16 |
| 5.2.2.5 Update .....                                                   | 16 |
| 5.2.2.5.1 General .....                                                | 16 |
| 5.2.2.5.2 Data Update using PATCH .....                                | 16 |
| 5.2.2.5.3 Data Update using PUT .....                                  | 17 |
| 5.2.2.6 Subscribe .....                                                | 17 |
| 5.2.2.6.1 General .....                                                | 17 |
| 5.2.2.6.2 NF service consumer subscribes to notifications to UDR ..... | 18 |
| 5.2.2.6.3 Stateless UDM subscribes to notifications to UDR.....        | 18 |
| 5.2.2.7 Unsubscribe.....                                               | 19 |
| 5.2.2.7.1 General .....                                                | 19 |
| 5.2.2.7.2 Unsubscribe service operation.....                           | 19 |
| 5.2.2.8 Notify .....                                                   | 20 |
| 5.2.2.8.1 General .....                                                | 20 |
| 5.2.2.8.2 Notification to NF service consumer on data change .....     | 20 |
| 5.2.2.8.3 Notification to stateless UDM on data change .....           | 20 |
| 5.2.2.9 DataRestorationNotification.....                               | 21 |
| 5.2.2.9.1 General .....                                                | 21 |
| 5.2.2.9.2 Notification on Data Restoration .....                       | 21 |
| 5.3 Nudr_GroupIDmap Service.....                                       | 22 |
| 5.3.1 Service Description.....                                         | 22 |
| 5.3.1.1 Service and operation description .....                        | 22 |
| 5.3.2 Service Operations .....                                         | 22 |
| 5.3.2.1 Introduction .....                                             | 22 |
| 5.3.2.2 Query.....                                                     | 22 |

|            |                                                       |    |
|------------|-------------------------------------------------------|----|
| 5.3.2.2.1  | General .....                                         | 22 |
| 5.3.2.2.2  | NF-Group ID retrieval .....                           | 22 |
| 6          | API Definitions .....                                 | 23 |
| 6.1        | Nudr_DataRepository Service API .....                 | 23 |
| 6.1.1      | API URI .....                                         | 23 |
| 6.1.2      | Usage of HTTP .....                                   | 23 |
| 6.1.2.1    | General .....                                         | 23 |
| 6.1.2.2    | HTTP standard headers .....                           | 24 |
| 6.1.2.2.1  | General .....                                         | 24 |
| 6.1.2.2.2  | Content type .....                                    | 24 |
| 6.1.2.2.3  | Cache-Control .....                                   | 24 |
| 6.1.2.2.4  | ETag .....                                            | 24 |
| 6.1.2.2.5  | If-None-Match .....                                   | 24 |
| 6.1.2.2.5a | If-Match .....                                        | 24 |
| 6.1.2.2.6  | Last-Modified .....                                   | 24 |
| 6.1.2.2.7  | If-Modified-Since .....                               | 25 |
| 6.1.2.2.8  | When to Use Entity-Tags and Last-Modified Dates ..... | 25 |
| 6.1.2.3    | HTTP custom headers .....                             | 25 |
| 6.1.2.3.1  | General .....                                         | 25 |
| 6.1.2.3.2  | 3gpp-Sbi-Message-Priority .....                       | 25 |
| 6.1.2.3.3  | 3gpp-Sbi-Notification-Correlation .....               | 25 |
| 6.1.3      | Resources .....                                       | 26 |
| 6.1.3.1    | Overview .....                                        | 26 |
| 6.1.3.2    | SubscriptionData .....                                | 27 |
| 6.1.3.3    | PolicyData .....                                      | 27 |
| 6.1.3.4    | StructuredDataForExposure .....                       | 27 |
| 6.1.3.5    | ApplicationData .....                                 | 27 |
| 6.1.3.6    | Resource: DataRestorationEvents .....                 | 27 |
| 6.1.3.6.1  | Description .....                                     | 27 |
| 6.1.3.6.2  | Resource Definition .....                             | 27 |
| 6.1.3.6.3  | Resource Standard Methods .....                       | 27 |
| 6.1.4      | Custom Operations without associated resources .....  | 28 |
| 6.1.5      | Notifications .....                                   | 28 |
| 6.1.5.1    | General .....                                         | 28 |
| 6.1.5.2    | Data Change Notification .....                        | 28 |
| 6.1.5.3    | Data Restoration Notification .....                   | 28 |
| 6.1.5a     | Data Model .....                                      | 30 |
| 6.1.5a.1   | General .....                                         | 30 |
| 6.1.5a.2   | Structured data types .....                           | 30 |
| 6.1.5a.2.1 | Introduction .....                                    | 30 |
| 6.1.5a.2.2 | Type: DataRestorationNotification .....               | 31 |
| 6.1.6      | Error Handling .....                                  | 31 |
| 6.1.7      | Security .....                                        | 32 |
| 6.1.8      | Feature negotiation .....                             | 35 |
| 6.2        | Nudr_GroupIDmap Service API .....                     | 38 |
| 6.2.1      | API URI .....                                         | 38 |
| 6.2.2      | Usage of HTTP .....                                   | 38 |
| 6.2.2.1    | General .....                                         | 38 |
| 6.2.2.2    | HTTP standard headers .....                           | 39 |
| 6.2.2.2.1  | General .....                                         | 39 |
| 6.2.2.2.2  | Content type .....                                    | 39 |
| 6.2.2.2.3  | Cache-Control .....                                   | 39 |
| 6.2.2.2.4  | ETag .....                                            | 39 |
| 6.2.2.2.5  | If-None-Match .....                                   | 39 |
| 6.2.2.2.6  | Last-Modified .....                                   | 39 |
| 6.2.2.2.7  | If-Modified-Since .....                               | 39 |
| 6.2.2.2.8  | When to Use Entity-Tags and Last-Modified Dates ..... | 39 |
| 6.2.2.3    | HTTP custom headers .....                             | 40 |
| 6.2.2.3.1  | General .....                                         | 40 |
| 6.2.3      | Resources .....                                       | 40 |
| 6.2.3.1    | Overview .....                                        | 40 |

|                               |                                                      |           |
|-------------------------------|------------------------------------------------------|-----------|
| 6.2.3.2                       | Resource NfGroupIds.....                             | 40        |
| 6.2.3.2.1                     | Description .....                                    | 40        |
| 6.2.3.2.2                     | Resource Definition.....                             | 40        |
| 6.2.3.2.3                     | Resource Standard Methods .....                      | 40        |
| 6.2.4                         | Custom Operations without associated resources ..... | 41        |
| 6.2.5                         | Notifications .....                                  | 41        |
| 6.2.6                         | Data Model .....                                     | 41        |
| 6.2.6.1                       | General .....                                        | 41        |
| 6.2.6.2                       | Structured data types .....                          | 42        |
| 6.2.6.2.1                     | Introduction .....                                   | 42        |
| 6.2.6.2.2                     | Type: NfGroupIdMapResult.....                        | 42        |
| 6.2.6.3                       | Simple data types and enumerations .....             | 42        |
| 6.2.6.3.1                     | Introduction .....                                   | 42        |
| 6.2.6.3.2                     | Simple data types.....                               | 42        |
| 6.2.7                         | Error Handling.....                                  | 42        |
| 6.2.7.1                       | General .....                                        | 42        |
| 6.2.7.2                       | Protocol Errors .....                                | 42        |
| 6.2.7.3                       | Application Errors .....                             | 42        |
| 6.2.8                         | Security.....                                        | 43        |
| 6.2.9                         | Feature Negotiation.....                             | 43        |
| <b>Annex A (normative):</b>   | <b>OpenAPI specification.....</b>                    | <b>44</b> |
| A.1                           | General .....                                        | 44        |
| A.2                           | Nudr_DataRepository API .....                        | 44        |
| A.3                           | Nudr_GroupIDmap API.....                             | 50        |
| <b>Annex B (informative):</b> | <b>Change history .....</b>                          | <b>53</b> |
| History .....                 |                                                      | 57        |

ETSI TS 129 504 V17.9.0 (2023-01)

<https://standards.iteh.ai/catalog/standards/sist/a82ddd6d-f56e-42b0-859f-905ff49bd9d0/etsi-ts-129-504-v17-9-0-2023-01>

# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

- |                  |                                                         |
|------------------|---------------------------------------------------------|
| <b>shall</b>     | indicates a mandatory requirement to do something       |
| <b>shall not</b> | indicates an interdiction (prohibition) to do something |

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

- |                   |                                                |
|-------------------|------------------------------------------------|
| <b>should</b>     | indicates a recommendation to do something     |
| <b>should not</b> | indicates a recommendation not to do something |
| <b>may</b>        | indicates permission to do something           |
| <b>need not</b>   | indicates permission not to do something       |

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

- |               |                                        |
|---------------|----------------------------------------|
| <b>can</b>    | indicates that something is possible   |
| <b>cannot</b> | indicates that something is impossible |

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

- |                 |                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>will</b>     | indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document     |
| <b>will not</b> | indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document |
| <b>might</b>    | indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document           |

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ETSI TS 129 504 V17.9.0 (2023-01)

<https://standards.iteh.ai/catalog/standards/sist/a82ddd6d-f56e-42b0-859f-905ff49bd9d0/etsi-ts-129-504-v17-9-0-2023-01>

---

# 1 Scope

The present document specifies the stage 3 protocol and high level data model for the Nudr Service Based Interface. It provides stage 3 protocol definitions and message flows, and specifies the API for each service offered by the Unified Data Repository (UDR). The data model and usage of the subscription data is specified in 3GPP TS 29.505 [2], and the data model and usage of the policy data, structured data for exposure and application data are specified in 3GPP TS 29.519 [3].

The 5G System architecture is specified in 3GPP TS 23.501 [4]. The stage 2 definition and related procedures for Nudr SBI service are specified in 3GPP TS 23.502 [5] and 3GPP TS 23.503 [6].

The Technical Realization of the Service Based Architecture is specified in 3GPP TS 29.500 [7] and the Principles and Guidelines for Services Definition is specified in 3GPP TS 29.501 [8].

---

# 2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 29.505: "5G System; Usage of the Unified Data Repository Services for Subscription Data; Stage 3".
- [3] 3GPP TS 29.519: "5G System; Usage of the Unified Data Repository Service for Policy Data, Structured Data for Exposure and Application Data; Stage 3".
- [4] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
- [5] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
- [6] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".
- [7] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".
- [8] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [9] IETF RFC 6901(April 2013): "JavaScript Object Notation (JSON) Pointer".
- [10] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces Stage 3".
- [11] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".
- [12] 3GPP TS 33.501: "Security architecture and procedures for 5G system".
- [13] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".
- [14] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".
- [15] IETF RFC 7232: "Hypertext Transfer Protocol (HTTP/1.1): Conditional Requests".
- [16] IETF RFC 7234: "Hypertext Transfer Protocol (HTTP/1.1): Caching".
- [17] IETF RFC 7807: "Problem Details for HTTP APIs".

[18] IETF RFC 7396: "JSON Merge Patch".

[19] IETF RFC 6902: "JavaScript Object Notation (JSON) Patch".

[20] 3GPP TR 21.900: "Technical Specification Group working methods".

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

3Definitions and abbreviations

3.1Definitions

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].

3.2Abbreviations

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].

|      |                                        |
|------|----------------------------------------|
| GPSI | Generic Public Subscription Identifier |
| NEF  | Network Exposure Function              |
| PCF  | Policy Control Function                |
| SUPI | Subscription Permanent Identifier      |
| UDM  | Unified Data Management                |
| UDR  | Unified Data Repository                |

4Overview

The Unified Data Repository (UDR) is the network entity in the 5G Core Network (5GC) supporting the following functionalities:

- Storage and retrieval of subscription data as specified in 3GPP TS 29.505 [2];
- Storage and retrieval of policy data as specified in 3GPP TS 29.519 [3];
- Storage and retrieval of structured data for exposure as specified in 3GPP TS 29.519 [3];
- Storage and retrieval of application data (including Packet Flow Descriptions (PFDs) for application detection, application request information for multiple UEs) as specified in 3GPP TS 29.519 [3];
- Subscription to notification and the notification of subscribed data changes.
- Storage and retrieval of NF-Group Id mapping data.

Figures 4-1 shows the data storage architecture for the 5GC:

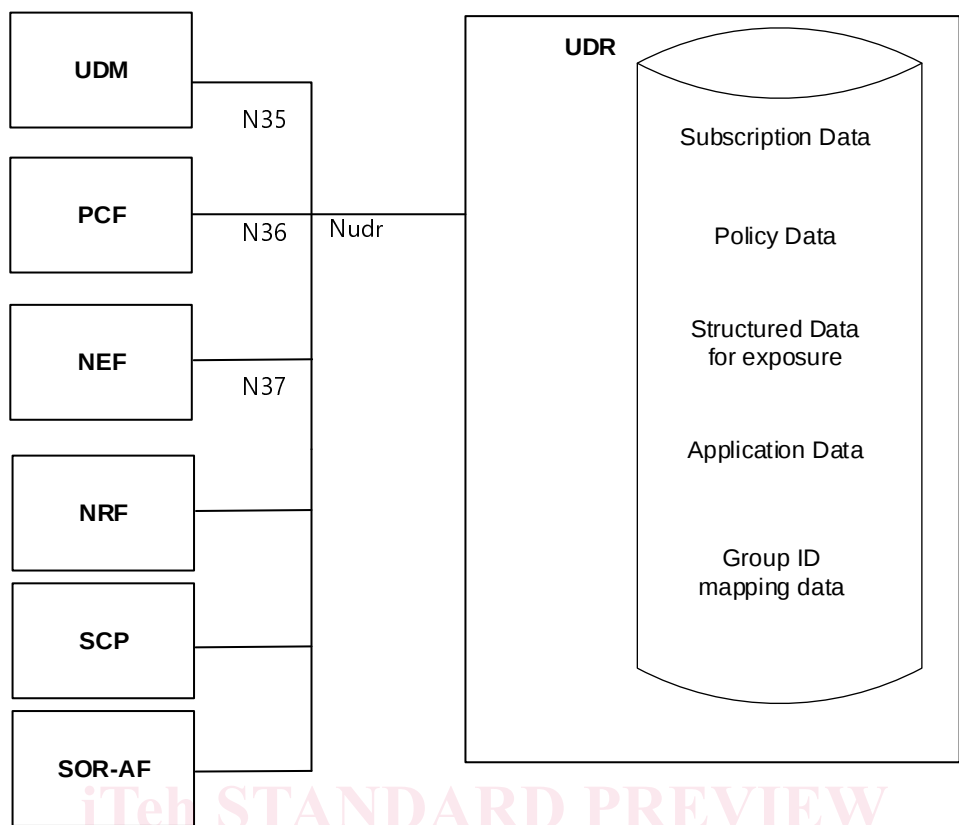


Figure 4-1: Data storage architecture

The Nudr interface is used by the network functions (i.e. UDM, PCF, NEF and NRF) to access a particular set of the data stored in the UDR.

NOTE: Services offered by the UDR via the Nudr service based interface can also be consumed by the HSS as specified in 3GPP TS 23.632 clause 5.2.4.

## 5 Services offered by the UDR

### 5.1 Introduction

The UDR offers the following services via the Nudr interface:

- Nudr\_DataRepository Service

NOTE: This service corresponds to the Nudr\_DataManagement service in 3GPP TS 23.501 [4], 3GPP TS 23.502 [5] and 3GPP TS 23.503 [6].

- Nudr\_GroupIDmap Service

Table 5.1-1 summarizes the corresponding APIs defined for this specification.

Table 5.1-1: API Descriptions

| Service Name        | Clause | Description                                               | OpenAPI Specification File   | apiName           | Annex |
|---------------------|--------|-----------------------------------------------------------|------------------------------|-------------------|-------|
| Nudr_DataRepository | 6.1    | Unified Data Repository Service                           | TS29504_Nudr_DR.yaml         | nudr-dr           | A.2   |
| Nudr_GroupIDmap     | 6.2    | Unified Data Repository Service for NF-Group ID retrieval | TS29504_Nudr_GroupIDmap.yaml | nudr-group-id-map | A.3   |

## 5.2 Nudr\_DataRepository Service

### 5.2.1 Service Description

#### 5.2.1.1 Service and operation description

The UDR is acting as NF Service Producer. It provides Unified Data Repository service to the NF service consumer. The known NF Service Consumers are the UDM, PCF and NEF.

For the Nudr\_DataRepository service, the following service operations are defined:

- Query
- Create
- Delete
- Update
- Subscribe
- Unsubscribe
- Notify
- DataRestorationNotification

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ETSI TS 129 504 V17.9.0 (2023-01)

<https://standards.iteh.ai/catalog/standards/sist/a82ddd6d-f56e-42b0-859f-905ff49bd9d0/etsi-ts-129-504-v17-9-0-2023-01>

This service allows NF service consumers to retrieve, create, update, modify and delete data stored in the UDR.

This service allows the NF service consumers to subscribe/unsubscribe the data change notification and to be notified of the data change.

This service allows the NF service consumers to be notified upon the UDR restoration.

#### 5.2.1.2 Service operation and data access authorization

UDR provides one Nudr\_DataRepository service to all of the NF consumers, while different types of data may have different data access authorizations, the UDR shall be able to have the authorization management mechanism to guarantee the safety of data access.

And the information in the Nudr\_DataRepository service operation should be able to identify the NF type of the consumer and the service operation type or name, and to indicate the requested data information including the data set and data subset, and the resource/data identifier. All HTTP methods for the service operation shall include the information in the appropriate place of the HTTP message.

If there is an illegal service operation or data access request initiated by a NF consumer, the service failure response should be returned through the Nudr interface with an explicit cause value.

**NOTE:** For allowed service operations or data access requests initiated by an NF consumer it is not expected (unless explicitly specified otherwise) that the UDR performs any consumer-specific application logic to check whether a requested service operation should be rejected.

## 5.2.2 Service Operations

### 5.2.2.1 Introduction

This clause specifies the generic Nudr\_DataRepository service operations towards the different data sets as shown in Figure 4-1.

The HTTP request of the service operations contains a resource URI where the {apiSpecificResourceUriPart} (see clause 4.4.2 in 3GPP TS 29.501 [8]) consists of a top-level segment and sub-level segment(s), followed by query parameters (optional or required).

If multiple query parameters are defined for a method on the resource, the default logical relationship between the different query parameters shall be the logical "AND", unless explicitly indicated on each specific resource and operation on the Nudr\_DataRepository API.

NOTE: Not all query parameters imply necessarily a logical relationship with other parameters (e.g. "supported-features"); whether or not such logical relationship exists, is determined by the semantics of the different query parameters in each resource and operation.

For Create, Query, Update and Delete operations, the top-level segment indicates one top level resource representing one of the data sets, which are defined as "/subscription-data", "/policy-data", "/exposure-data" and "/application-data" in Figure 6.1.3.1-1. And a certain child resource is indicated by the end URI of the sub-level segments, which are defined in 3GPP TS 29.505 [2] for use when the top-level segment is "/subscription-data" and in 3GPP TS 29.519 [3] for use when the top-level segment is "/policy-data", "/exposure-data" or "/application-data".

For Subscribe/Unsubscribe to data change notification operations, the resource of the subscription to the notification should be as the child resource of each of the data sets (i.e. "/subscription-data", "/policy-data", "/exposure-data" and "/application-data"), which are indicated by the top-level segment in the URI. And the resource representation of the subscription to the notification should be indicated by the sub-level segment of each data set.

The following procedures for each operation should be taken as the common procedures and applicable to corresponding detail procedures with the same service operation in 3GPP TS 29.505 [2] and 3GPP TS 29.519 [3].

### 5.2.2.2 Query

#### 5.2.2.2.1 General

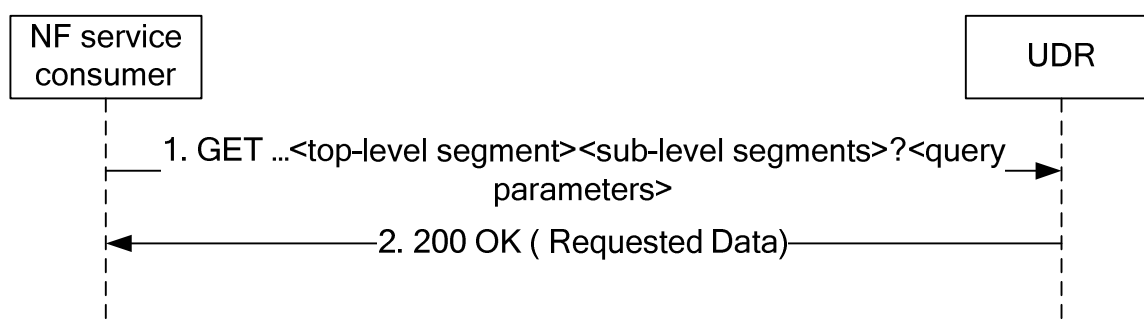
The Query service operation is used to retrieve the data stored in the UDR. HTTP GET method shall be used for the service operation to request the certain data record(s). One piece of data records should be a data set, a data subset, a group of data in one data subset, or a specific data. If the data record(s) are the attribute(s), query parameter or the combination of query parameters should be used as the filters to control the content of result.

#### 5.2.2.2.2 Data retrieval

Figure 5.2.2.2.2-1 shows a scenario where the NF service consumer (e.g. UDM, PCF or NEF) sends a request to the UDR to retrieve data.

Query parameters may be used for data retrieval:

- i) Clause 5.2.2.2.3 specifies the query parameter used for retrieving subset of a resource;
- ii) Other query parameters are defined in 3GPP TS 29.505 [2] and 3GPP TS 29.519 [3].



**Figure 5.2.2.2-1: Retrieving Data**

1. The NF service consumer shall send a GET request to the resource representing the data. Query parameters may be used to restrict the response to the requested data record(s) of the resource's representation. Query parameters may also indicate the features that the NF service consumer supports as described in clause 6.6.2 of 3GPP TS 29.500 [7].
2. On success, the UDR shall respond with "200 OK" with the message body containing the requested data record(s) restricted to the query parameters. (and thus also to the indicated features supported by the NF service consumer).

On failure, the UDR shall return an appropriated error code with the error cause information.

The error codes of corresponding service operations in 3GPP TS 29.505 [2] and 3GPP TS 29.519 [3] shall align and comply with the failure response mechanism which is defined in 3GPP TS 29.500 [7].

#### 5.2.2.2.3 Retrieval of subset of a resource

When a resource has multiple attributes, it is allowed for the NFs to retrieve a subset of the attributes. When the attribute is of type map, it is allowed for the NFs to retrieve individual member(s) of that map. For retrieval of subset of a resource, a new query parameter "fields" is defined to carry the identities of the attributes to be retrieved. The definition of "fields" query parameter is:

- 1) "fields" query parameter is of type array; and
- 2) each element of the array is of type string encoded as a JSON pointer as defined IETF RFC 6901 [9].

NOTE: identifying an individual element in the array is supported by JSON pointer, however it is not recommended to use this feature if the client is not exactly aware of the order of the members in the array.

If retrieval of subset of a particular resource is supported, then all the attributes of the corresponding data type of that resource shall be optional or conditional.

##### EXAMPLE 1:

Given the following representation of ExResource:

```

{
  "lv1Attr1": "value1"
  "lv1Attr2": "value2"
  "lv1Attr3": {
    "lv2Attr1": "value3"
    "lv2Attr2": "value4"
  }
}
  
```

To retrieve "lv1Attr1" and "lv2Attr2", the NF sends the following request:

GET /ExResource?fields=/lv1Attr1, /lv1Attr3/lv2Attr2

Upon success, the UDR then returns the following representation:

```
{
  "lv1Attr1": "value1"
  "lv1Attr3": {
    "lv2Attr2": "value4"
  }
}
```

#### EXAMPLE 2:

Given the following representation of ExResource:

```
{
  "Attr1": "value1"
  "Attr2": "value2"
  "AttrMap": {
    "Key1": {ExObject1}
    "Key2": {ExObject2}
  }
}
```

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

ETSI TS 129 504 V17.9.0 (2023-01)

<https://standards.iteh.ai/catalog/standards/sist/a82ddd6d-f56e-42b0-859f-905ff49bd9d0/etsi-ts-129-504-v17-9-0-2023-01>

To retrieve "Attr1" and the second member of "AttrMap ", the NF sends the following request:

GET /ExResource?fields=/Attr1, /AttrMap/Key2

Upon success, the UDR then returns the following representation:

```
{
  "Attr1": "value1"
  "AttrMap": {
    "Key2": {ExObject2}
  }
}
```

### 5.2.2.3 Create

#### 5.2.2.3.1 General

The Create service operation is used by the NF service consumer (e.g. NEF) to create the data into the UDR.

The following procedures using the Create service operation are supported: