**3GPP TSG-CT WG4 Meeting #97eC4-202abc**

**E-Meeting, 15th – 23rd April 2020 *was* C4-202333**

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| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **29.503** | **CR** | **0421** | **rev** | **1** | **Current version:** | **16.3.0** |  |
|  |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | MDT Configuration data for 5G |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | TEI16, 5GMDT |  | ***Date:*** | 2020-04-02 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | MDT for 5G has been introduced in S5, MDT configuration parameters will be transferred from UDM to AMF, then to other NFs (e.g. between AMFs), finally to NG RAN and UE. MDT configuration parameters need be defined as UE subscription data for 5G. We can see the procedures related to MDT in clause 4.1.2.17 of 3GPP TS 32.422. UDM can provide MDT configuration data to AMF by Access and Mobility Subscription Data Retrieval service operation of SDM service if Activation of MDT task is before UE registers to the network in 5GC and NG-RAN, and UDM can provide MDT configuration data to AMF by Data Change Notification To NF service operation of SDM service Activation of MDT task is after UE attachment in 5GC and NG-RAN. |
|  |  |
| ***Summary of change:*** | 1.Add MDT configuration data in Access and Mobility Subscription Data Retrieval service operation of SDM service.2.Add MDT configuration data in data model AccessAndMobilitySubscriptionData3. Add MDT configuration data in Data Change Notification To NF service operation of SDM service. |
|  |  |
| ***Consequences if not approved:*** | MDT feature for 5G in S5 is not implemented. |
|  |  |
| ***Clauses affected:*** | 2, 6.1.6.1, 6.1.6.2.4, A.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | This CR will introduce backward compatible new features in the OpenAPI specification file of TS29503\_Nudm\_SDM.yaml, TS29505\_Subscription\_Data.yaml. |
|  |  |
| ***This CR's revision history:*** | Rev1：1. Removed text which is not modified betweed ***(… text not shown for clarity …)*** and\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* in A.2
2. Reverted the revisions in 5.2.2.2.3 and 5.2.2.5.2
3. Add the reference TS 32.422 in clasue 2 and correct the reference of 32.422 in Table 6.1.6.2.4-1, it should be 32.422 [xx].
 |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

# 2 References

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

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

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

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

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

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[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 33.501: "Security Architecture and Procedures for 5G System".

[7] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces Stage 3".

[8] 3GPP TS 23.003: "Numbering, addressing and identification".

[9] 3GPP TS 29.504: "5G System; Unified Data Repository Services; Stage 3".

[10] 3GPP TS 29.505: "5G System; Usage of the Unified Data Repository Services for Subscription Data; Stage 3".

[11] 3GPP TS 32.255: "Charging management; 5G data connectivity domain charging".

[12] 3GPP TS 32.298: "Charging management; Charging Data Record (CDR) parameter description".

[13] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[14] OpenAPI Initiative, "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>

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

[16] IETF RFC 7807: "Problem Details for HTTP APIs".

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

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

[19] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".

[20] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station in idle mode".

[21] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[22] 3GPP TS 29.338: "Diameter based protocols to support Short Message Service (SMS) capable Mobile Management Entities (MMEs)"

[23] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[24] 3GPP TS 29.509: "Authentication Server Services; Stage 3".

[25] IETF RFC 7232: "Hypertext Transfer Protocol (HTTP/1.1): Conditional Requests".

[26] IETF RFC 7234: "Hypertext Transfer Protocol (HTTP/1.1): Caching".

[27] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[28] ETSI TS 102 225: "Smart Cards; Secured packet structure for UICC based applications".

[29] IETF RFC 7542: "The Network Access Identifier".

[30] 3GPP TR 21.900: "Technical Specification Group working methods".

[31] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

[32] 3GPP TS 23.632: "User Data Interworking, Coexistence and Migration"

[33] 3GPP TS 29.519: "Policy Data, Application Data and Structured Data for Exposure; Stage 3".

[34] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[35] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[36] 3GPP TS 29.518: "Access and Mobility Management Services".

[37] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS); Stage 2".

[38] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[39] 3GPP TS 29.515: "5G System; Gateway Mobile Location Services; Stage 3".

[40] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".

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

[42] BBF TR-069: "CPE WAN Management Protocol".

[43] BBF TR-369: "User Services Platform (USP)".

[44] 3GPP TS 29.524: "5G System; Cause codes mapping between 5GC interfaces; Stage 3".

[45] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[46] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[47] 3GPP TS 22.071: "Location Services (LCS); Service description; Stage 1".

[xx] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

#### 6.1.6.1 General

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

Table 6.1.6.1-1 specifies the structured data types defined for the Nudm\_SDM service API. For simple data types defined for the Nudm\_SDM service API see table 6.1.6.3.2-1.

Table 6.1.6.1-1: Nudm\_SDM specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| Nssai | 6.1.6.2.2 | Network Slice Selection Assistance Information |
| SdmSubscription | 6.1.6.2.3 | A subscription to notifications |
| AccessAndMobilitySubscriptionData | 6.1.6.2.4 | Access and Mobility Subscription Data |
| SmfSelectionSubscriptionData | 6.1.6.2.5 | SMF Selection Subscription Data |
| UeContextInSmfData | 6.1.6.2.16 | UE Context In SMF Data |
| PduSession | 6.1.6.2.17 |  |
| DnnInfo | 6.1.6.2.6 | Data Network Name and associated information (LBO roaming allowed flag) |
| SnssaiInfo | 6.1.6.2.7 | S-NSSAI and associated information (DNN Info) |
| SessionManagementSubscriptionData | 6.1.6.2.8 | User subscribed session management data |
| DnnConfiguration | 6.1.6.2.9 | User subscribed data network configuration |
| PduSessionTypes | 6.1.6.2.11 | Default/allowed session types for a data network |
| SscModes | 6.1.6.2.12 | Default/allowed SSC modes for a data network |
| SmsSubscriptionData | 6.1.6.2.13 |  |
| SmsManagementSubscriptionData | 6.1.6.2.14 | SMS Management Subscription Data |
| SubscriptionDataSets | 6.1.6.2.15 |  |
| IdTranslationResult | 6.1.6.2.18 | SUPI that corresponds to a given GPSI |
| IpAddress | 6.1.6.2.22 | IP address (IPv4, or IPv6, or IPv6 prefix) |
| 3GppChargingCharacteristics | 6.1.6.3.2 | 3GPP Charging Characteristics |
| IwkEpsInd | 6.1.6.3.2 | Interworking with EPS Indication |
| ModificationNotification | 6.1.6.2.21 |  |
| UeContextInSmsfData | 6.1.6.2.23 |  |
| SmsfInfo | 6.1.6.2.24 |  |
| AcknowledgeInfo | 6.1.6.2.25 |  |
| SorInfo | 6.1.6.2.26 | Steering Of Roaming Information |
| UpuInfo | 6.1.6.2.33 | UE Parameters Update Information |
| SharedData | 6.1.6.2.27 | Subscription Data shared by multiple UEs |
| PgwInfo | 6.1.6.2.28 | Information about the DNNs/APNs and PGW-C+SMF FQDNs used in interworking with EPS |
| TraceDataResponse | 6.1.6.2.29 | Contains Trace Data or a shared data Id identifying shared Trace Data |
| SteeringContainer | 6.1.6.2.30 |  |
| SdmSubsModification | 6.1.6.2.31 | Modification instruction for a subscription to notifications |
| EmergencyInfo | 6.1.6.2.32 | Information about emergency session |
| EpsIwkPgw | 6.2.6.2.11 | Information of the PGW-C+SMF selected by the AMF for EPS interworking with N26 interface. |
| GroupIdentifiers | 6.1.6.2.34 |  |
| ExtGroupId | 6.1.6.3.2 |  |
| NiddInformation | 6.1.6.2.35 | Non-IP Data Delivery information |
| CagData | 6.1.6.2.36 |  |
| CagInfo | 6.1.6.2.37 |  |
| DataSetName | 6.1.6.3.3 |  |
| PduSessionContinuityInd | 6.1.6.3.7 |  |
| AdditionalSnssaiData | 6.1.6.2.38 | Additional information specific to a slice |
| VnGroupData | 6.1.6.2.39 |  |
| AppDescriptor | 6.1.6.2.40 |  |
| AppPortId | 6.1.6.2.41 | Application Port Id |
| LcsPrivacyData | 6.1.6.2.42 |  |
| Lpi | 6.1.6.2.43 |  |
| UnrelatedClass | 6.1.6.2.44 |  |
| PlmnOperatorClass | 6.1.6.2.45 |  |
| ValidTimePeriod | 6.1.6.2.46 |  |
| LcsMoData | 6.1.6.2.47 |  |
| EcRestrictionData | 6.1.6.2.48 | Enhance Coverage Restriction Data |
| ExpectedUeBehaviourData | 6.1.6.2.49 | Expected UE Behaviour Data |
| MaximumResponseTime | 6.1.6.2.50 | Maximum Response Time |
| MaximumLatency | 6.1.6.2.51 | Maximum Latency |
| SuggestedPacketNumDl | 6.1.6.2.52 | Suggested Number of Downlink Packets |
| FrameRouteInfo | 6.1.6.2.54 | Frame Route Information |
| EnhancedCoverageRestrictionData | 6.1.6.2.56 | Enhanced Coverage Restriction Data |
| EdrxParameters | 6.1.6.2.57 | eDRX Parameters |
| PtwParameters | 6.1.6.2.58 | Paging Time Window Parameters |
| OperationMode | 6.1.6.3.12 | Operation Mode |
| SorUpdateIndicator | 6.1.6.3.13 | SoR Update Indicator |
| NonExternalUnrelatedClass | 6.1.6.2.59 |  |
| LcsClientNonExternal | 6.1.6.2.60 |  |
| AfNonExternal | 6.1.6.2.61 |  |
| ExternalUnrelatedClass | 6.1.6.2.62 |  |
| AfExternal | 6.1.6.2.63 |  |
| LcsClientExternal | 6.1.6.2.64 |  |
| LcsClientGroupExternal | 6.1.6.2.65 |  |
| ServiceTypeUnrelatedClass | 6.1.6.2.66 |  |
| codeWordInd | 6.1.6.3.14 |  |

Table 6.1.6.1-2 specifies data types re-used by the Nudm\_SDM service API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nudm\_SDM service API.

Table 6.1.6.1-2: Nudm\_SDM re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Dnn | 3GPP TS 29.571 [7] | Data Network Name with Network Identifier only; this type is used as key in a map of:- DnnConfigurations; see clause 6.1.6.2.8;- EpsIwkPgws; see clause 6.2.6.2.2; - ExpectedUeBehaviourData; see clause 6.1.6.2.8; |
| DurationSec | 3GPP TS 29.571 [7] | Time value in seconds |
| ProblemDetails | 3GPP TS 29.571 [7] | Common data type used in response bodies |
| Snssai | 3GPP TS 29.571 [7] | Single NSSAI |
| Uri | 3GPP TS 29.571 [7] | Uniform Resource Identifier |
| Gpsi | 3GPP TS 29.571 [7] | Generic Public Subscription Identifier |
| RatType | 3GPP TS 29.571 [7] | Radio Access Technology Type |
| Area | 3GPP TS 29.571 [7] |  |
| ServiceAreaRestriction | 3GPP TS 29.571 [7] |  |
| CoreNetworkType | 3GPP TS 29.571 [7] |  |
| SupportedFeatures | 3GPP TS 29.571 [7] | see 3GPP TS 29.500 [4] clause 6.6 |
| PlmnId | 3GPP TS 29.571 [7] | PLMN Identity |
| PduSessionType | 3GPP TS 29.571 [7] |  |
| SubscribedDefaultQos | 3GPP TS 29.571 [7] | Subscribed Default QoS |
| Ambr | 3GPP TS 29.571 [7] |  |
| PduSessionId | 3GPP TS 29.571 [7] | PduSessionId is used as key in a map of PduSessions; see clause 6.1.6.2.16. |
| NfInstanceId | 3GPP TS 29.571 [7] |  |
| Supi | 3GPP TS 29.571 [7] |  |
| RfspIndex | 3GPP TS 29.571 [7] |  |
| SscMode | 3GPP TS 29.571 [7] |  |
| Ipv4Address | 3GPP TS 29.571 [7] |  |
| Ipv6Address | 3GPP TS 29.571 [7] |  |
| Ipv6Prefix | 3GPP TS 29.571 [7] |  |
| SorMac | 3GPP TS 29.509 [24] |  |
| SteeringInfo | 3GPP TS 29.509 [24] |  |
| AckInd | 3GPP TS 29.509 [24] |  |
| CounterSor | 3GPP TS 29.509 [24] |  |
| UpuMac | 3GPP TS 29.509 [24] |  |
| UpuData | 3GPP TS 29.509 [24] |  |
| UpuAckInd | 3GPP TS 29.509 [24] |  |
| CounterUpu | 3GPP TS 29.509 [24] |  |
| TraceData | 3GPP TS 29.571 [7] | Trace control and configuration parameters |
| NotifyItem | 3GPP TS 29.571 [7] |  |
| UpSecurity | 3GPP TS 29.571 [7] |  |
| ServiceName | 3GPP TS 29.510 [19] |  |
| OdbPacketServices | 3GPP TS 29.571 [7] |  |
| GroupId | 3GPP TS 29.571 [7] | This type is also used as key of a map in attributes:- vnGroupInfo and sharedVnGroupDataIds; see clause 6.1.6.2.4, 6.1.6.2.8, 6.1.6.2.27; |
| DateTime | 3GPP TS 29.571 [7] |  |
| CagId | 3GPP TS 29.571 [7] |  |
| StnSr | 3GPP TS 29.571 [7] | Session Transfer Number for SRVCC |
| CMsisdn | 3GPP TS 29.571 [7] | Correlation MSISDN |
| OsId | 3GPP TS 29.519 [33] |  |
| Uint16 | 3GPP TS 29.571 [7] |  |
| RgWirelineCharacteristics | 3GPP TS 29.571 [7] |  |
| Tmbr | 3GPP TS 29.571 [7] |  |
| GeographicArea | 3GPP TS 29.572 [34] |  |
| LcsServiceType | 3GPP TS 29.572 [34] |  |
| ScheduledCommunicationTime | 6.5.6.2.9 |  |
| LocationArea | 6.5.6.2.10 |  |
| StationaryIndication | 6.5.6.3.3 |  |
| TrafficProfile | 6.5.6.3.4 |  |
| ScheduledCommunicationType | 6.5.6.3.5 |  |
| BatteryIndication | 6.5.6.2.14 |  |
| ScheduledCommunicationTime | 6.5.6.2.9 |  |
| LocationArea | 6.5.6.2.10 |  |
| StationaryIndication | 6.5.6.3.3 |  |
| TrafficProfile | 6.5.6.3.4 |  |
| ScheduledCommunicationType | 6.5.6.3.5 |  |
| BatteryIndication | 6.5.6.3.14 |  |
| AcsInfo | 3GPP TS 29.571 [7] | ACS Information |
| IPv4AddrMask | 3GPP TS 29.571 [7] |  |
| Ipv6Prefix | 3GPP TS 29.571 [7] |  |
| NefId | 3GPP TS 29.510 [19] |  |
| PatchResult | 3GPP TS 29.571 [7] |  |
| NrV2xAuth | 3GPP TS 29.571 [7] |  |
| LteV2xAuth | 3GPP TS 29.571 [7] |  |
| BitRate | 3GPP TS 29.571 [7] |  |
| MdtConfiguration | 3GPP TS 29.571 [7] |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

##### 6.1.6.2.4 Type: AccessAndMobilitySubscriptionData

Table 6.1.6.2.4-1: Definition of type AccessAndMobilitySubscriptionData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| supportedFeatures | SupportedFeatures | O | 0..1 | See clause 6.1.8 |  |
| gpsis | array(Gpsi) | O | 0..N | List of Generic Public Subscription Identifier; see 3GPP TS 29.571 [7] |  |
| internalGroupIds | array(GroupId) | O | 1..N | List of internal group identifier; see 3GPP TS 23.501 [2] clause 5.9.7 |  |
| vnGroupInfo | map(VnGroupData) | O | 1..N | A map of 5G VN group data (list of key-value pairs where GroupId serves as key; see clause 6.1.6.1).This attribute is only applicable to the Nudm interface and shall not be included over the Nudr interface. |  |
| sharedVnGroupDataIds | map(SharedDataId) | O | 1..N | A map of identifiers of shared 5G VN group data (list of key-value pairs whereGroupId serves as key; see clause 6.1.6.1), only present if vnGroupInfo not present.This attribute is only applicable to the Nudm interface and shall not be included over the Nudr interface. |  |
| subscribedUeAmbr | AmbrRm | O | 0..1 |  |  |
| nssai | Nssai | O | 0..1 | Network Slice Selection Assistance Information |  |
| ratRestrictions | array(RatType) | O | 0..N | List of RAT Types that are restricted; see 3GPP TS 29.571 [7] (NOTE 2) |  |
| forbiddenAreas | array(Area) | O | 0..N | List of forbidden areas |  |
| serviceAreaRestriction | ServiceAreaRestriction | O | 0..1 | Subscribed Service Area Restriction |  |
| coreNetworkTypeRestrictions | array(CoreNetworkType) | O | 0..N | List of Core Network Types that are restricted |  |
| rfspIndex | RfspIndexRm | O | 0..1 | Index to RAT/Frequency Selection Priority; |  |
| subsRegTimer | DurationSecRm | O | 0..1 | Subscribed periodic registration timer; see 3GPP TS 29.571 [7] |  |
| ueUsageType | UeUsageType | O | 0..1 |  |  |
| mpsPriority | MpsPriorityIndicator | O | 0..1 |  |  |
| mcsPriority | McsPriorityIndicator | O | 0..1 |  |  |
| activeTime | DurationSecRm | O | 0..1 | subscribed active time for PSM UEs |  |
| dlPacketCount | DlPacketCount | O | 0..1 | DL Buffering Suggested Packet Count indicates whether extended buffering of downlink packets for High Latency Communication is requested. |  |
| sorInfo | SorInfo | O | 0..1 | On Nudm, this IE shall be present if the UDM shall send the information for Steering of Roaming during registration or the subscription data update to the UE. The UDM may detect the need to send sorInfo by retrieving context information from the UDR. (NOTE 4) |  |
| sorInfoExpectInd | Boolean | C | 1 | Contains the indication on whether or not the UE is expecting to receive SoR information at initial registration.* When set to true; it indicates that the UE is expecting to receive SoR information at initial registration, i.e. the UDM shall send SoR information to the AMF on Nudm even when nothing was received from UDR or SOR-AF. In case the UDM was not able to obtain SoR information, SoR information sent to on Nudm shall contain the indication that "no change" is needed.
* When set to false: it indicates that the UE is not expecting to receive SoR information at initial registration, i.e. the UDM shall send SoR information to the AMF only if SoR information was received from the UDR or SOR-AF, but otherwise shall not send it, not even a "no change" indication.

This attribute may be present on Nudr interface and shall be absent on UDM interface.The UDM shall ignore this attribute if the UE is not roaming out of its HPLMN |  |
| sorafRetrieval | boolean | C | 0..1 | Contains the indication on whether or not SoR information shall be retrieved from the SOR-AF.* When set to true: it indicates that the UDM shall retrieve SoR information from the SOR-AF.
* When set to false or absent: it indicates that the retrieval of SorInfo from the SOR-AF is not required.

This attribute may be present on Nudr interface and shall be absent on Nudm interface.The UDM shall ignore this attribute if the UE is not roaming out of its HPLMN. |  |
| sorUpdateIndicatorList | array(SorUpdateIndicator) | C | 1..N | When present, it contains the list of SoR Update Indicators;* It shall indicate that the AMF shall retrieve SoR information when the UE performs Registration with NAS Registration Type "Initial Registration" if the value "INITIAL\_REGISTRATION" is included;
* And/or it shall indicate that the AMF shall retrieve SoR information when the UE performs Registration with NAS Registration Type "Emergency Registration" if the value "EMERGENCY\_REGISTRATION" is included.

When absent on Nudm interface, it indicates that the AMF is not requested to retrieve SoR information when the UE performs Registration with either NAS Registration Type "Initial Registration" or NAS Registration Type "Emergency Registration".The UDM shall ignore this attribute if the UE is not roaming out of its HPLMN. |  |
| upuInfo | UpuInfo | O | 0..1 | This IE shall be present if the UDM shall send the information for UE Parameters Update after the UE has been successfully authenticated and registered to the 5G system. |  |
| micoAllowed | MicoAllowed | O | 0..1 | Indicates whether the UE subscription allows MICO mode. |  |
| sharedAmDataIds | array(SharedDataId) | O | 0..N | Identifier of shared Access And Mobility Subscription data | SharedData |
| odbPacketServices | OdbPacketServices | O | 0..1 | Operator Determined Barring for Packet Oriented Services (NOTE 3). |  |
| subscribedDnnList | array(Dnn) | O | 0..N | List of the subscribed DNNs for the UE (including optionally the Wildcard DNN). Used to determine the list of LADN available to the UE as defined in clause 5.6.5 of TS 23.501 [2]. When present, this IE shall contain the Network Identifier only. |  |
| serviceGapTime | DurationSec | O | 0..1 | Used to set the Service Gap timer for Service Gap Control (see TS 23.501 [2] clause 5.26.16 and TS 23.502 [3] clause 4.2.2.2.2). |  |
| mdtConfiguration | MdtConfiguration | C | 0..1 | This IE shall be present if the MDT task is activated.When present, this IE shall contain MDT configuration data for UE (see clause 4.1.2.17 of 3GPP TS 32.422 [xx]). |  |
| traceData | TraceData | O | 0..1 | Trace requirements about the UE, only sent to AMF in the HPLMN or one of its equivalent PLMN(s) |  |
| cagData | CagData | O | 0..1 | Closed Access Group Data.Shall be absent if both- no CAG is subscribed for the serving PLMN and- an acknowledgement from the UE is not pending. |  |
| stnSr | StnSr | O | 0..1 | This IE shall be present if the UE is subscribed to 5G SRVCC.When present, it indicates the STN-SR (Session Transfer Number for SRVCC) of the UE. |  |
| cMsisdn | CMsisdn | O | 0..1 | This IE shall be present if the UE is subscribed to 5G SRVCC.When present, it indicates the C-MSISDN (Correlation MSISDN) of the UE. |  |
| nbIoTUePriority | NbIoTUePriority | O | 0..1 | Indicates NB IoT UE priority which is used by the NG-RAN to prioritise resource allocation between UEs accessing via NB-IoT(see clause 5.31.17 of 3GPP TS 23.501 [2]). |  |
| nssaiInclusionAllowed | boolean | O | 0..1 | Indicates that the UE is allowed to include NSSAI in the RRC connection establishment in clear text for 3GPP access.true: indicates that NSSAI can be included in RRC connection establishment by the UE.false or absent: indicates that NSSAI cannot be included. |  |
| rgWirelineCharacteristics | RgWirelineCharacteristics | O | 0..1 | Indicates the RG Level Wireline Access Characteristics as specified in 3GPP TS 23.316 [37]. |  |
| rgTMBR | TMBR | O | 0..1 | The maximum aggregated uplink and downlink bit rates to be shared across all Non-GBR and GBR QoS Flows via wireline access network for the UE as specified in 3GPP TS 23.316 [37] |  |
| ecRestrictionData | EcRestrictionData | O | 0..1 | Indicates Enhanced Coverage Restriction Data.If absent, indicates enchanged coverage is not restricted. |  |
| expectedUeBehaviour | ExpectedUeBehaviourData | O | 0..1 | Indicates Expected UE Behaviour parameters associated with AMF(see clause 5.20 of 3GPP TS 23.501 [2] and clause  4.15.6.3 of 3GPP TS 23.502 [3]).This attribute is only applicable to the Nudm interface and shall not be included over the Nudr interface. |  |
| maximumResponseTimeList | array(MaximumResponseTime) | O | 1..N | Indicates Maximum Response Time associated with AMF (see clause 5.20 of 3GPP TS 23.501 [2] and clause  4.15.6.3a of 3GPP TS 23.502 [3]).This attribute is only applicable to the Nudm interface and shall not be included over the Nudr interface. |  |
| maximumLatencyList | array(MaximumLatency) | O | 1..N | Indicates Maximum Latency associated with AMF (see clause 5.20 of 3GPP TS 23.501 [2] and clause  4.15.6.3a of 3GPP TS 23.502 [3]).This attribute is only applicable to the Nudm interface and shall not be included over the Nudr interface. |  |
| primaryRatRestrictions | array(RatType) | O | 0..N | List of RAT Types that are restricted for use as primary RAT; see 3GPP TS 29.571 [7] (NOTE 2) |  |
| secondaryRatRestrictions | array(RatType) | O | 0..N | List of RAT Types that are restricted for use as secondary RAT; see 3GPP TS 29.571 [7] (NOTE 2) |  |
| edrxParametersList | array(EdrxParameters) | O | 1..N | List of subscribed the extended idle mode DRX parameters (see clause 5.31.7.2.1 of 3GPP TS 23.501 [2]). |  |
| ptwParametersList | array(PtwParameters) | O | 1..N | List of subscribed the Paging Time Window parameters (see clause 5.31.7.2.1 of 3GPP TS 23.501 [2]). |  |
| iabOperationAllowed | boolean | O | 0..1 | Indicates that the UE is allowed for IAB operation as specified in 3GPP TS 23.501 [2].true: indicates that the UE is allowed for IAB operation.false or absent: indicates that the UE is not allowed for IAB operation. |  |
| nrV2xServicesAuth | NrV2xAuth | O | 0..1 | Indicates whether the UE is authorized to use the LTE sidelink for V2X services. |  |
| lteV2xServicesAuth | LteV2xAuth | O | 0..1 | Indicates whether the UE is authorized to use the NR sidelink for V2X services. |  |
| nrUePc5Ambr | BitRate | O | 0..1 | Indicates UE-PC5-AMBR for V2X communication over PC5 reference point for NR PC5. |  |
| ltePc5Ambr | BitRate | O | 0..1 | Indicates UE-PC5-AMBR for V2X communication over PC5 reference point for LTE PC5. |  |
| NOTE 1: AccessAndMobilitySubscriptionData can be UE-individual data or shared data. UE-individual data take precedence over shared data. E.g.: When an attribute of type array is present but empty within UE-Individual data and present (with any cardinality) in shared data, the empty array takes precedence. Similarly, when a nullable attribute is present with value null within the individual data and present (with any value) in shared data, the null value takes precedence (i.e. for the concerned UE the attribute is considered absent).NOTE 2: If the primaryRatRestrictions and secondaryRatRestrictions attributes are supported by the sender, the sender shall include the list of RAT Types that are restricted, if any, in the ratRestrictions attribute, shall include the list of RAT Types that are restricted for use as primary RAT, if any, in the primaryRatRestrictions attribute and shall include the list of RAT Types that are restricted for use as secondary RAT, if any, in the secondaryRatRestrictions attribute. If the primaryRatRestrictions and secondaryRatRestrictions attributes are supported by the receiver, the receiver shall use the data in the primaryRatRestrictions attribute, if received, as the list of RAT Types that are restricted for use as primary RAT, and shall use the data in the secondaryRatRestrictions attribute, if received, as the list of RAT Types that are restricted for use as secondary RAT, otherwise the receiver shall use the data in the ratRestrictions attribute, if received, as the list of RAT Types that are restricted. NOTE 3: The AMF shall take responsibility to perform PDU session related actions subject to change of OdbPacketService, e.g. release existing PDU session.NOTE 4: The UDM shall ignore the content of sorInfo received on Nudr if "sorafRetrieval" is set to true. |  |

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## A.2 Nudm\_SDM API

openapi: 3.0.0

***(… text not shown for clarity …)***

 AccessAndMobilitySubscriptionData:

 type: object

 properties:

 supportedFeatures:

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

 gpsis:

 type: array

 items:

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

 internalGroupIds:

 type: array

 items:

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

 minItems: 1

 vnGroupInfo:

 type: object

 additionalProperties:

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

 minProperties: 1

 sharedVnGroupDataIds:

 type: object

 additionalProperties:

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

 minProperties: 1

 subscribedUeAmbr:

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

 nssai:

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

 ratRestrictions:

 type: array

 items:

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

 forbiddenAreas:

 type: array

 items:

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

 serviceAreaRestriction:

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

 coreNetworkTypeRestrictions:

 type: array

 items:

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

 rfspIndex:

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

 subsRegTimer:

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

 ueUsageType:

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

 mpsPriority:

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

 mcsPriority:

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

 activeTime:

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

 dlPacketCount:

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

 sorInfo:

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

 sorInfoExpectInd:

 type: boolean

 sorafRetrieval:

 type: boolean

 default: false

 sorUpdateIndicatorList:

 type: array

 items:

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

 minItems: 1

 upuInfo:

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

 micoAllowed:

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

 sharedAmDataIds:

 type: array

 items:

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

 minItems: 1

 odbPacketServices:

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

 subscribedDnnList:

 type: array

 items:

 anyOf:

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

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

 serviceGapTime:

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

 mdtConfiguration:

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

 traceData:

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

 cagData:

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

 stnSr:

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

 cMsisdn:

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

 nbIoTUePriority:

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

 nssaiInclusionAllowed:

 type: boolean

 default: false

 rgWirelineCharacteristics:

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

 rgTMBR:

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

 ecRestrictionData:

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

 expectedUeBehaviourList:

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

 maximumResponseTimeList:

 type: array

 items:

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

 minItems: 1

 maximumLatencyList:

 type: array

 items:

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

 minItems: 1

 primaryRatRestrictions:

 type: array

 items:

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

 secondaryRatRestrictions:

 type: array

 items:

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

 edrxParametersList:

 type: array

 items:

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

 minItems: 1

 ptwParametersList:

 type: array

 items:

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

 minItems: 1

 iabOperationAllowed:

 type: boolean

 default: false

 nrV2xServicesAuth:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/NrV2xAuth'

 lteV2xServicesAuth:

 $ref: 'TS29571\_CommonData.yaml#/components/schemas/LteV2xAuth'

 nrUePc5Ambr:

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

 ltePc5Ambr:

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

***(… text not shown for clarity …)***

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*The end of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*