**3GPP TSG-CT WG4 Meeting #99eC4-204267**

**E-Meeting, 18th – 28th August 2020**

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| --- |
| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **29.518** | **CR** | **0397** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  |
| *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:***  | Selected EPS NAS Security Algorithm |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | CT4 |
|  |  |
| ***Work item code:*** | TEI15, 5GS\_Ph1-CT |  | ***Date:*** | 2020-08-24 |
|  |  |  |  |  |
| ***Category:*** | **A** |  | ***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:*** | 3GPP 33.501 has specified that for AMF with N26 supported should inform UE for the selected EPS NAS algorithm:6.7.2 NAS security mode command procedure…In case the network supports interworking using the N26 interface between MME and AMF, the AMF shall also include the selected EPS NAS algorithms (defined in Annex B of TS 33.401 [10]) to be used after mobility to EPS in the NAS Security Mode Command message (see clause 8.5.2). The UE shall store the algorithms for use after mobility to EPS using the N26 interface between MME and AMF. The AMF shall store the selected EPS NAS algorithms in the UE security context.NOTE 2a: When AMF change happens either due to N2-handover or idle mode mobility, the selected EPS NAS algorithms is always included in the 5G UE security context and provided to the target AMF as part of the 5G UE security context. If selected EPS NAS alogrithm is passed to the UE, the AMF stores it in UE security context and transfer it to new AMF during inter-AMF mobility as part of the UE security context. |
|  |  |
| ***Summary of change:*** | 1/ Add new reference to TS 33.4012/ Add new attribute epsNasSecurityMode in MmContext data type3/ Define new data type EpsNasSecurityMode4/ Define new enumerations for EPS NAS security algorithms5/ Update OpenAPI accordingly |
|  |  |
| ***Consequences if not approved:*** | Stage 2 requirement cannot be fulfilled. Selected EPS NAS algorithm cannot be known by new AMF after AMF changes, potentially leads to problems during N26 based mobility procedures from 5GS to EPS. |
|  |  |
| ***Clauses affected:*** | 2, 6.1.6.1, 6.1.6.2.34, 6.1.6.2.x(New), 6.1.6.3.y(New), 6.1.6.3.z(New), 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 introduces backward compatible corrections to OpenAPI file of Namf\_Communication API. |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* First Change \* \* \* \*

# 2 References

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

[7] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

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

[9] IETF RFC 2387: "The MIME Multipart/Related Content-type".

[10] IETF RFC 2045: "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies".

[11] 3GPP TS 24.501: "Non-Access-Stratum (NAS) Protocol for 5G System (5GS); Stage 3".

[12] 3GPP TS 38.413: "NG Radio Access Network (NG-RAN); NG Application Protocol (NGAP)".

[13] 3GPP TS 36.355: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)".

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

[15] 3GPP TS 24.007: "Mobile radio interface signalling layer 3; General Aspects".

[16] 3GPP TS 29.502: "5G System, Session Management Services; Stage 3".

[17] 3GPP TS 38.455: "NR Positioning Protocol A (NRPPa)".

[18] 3GPP TS 29.531: "Network Slice Selection Services; Stage 3".

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

[20] 3GPP TS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[21] Void.

[22] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

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

[24] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[25] 3GPP TS 29.572: "5G System, Location Management Services; Stage 3".

[26] Void.

[27] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

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

[29] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".

[30] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".

[31] Void.

[32] 3GPP TS 29.507: "5G System; Access and Mobility Policy Control Service; Stage 3".

[33] 3GPP TS 23.527: "5G System; Restoration Procedures".

[34] 3GPP TS 29.525: "5G System; UE Policy Control Service; Stage 3".

[35] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

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

[37] 3GPP TR 21.900: "Technical Specification Group working methods".

[38] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[39] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC); Stage 2".

[40] IETF RFC 6901: "JavaScript Object Notation (JSON) Pointer".

[41] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[42] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[43] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification; Formats and coding".

[44] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[45] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[46] 3GPP TS 29.515: "5G System; Gateway Mobile Location Services Stage 3".

[47] 3GPP TS 23.287: "Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services".

[48] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS)".

[xx] 3GPP TS 33.401: "3GPP System Architecture Evolution (SAE); Security architecture".

\* \* \* 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 data types defined for the Namf\_Communication service based interface protocol.

Table 6.1.6.1-1: Namf\_Communication specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| SubscriptionData | 6.1.6.2.2 | Information within AMFStatusChangeSubscribe |
| AmfStatusChangeNotification | 6.1.6.2.3 | Information within AMFStatusChangeNotify |
| AmfStatusInfo | 6.1.6.2.4 | Information within AMFStatusChangeNotify |
| AssignEbiData | 6.1.6.2.5 | Represents information needed for AMF to assign EBIs. |
| AssignedEbiData | 6.1.6.2.6 | Represents successful assignment of EBI(s). |
| AssignEbiFailed | 6.1.6.2.7 | Represents failed assignment of EBI(s) |
| UEContextRelease | 6.1.6.2.8 | Information within ReleaseUeContext |
| N2InformationTransferReqData | 6.1.6.2.9 | N2 information requested to be transferred to 5G AN. |
| NonUeN2InfoSubscriptionCreateData | 6.1.6.2.10 | Subscription information for non UE specific N2 information notification. |
| NonUeN2InfoSubscriptionCreatedData | 6.1.6.2.11 | The created subscription for non UE specific N2 information notification. |
| UeN1N2InfoSubscriptionCreateData | 6.1.6.2.12 | Subscription information for UE specific N1 and/or N2 information notification. |
| UeN1N2InfoSubscriptionCreatedData | 6.1.6.2.13 | The created subscription for UE specific N1 and/or N2 information notification. |
| N2InformationNotification | 6.1.6.2.14 | N2 information for notification. |
| N2InfoContainer | 6.1.6.2.15 | N2 information container. |
| N1MessageNotification | 6.1.6.2.16 | N1 message notification data structure. |
| N1MessageContainer | 6.1.6.2.17 | N1 Message Container |
| N1N2MessageTransferReqData | 6.1.6.2.18 | N1/N2 message container |
| N1N2MessageTransferRspData | 6.1.6.2.19 | N1/N2 message transfer response |
| RegistrationContextContainer | 6.1.6.2.20 | Registration Context Container used to send the UE context information, N1 message from UE, AN address etc during Registration with AMF re-allocation procedure. |
| AreaOfValidity | 6.1.6.2.21 | Area of validity information for N2 information transfer |
| UeContextTransferReqData | 6.1.6.2.23 | Represents to start transferring of an individual ueContext resource from old AMF to new AMF. |
| UeContextTransferRspData | 6.1.6.2.24 | Indicates the transferring of the individual ueContext resource is started successfully. |
| UeContext | 6.1.6.2.25 | Represents an individual ueContext resource |
| N2SmInformation | 6.1.6.2.26 | Represents the session management SMF related N2 information data part. |
| N2InfoContent | 6.1.6.2.27 | Represents a transparent N2 information content to be relayed by AMF. |
| NrppaInformation | 6.1.6.2.28 | Represents a NRPPa related N2 information data part. |
| PwsInformation | 6.1.6.2.29 | Represents a PWS related information data part. |
| N1N2MsgTxfrFailureNotification | 6.1.6.2.30 | N1/N2 Message Transfer Failure Notification |
| N1N2MessageTransferError | 6.1.6.2.31 | N1/N2 Message Transfer Error |
| N1N2MsgTxfrErrDetail | 6.1.6.2.32 | N1/N2 Message Transfer Error Details |
| N2InformationTransferRspData | 6.1.6.2.33 | Indicates a successful delivery of N2 Information to the AN. |
| MmContext | 6.1.6.2.34 | Represents a Mobility Management Context in UE Context |
| SeafData | 6.1.6.2.35 | Represents SEAF data derived from data received from AUSF |
| NasSecurityMode | 6.1.6.2.36 | Indicates the NAS Security Mode |
| PduSessionContext | 6.1.6.2.37 | Represents a PDU Session Context in UE Context |
| NssaiMapping | 6.1.6.2.38 | Represents a map of a S-NSSAI in serving PLMN to a S-NSSAI in home PLMN. |
| UeRegStatusUpdateReqData | 6.1.6.2.39 | Provides information on the UE registration completion at a target AMF. |
| AssignEbiError | 6.1.6.2.40 | Represents the details regarding EBI assignment failure. |
| UeContextCreateData | 6.1.6.2.41 | Indicates a request to create an individual ueContext resource |
| UeContextCreatedData | 6.1.6.2.42 | Indicates a successful creation of an individual ueContext resource |
| UeContextCreateError | 6.1.6.2.43 | Represents an error when creating a UE context |
| NgRanTargetId | 6.1.6.2.44 | Indicates a NG RAN as target of the handover |
| N2InformationTransferError | 6.1.6.2.45 | Error within NonUeN2MessageTransfer response |
| PWSResponseData | 6.1.6.2.46 | Represents the type of PWS |
| PWSErrorData | 6.1.6.2.47 | Represents the type of PWS error |
| NgKsi | 6.1.6.2.49 | Represents the ngKSI (see 3GPP TS 33.501 [27]) |
| KeyAmf | 6.1.6.2.50 | Represents the Kamf or K'amf. (see 3GPP TS 33.501 [27]). |
| ExpectedUeBehavior | 6.1.6.2.51 | Represents the expected UE behavior (e.g. UE moving trajectory) and its validity period. |
| UeRegStatusUpdateRspData | 6.1.6.2.52 | Provides the status of UE context transfer status update at a source AMF. |
| N2RanInformation | 6.1.6.2.53 | Represents the RAN related N2 information data part. |
| N2InfoNotificationRspData | 6.1.6.2.54 | N2 information notification response data |
| SmallDataRateStatusInfo | 6.1.6.2.55 | Represents the small data rate status |
| SmfChangeInfo | 6.1.6.2.56 |  |
| V2xContext | 6.1.6.2.57 | Represents the V2X services related parameters |
| ImmediateMdtConf | 6.1.6.2.58 | Immediate MDT Configuration |
| V2xInformation | 6.1.6.2.59 | V2X related N2 information |
| EpsNasSecurityMode | 6.1.6.2.x | Indicates the EPS NAS Security Mode |
| EpsBearerId | 6.1.6.3.2 | EPS Bearer Identifier |
| Ppi | 6.1.6.3.2 | Paging Policy Indicator |
| NasCount | 6.1.6.3.2 | Represents a NAS COUNT |
| 5GMmCapability | 6.1.6.3.2 | Represents a 5GMM capability |
| UeSecurityCapability | 6.1.6.3.2 | Represents a UE Security Capability |
| S1UeNetworkCapability | 6.1.6.3.2 | Represents a S1 UE Network Capability |
| DrxParameter | 6.1.6.3.2 | Indicates the UE DRX Parameters |
| OmcIdentifier | 6.1.6.3.2 | Represents the OMC Identifier |
| MSClassmark2 | 6.1.6.3.2 | Indicates the MS Classmark 2 of a 5G SRVCC UE |
| SupportedCodec | 6.1.6.3.2 | Indicates the supported codec of a 5G SRVCC UE |
| StatusChange | 6.1.6.3.3 |  |
| N2InformationClass | 6.1.6.3.4 |  |
| N1MessageClass | 6.1.6.3.5 |  |
| N1N2MessageTransferCause | 6.1.6.3.6 |  |
| UeContextTransferStatus | 6.1.6.3.7 | Describes the status of an individual ueContext resource in UE Context Transfer procedures |
| N2InformationTransferResult | 6.1.6.3.8 | Describes the result of N2 information transfer by AMF to the AN. |
| CipheringAlgorithm | 6.1.6.3.9 | Indicates the supported Ciphering Algorithm |
| IntegrityAlgorithm | 6.1.6.3.10 | Indicates the supported Integrity Algorithm |
| SmsSupport | 6.1.6.3.11 | Indicates the supported SMS delivery of a UE. |
| ScType | 6.1.6.3.12 | Indicates the security context type. |
| KeyAmfType | 6.1.6.3.13 | Indicates the Kamf type. |
| TransferReason | 6.1.6.3.14 | Indicates UE Context Transfer Reason |
| PolicyReqTrigger | 6.1.6.3.15 | Policy Request Triggers |
| RatSelector | 6.1.6.3.16 | Indicates the RAT type for the transfer of N2 information |
| NgapIeType | 6.1.6.3.17 | Indicates the supported NGAP IE types |
| N2InfoNotifyReason | 6.1.6.3.18 | N2 Information Notify Reason |
| SmfChangeIndication | 6.1.6.3.19 | Indicates the I-SMF or V-SMF change or removal |
| SbiBindingLevel | 6.1.6.3.20 | SBI Binding Level |
| EpsNasCipheringAlgorithm | 6.1.6.3.y | Indicates the supported EPS NAS Ciphering Algorithm |
| EpsNasIntegrityAlgorithm | 6.1.6.3.z | Indicates the supported EPS NAS Integrity Algorithm |

Table 6.1.6.1-2 specifies data types re-used by the Namf 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 Namf service based interface.

Table 6.1.6.1-2: Namf re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Snssai | 3GPP TS 29.571 [6] |  |
| Arp | 3GPP TS 29.571 [6] |  |
| PduSesisonId | 3GPP TS 29.571 [6] |  |
| Guami | 3GPP TS 29.571 [6] | Globally Unique AMF Identifier |
| AmfName | 3GPP TS 29.571 [6] | The name of the AMF |
| Supi | 3GPP TS 29.571 [6] | Subscription Permanent Identifier |
| IndicationFlags | 3GPP TS 29.502 [16] | Indication Flags |
| Cause | 3GPP TS 29.571 [6] | 5G-AN Cause |
| ProblemDetails | 3GPP TS 29.571 [6] | Detailed problems in failure case |
| supportedFeatures | 3GPP TS 29.571 [6] | Supported Features |
| TimeZone | 3GPP TS 29.571 [6] |  |
| UserLocation | 3GPP TS 29.571 [6] |  |
| AccessType | 3GPP TS 29.571 [6] |  |
| AllowedNssai | 3GPP TS 29.531 [18] |  |
| NfInstanceId | 3GPP TS 29.571 [6] |  |
| Uri | 3GPP TS 29.571 [6] |  |
| Ecgi | 3GPP TS 29.571 [6] | EUTRA Cell Identifier |
| Ncgi | 3GPP TS 29.571 [6] | NR Cell Identifier |
| Uint16 | 3GPP TS 29.571 [6] |  |
| 5Qi | 3GPP TS 29.571 [6] | 5G QoS Identifier |
| CorrelationID | 3GPP TS 29.572 [25] | LCS Correlation ID |
| Pei | 3GPP TS 29.571 [6] |  |
| Dnn | 3GPP TS 29.571 [6] |  |
| Gpsi | 3GPP TS 29.571 [6] |  |
| GroupId | 3GPP TS 29.571 [6] |  |
| PlmnId | 3GPP TS 29.571 [6] |  |
| RfspIndex | 3GPP TS 29.571 [6] |  |
| EbiArpMapping | 3GPP TS 29.502 [16] | EBI - ARP mapping |
| NsiId | 3GPP TS 29.531 [18] |  |
| TraceData | 3GPP TS 29.571 [6] | Trace control and configuration parameters |
| ConfiguredSnssai | 3GPP TS 29.531 [18] |  |
| NgApCause | 3GPP TS 29.571 [6] | Represents the NG AP cause IE |
| Area | 3GPP TS 29.571 [6] |  |
| ServiceAreaRestriction | 3GPP TS 29.571 [6] |  |
| CoreNetworkType | 3GPP TS 29.571 [6] |  |
| Ambr | 3GPP TS 29.571 [6] |  |
| GlobalRanNodeId | 3GPP TS 29.571 [6] |  |
| NfGroupId | 3GPP TS 29.571 [6] | Network Function Group Id |
| DurationSec | 3GPP TS 29.571 [6] |  |
| StnSr | 3GPP TS 29.571 [6] | Session Transfer Number for SRVCC |
| CMsisdn | 3GPP TS 29.571 [6] | Correlation MSISDN |
| DateTime | 3GPP TS 29.571 [6] |  |
| SmallDataRateStatus | 3GPP TS 29.571 [6] |  |
| NfSetId | 3GPP TS 29.571 [13] | NF Set ID |
| NfServiceSetId | 3GPP TS 29.571 [13] | NF Service Set ID |
| LMFIdentification | 3GPP TS 29.572 [25] | LMF Identification |
| PlmnAssiUeRadioCapId | 3GPP TS 29.571 [6] |  |
| ManAssiUeRadioCapId | 3GPP TS 29.571 [6] |  |
| NrV2xAuth | 3GPP TS 29.571 [6] | NR V2X services authorized |
| LteV2xAuth | 3GPP TS 29.571 [6] | LTE V2X services authorized |
| BitRate | 3GPP TS 29.571 [6] | Bit Rate |
| Pc5QoSPara | 3GPP TS 29.571 [6] | PC5 QoS parameters |
| CnAssistedRanPara | 3GPP TS 29.502 [16] | SMF derived CN assisted RAN Parameters Tuning |
| MoExpDataCounter | 3GPP TS 29.571 [6] | MO Exception Data Counter |
| CagData | 3GPP TS 29.503 [35] | Closed Access Group Data |
| NssaaStatus | 3GPP TS 29.571 [6] | Subscribed S-NSSAI subject to NSSAA procedure and the status |

\* \* \* Next Change \* \* \* \*

##### 6.1.6.2.34 Type: MmContext

Table 6.1.6.2.34-1: Definition of type MmContext

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| accessType | AccessType | M | 1 | This IE shall contain the access type of the MM context. |
| nasSecurityMode | NasSecurityMode | C | 0..1 | This IE shall be present if available in 3GPP access MM context. When present, this IE shall contain the used NAS security mode of the UE. |
| epsNasSecurityMode | EpsNasSecurityMode | C | 0..1 | This IE shall be present in 3GPP access MM context if selected EPS NAS security algorithms have been previously provided to the UE, as specified in clause 6.7.2 of 3GPP TS 33.501 [27].When present, this IE shall contain the selected EPS NAS security algorithms provided to the UE. |
| nasDownlinkCount | NasCount | C | 0..1 | This IE shall be present if available in 3GPP access MM context. When present, this IE shall contain the NAS downlink count of the UE. |
| nasUplinkCount | NasCount | C | 0..1 | This IE shall be present if available in 3GPP access MM context. When present, this IE shall contain the NAS uplink count of the UE. |
| ueSecurityCapability | UeSecurityCapability | C | 0..1 | This IE shall be present if available in 3GPP access MM context. When present, this IE shall contain the UE security capability |
| s1UeNetworkCapability | S1UeNetworkCapability | C | 0..1 | This IE shall be present if available in 3GPP access MM context. When present, this IE shall contain the S1 UE network capabilities. |
| allowedNssai | array(Snssai) | C | 1..N | This IE shall be present if available. When present, this IE shall contain the allowed NSSAI for the access type. |
| nssaiMappingList | array(NssaiMapping) | C | 1..N | This IE shall be present if available. When present, this IE shall contain the mapping of the allowed NSSAI for the UE. |
| nsInstanceList | array(NsiId) | C | 1..N | This IE shall be present if available. When present, it shall indicate the Network Slice Instances selected for the UE. |
| expectedUEbehavior | ExpectedUeBehavior | C | 0..1 | This IE shall be present if available. When present it shall indicate the expected UE moving trajectory and its validity period. See 3GPP TS 23.502 [3] clause 4.15.6.3. |
| plmnAssiUeRadioCapId | PlmnAssiUeRadioCapId | C | 0..1 | This IE shall be present if the source AMF supports RACS feature and if available. When present it shall be the PLMN-assigned UE Radio Capability ID. |
| manAssiUeRadioCapId | ManAssiUeRadioCapId | C | 0..1 | This IE shall be present if the source AMF supports RACS feature and if available. When present it shall be the Manufacturer-assigned UE Radio Capability ID. |
| ucmfDicEntryId | string | C | 0..1 | This IE shall be present if the source AMF supports RACS feature and if available. When present it shall be the UCMF allocated dicEntryId received from the UCMF. |
| n3IwfId | GlobalRanNodeId | C | 0..1 | This IE shall be present during Registration procedure with AMF changes as specified in clause 4.2.2.2 of 3GPP TS 23.502 [3], if old AMF holds UE context established via N3IWF.When present, this IE shall contain the Global RAN Node ID of N3IWF. |
| wagfId | GlobalRanNodeId | C | 0..1 | This IE shall be present during Registration procedure with AMF changes as specified in clause 4.2.2.2 of 3GPP TS 23.502 [3], if old AMF holds UE context established via W-AGF.When present, this IE shall contain the Global RAN Node ID of W-AGF. |
| tngfId | GlobalRanNodeId | C | 0..1 | This IE shall be present during Registration procedure with AMF changes as specified in clause 4.2.2.2 of 3GPP TS 23.502 [3], if old AMF holds UE context established via TNGF.When present, this IE shall contain the Global RAN Node ID of TNGF. |
| anN2ApId | integer | C | 0..1 | This IE shall be present during Registration procedure with AMF changes, as specified in clause 4.2.2.2 of 3GPP TS 23.502 [3], if old AMF holds UE context established via N3IWF/W-AGF/TNGF and the UE is in CM-CONNECTED state via N3IWF/W-AGF/TNGF.When present, this IE shall contain the RAN UE NGAP ID over N2 interface. |
| nssaaStatusList | array(NssaaStatus) | C | 1..N | This IE shall be present if available. When present, it shall contain the subscribed S-NSSAIs subject to NSSAA procedure and for which a status information is available. See 3GPP TS 23.501 [2] clause 5.15.5.2.1 and 3GPP TS 23.502 [3] clause 5.2.2.2.2. |
| pendingNssaiMappingList | array(NssaiMapping) | C | 1..N | This IE shall be present if available. When present, this IE shall contain the mapping of the pending NSSAI for the UE. |

\* \* \* Next Change \* \* \* \*

##### 6.1.6.2.x Type: EpsNasSecurityMode

Table 6.1.6.2.x-1: Definition of type EpsNasSecurityMode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| integrityAlgorithm | EpsNasIntegrityAlgorithm | M | 1 | Indicates the integrity protection algorithm for EPS NAS |
| cipheringAlgorithm | EpsNasCipheringAlgorithm | M | 1 | Indicates the ciphering algorithm for EPS NAS. |

\* \* \* Next Change \* \* \* \*

##### 6.1.6.3.y Enumeration: EpsNasCipheringAlgorithm

This data type enumerates the algorithms for data ciphering in EPS NAS, as specified in clause 5.1.3.2 of 3GPP TS 33.401 [xx].

Table 6.1.6.3.y-1: Enumeration EpsNasCipheringAlgorithm

|  |  |
| --- | --- |
| Enumeration value | Description |
| "EEA0" | Null ciphering algorithm |
| "EEA1" | 128-bit SNOW 3G based algorithm |
| "EEA2" | 128-bit AES based algorithm |
| "EEA3" | 128-bit ZUC based algorithm |

\* \* \* Next Change \* \* \* \*

##### 6.1.6.3.z Enumeration: EpsNasIntegrityAlgorithm

This data type enumerates the algorithms for data integrity protection in EPS NAS, as specified in clause 5.1.4.2 of 3GPP TS 33.401 [xx].

Table 6.1.6.3.z-1: Enumeration EpsNasIntegrityAlgorithm

|  |  |
| --- | --- |
| Enumeration value | Description |
| "EIA0" | Null Integrity Protection algorithm |
| "EIA1" | 128-bit SNOW 3G based algorithm |
| "EIA2" | 128-bit AES based algorithm |
| "EIA3" | 128-bit ZUC based algorithm |

\* \* \* Next Change \* \* \* \*

## A.2 Namf\_Communication API

openapi: 3.0.0

info:

 version: 1.1.0

 title: Namf\_Communication

 description: |

 AMF Communication Service

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security:

 - {}

 - oAuth2ClientCredentials:

 - namf-comm

externalDocs:

 description: 3GPP TS 29.518 V16.4.0; 5G System; Access and Mobility Management Services

 url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.518/'

servers:

 - url: '{apiRoot}/namf-comm/v1'

 variables:

 apiRoot:

 default: https://example.com

 description: apiRoot as defined in clause clause 4.4 of 3GPP TS 29.501

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarify \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 MmContext:

 type: object

 properties:

 accessType:

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

 nasSecurityMode:

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

 epsNasSecurityMode:

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

 nasDownlinkCount:

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

 nasUplinkCount:

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

 ueSecurityCapability:

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

 s1UeNetworkCapability:

 $ref: '#/components/schemas/S1UeNetworkCapability'

 allowedNssai:

 type: array

 items:

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

 minItems: 1

 nssaiMappingList:

 type: array

 items:

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

 minItems: 1

 nsInstanceList:

 type: array

 items:

 $ref: 'TS29531\_Nnssf\_NSSelection.yaml#/components/schemas/NsiId'

 minItems: 1

 expectedUEbehavior:

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

 plmnAssiUeRadioCapId:

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

 manAssiUeRadioCapId:

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

 ucmfDicEntryId:

 type: string

 n3IwfId:

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

 wagfId:

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

 tngfId:

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

 anN2ApId:

 type: integer

 nssaaStatusList:

 type: array

 items:

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

 minItems: 1

 pendingNssaiMappingList:

 type: array

 items:

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

 minItems: 1

 required:

 - accessType

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarify \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 ImmediateMdtConf:

 type: object

 properties:

 jobType:

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

 measurementLteList:

 type: array

 items:

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

 minItems: 1

 measurementNrList:

 type: array

 items:

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

 minItems: 1

 reportingTriggerList:

 type: array

 items:

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

 minItems: 1

 reportInterval:

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

 reportAmount:

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

 eventThresholdRsrp:

 type: integer

 minimum: 0

 maximum: 97

 eventThresholdRsrq:

 type: integer

 minimum: 0

 maximum: 34

 collectionPeriodRmmLte:

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

 measurementPeriodLte:

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

 areaScope:

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

 positioningMethod:

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

 mdtAllowedPlmnIdList:

 type: array

 items:

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

 minItems: 1

 maxItems: 16

 required:

 - jobType

 EpsNasSecurityMode:

 type: object

 properties:

 integrityAlgorithm:

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

 cipheringAlgorithm:

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

 required:

 - integrityAlgorithm

 - cipheringAlgorithm

#

# SIMPLE DATA TYPES

#

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text Skipped for Clarify \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

 SmfChangeIndication:

 anyOf:

 - type: string

 enum:

 - CHANGED

 - REMOVED

 - type: string

 SbiBindingLevel:

 anyOf:

 - type: string

 enum:

 - NF\_INSTANCE\_BINDING

 - NF\_SET\_BINDING

 - NF\_SERVICE\_SET\_BINDING

 - type: string

 EpsNasCipheringAlgorithm:

 anyOf:

 - type: string

 enum:

 - EEA0

 - EEA1

 - EEA2

 - EEA3

 - type: string

 EpsNasIntegrityAlgorithm:

 anyOf:

 - type: string

 enum:

 - EIA0

 - EIA1

 - EIA2

 - EIA3

 - type: string

\* \* \* End of Changes \* \* \* \*