

UCC 5G AMF API Reference, Release 2026.04

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About this Guide

Note The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. While any existing biased terms are being substituted, exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

This preface describes the *Ultra Cloud Core 5G Access and Mobility Management Function - API Reference*, the document conventions, and the customer support details.

- Conventions Used, on page ix
- Contacting Customer Support, on page x

Conventions Used

The following tables describe the conventions used throughout this documentation.

Notice Type	Description
Information Note	Provides information about important features or instructions.
Caution	Alerts you of potential damage to a program, device, or system.
Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.

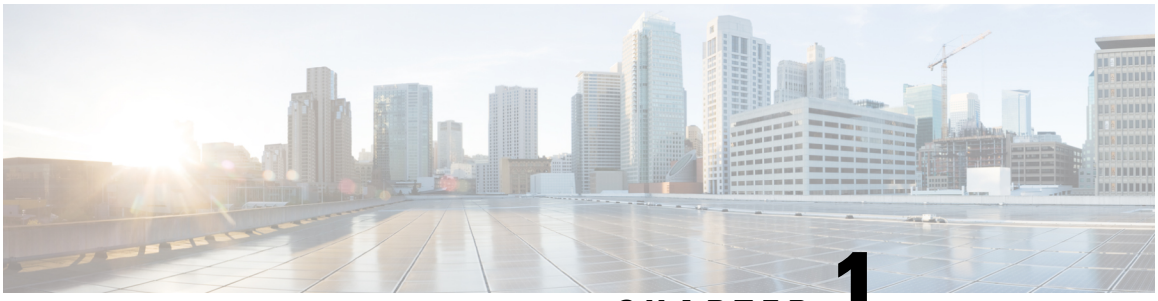
Typeface Conventions	Description
Text represented as a `screen display`	This typeface represents displays that appear on your terminal screen, for example: `Login:`

Typeface Conventions	Description
Text represented as **commands**	This typeface represents commands that you enter, for example: **show ip access-list** This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.
Text represented as a **command** *variable*	This typeface represents a variable that is part of a command, for example: **show card** *slot_number* *slot_number* is a variable representing the applicable chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example: Click the **File** menu, then click **New**

Contacting Customer Support

Use the information in this section to contact customer support.

Refer to the support area of http://www.cisco.com for up-to-date product documentation or to submit a service request. A valid username and password are required to access this site. Please contact your Cisco sales or service representative for additional information.



CHAPTER 1

Equipment Identity Register

EIR allows the AMF to interact with EIR to validate the UE identity during the UE registration procedure.

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- Servers, on page 2
- Security, on page 2
- Paths, on page 2
- Components, on page 5
- External Docs, on page 6

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '1.1.1'

Title: '5G-EIR Equipment Identity Check'


Description: |

  5G-EIR Equipment Identity Check Service.

  © 2021, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

  All rights reserved.
```

Servers

URL: '{apiRoot}/n5g-eir-eic/v1'

Variables:

API Root:

Default: https://example.com

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

Security

- {}
- oAuth2ClientCredentials:
  - n5g-eir-eic

Paths

equipment-status

get:

Summary: Retrieves the status of the UE

Operation ID: GetEquipmentStatus

Tags:

- Equipment Status (Document)

Parameters:

- **Name**: pei

  In: query

  Description: PEI of the UE

```
    Required/Optional: true
    Schema:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
  - Name: supi
    In: query
    Description: SUPI of the UE
    Required/Optional: false
    Schema:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
  - Name: gpsi
    In: query
    Description: GPSI of the UE
    Required/Optional: false
    Schema:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
  - Name: supported-features
    In: query
    Description: supported features of the NF consumer
    Schema:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
Responses:
  '200':
    Description: Expected response to a valid request
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/EirResponseData'
  '307':
    Description: temporary redirect
```

```
        Headers:
          Location:
            Description: 'An alternative URI of the resource located on an alternative
service instance within the same 5G-EIR or 5G-EIR (service) set '
            Required/Optional: true
            Schema:
              Type: string
          3gpp-Sbi-Target-Nf-Id:
            Description: 'Identifier of target 5G-EIR (service) instance towards which
the request is redirected'
            Schema:
              Type: string
      '308':
        Description: permanent redirect
        Headers:
          Location:
            Description: 'An alternative URI of the resource located on an alternative
service instance within the same 5G-EIR or 5G-EIR (service) set '
            Required/Optional: true
            Schema:
              Type: string
          3gpp-Sbi-Target-Nf-Id:
            Description: 'Identifier of target 5G-EIR (service) instance towards which
the request is redirected'
            Schema:
              Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
      '404':
```

```
      Description: PEI Not Found
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '414':
      Reference: 'TS29571_CommonData.yaml#/components/responses/414'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
```

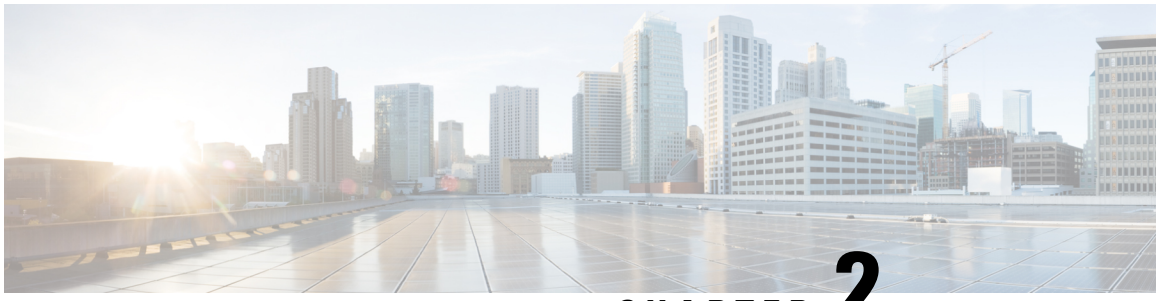
Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          n5g-eir-eic: Access to the N5g-eir_EquipmentIdentityCheck API
schemas:
```

```
EirResponseData:
  Type: object
  Required:
    - status
  Properties:
    status:
        Reference: '#/components/schemas/EquipmentStatus'
EquipmentStatus:
  Type: string
  enum:
    - WHITELISTED
    - BLACKLISTED
    - GREYLISTED
```

External Docs

```
Description: 3GPP TS 29.511 V16.4.0; 5G System; Equipment Identity Register Services;
Stage 3
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.511/'
```



CHAPTER 2

Namf_Communication

This service enables an NF to communicate with the UE through N1 NAS messages or with the AN (both UE and non UE specific). The service operations defined below allow the NF to communicate with the UE and the AN. The following are the key functionalities of this NF service.

- Provide service operations for transporting N1 messages to the UE;
- Allow NFs to subscribe and unsubscribe for notifications of specific N1 messages from the UE;
- Allow NFs to subscribe and unsubscribe for notifications about specific information from AN;
- Provide service operations for initiating N2 messages towards the AN;
- Security Context Management; and
- UE information management and transfer (including its security context).

Reference: 3GPP TS 29.518 [14]

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- External Docs, on page 45

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: 1.0.0
Title: Namf_Communication
Description: AMF Communication Service

Servers

```
URL: '{apiRoot}/namf-comm/v1'
Variables:
  API Root:
    Default: https://example.com
    Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501
```

Security

```
- {}
- oAuth2Clientcredentials:
    - namf-comm
```

Paths

/ue-contexts/{ueContextId}

```
  put:
    Summary: Namf_Communication CreateUEContext service Operation

    Tags:
      - Individual ueContext (Document)
    Operation ID: CreateUEContext

    Parameters:
      - Name: ueContextId
        In: path
        Description: UE Context Identifier
        Required/Optional: true
        Schema:
          Type: string
          pattern:
'^(5g-guti-[0-9]{5,6}[0-9a-fA-F]{14}|imsi-[0-9]{5,15}|nai-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|.+)$'

    Request Body:
      Content:
        Multipart/Related: # message with binary body part(s)
          Schema:
            Type: object
            Properties: # Request parts
              JSON Data:
                Reference: '#/components/schemas/UeContextCreateData'
              binaryDataN1Message:
                Type: string
```

```
                Format: binary
              binaryDataN2Information:
                Type: string
                Format: binary
              binaryDataN2InformationExt1:
                Type: string
                Format: binary
            Encoding:
              JSON Data:
                Content Type: application/json
              binaryDataN1Message:
                Content Type: application/vnd.3gpp.5gnas
                Headers:
                  Content ID:
                    Schema:
                      Type: string
              binaryDataN2Information:
                Content Type: application/vnd.3gpp.ngap
                Headers:
                  Content ID:
                    Schema:
                      Type: string
              binaryDataN2InformationExt1:
                Content Type: application/vnd.3gpp.ngap
                Headers:
                  Content ID:
                    Schema:
                      Type: string
        Required/Optional: true

    Responses:
      '201':
        Description: UE context successfully created.
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/namf-comm/v1/ue-contexts/{ueContextId}'
            Required/Optional: true
            Schema:
              Type: string
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/UeContextCreatedData'
          Multipart/Related: # message with binary body part(s)
            Schema:
              Type: object
              Properties: # Request parts
                JSON Data:
                  Reference: '#/components/schemas/UeContextCreatedData'
                binaryDataN1Message:
                  Type: string
```

```
          Format: binary
        binaryDataN2Information:
          Type: string
          Format: binary
    Encoding:
      JSON Data:
        Content Type: application/json
      binaryDataN1Message:
        Content Type: application/vnd.3gpp.5gnas
        Headers:
          Content ID:
            Schema:
              Type: string
      binaryDataN2Information:
        Content Type: application/vnd.3gpp.ngap
        Headers:
          Content ID:
            Schema:
              Type: string
'400':
  Description: Bad Request
  Content:
    Application/JSON:
      Schema:
        Reference: '#/components/schemas/UeContextCreateError'
'403':
  Description: Forbidden
  Content:
    Application/JSON:
      Schema:
        Reference: '#/components/schemas/UeContextCreateError'
'411':
  Reference: 'TS29571_CommonData.yaml#/components/responses/411'
'413':
  Reference: 'TS29571_CommonData.yaml#/components/responses/413'
'415':
  Reference: 'TS29571_CommonData.yaml#/components/responses/415'
'429':
  Reference: 'TS29571_CommonData.yaml#/components/responses/429'
'500':
  Description: Internal Server Error
  Content:
    Application/JSON:
      Schema:
        Reference: '#/components/schemas/UeContextCreateError'
'503':
  Reference: 'TS29571_CommonData.yaml#/components/responses/503'
Default:
  Description: Unexpected error
```

/ue-contexts/{ueContextId}/release

```
  Method: Post
    Summary: Namf_Communication ReleaseUEContext service Operation

    Tags:
      - Individual ueContext (Document)
    Operation ID: ReleaseUEContext

    Parameters:
      - Name: ueContextId
        In: path
        Description: UE Context Identifier
        Required/Optional: true
        Schema:
          Type: string
          pattern:
'^(5g-guti-[0-9]{5,6}[0-9a-fA-F]{14}|imsi-[0-9]{5,15}|nai-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|.+)$'

    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/UEContextRelease'
      Required/Optional: true

    Responses:
      '204':
        Description: UE Context successfully released
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
```

/ue-contexts/{ueContextId}/assign-ebi

```
Method: Post
  Summary: Namf_Communication EBI Assignment service Operation

  Tags:
    - Individual ueContext (Document)
  Operation ID: EBIAssignment

  Parameters:
    - Name: ueContextId
      In: path
      Description: UE Context Identifier
      Required/Optional: true
      Schema:
        Type: string
        pattern:
'^(5g-guti-[0-9]{5,6}[0-9a-fA-F]{14}|imsi-[0-9]{5,15}|nai-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|.+)$'

  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/AssignEbiData'
    Required/Optional: true

  Responses:
    '200':
      Description: EBI Assignment successfully performed.
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/AssignedEbiData'
    '400':
      Description: Bad Request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/AssignEbiError'
    '403':
      Description: Forbidden
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/AssignEbiError'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
```

```
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Description: Internal Server Error
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/AssignEbiError'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
```

/ue-contexts/{ueContextId}/transfer

```
  Method: Post
    Summary: Namf_Communication UEContextTransfer service Operation

    Tags:
      - Individual ueContext (Document)
    Operation ID: UEContextTransfer

    Parameters:
      - Name: ueContextId
        In: path
        Description: UE Context Identifier
        Required/Optional: true
        Schema:
          Type: string
          pattern:
'^(5g-guti-[0-9]{5,6}[0-9a-fA-F]{14}|imsi-[0-9]{5,15}|nai-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|.+)$'

    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/UeContextTransferReqData'
        Multipart/Related: # message with binary body part(s)
          Schema:
            Type: object
            Properties: # Request parts
              JSON Data:
                Reference: '#/components/schemas/UeContextTransferReqData'
              binaryDataN1Message:
                Type: string
                Format: binary
          Encoding:
            JSON Data:
              Content Type: application/json
            binaryDataN1Message:
              Content Type: application/vnd.3gpp.5gnas
              Headers:
```

```
          Content ID:
            Schema:
              Type: string
  Required/Optional: true

Responses:
  '200':
    Description: UE context transfer successfully initiated.
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/UeContextTransferRspData'
      Multipart/Related: # message with binary body part(s)
        Schema:
          Type: object
          Properties: # Request parts
            JSON Data:
              Reference: '#/components/schemas/UeContextTransferRspData'
            binaryDataN2Information:
              Type: string
              Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryDataN2Information:
            Content Type: application/vnd.3gpp.ngap
            Headers:
              Content ID:
                Schema:
                  Type: string
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
    Reference: 'TS29571_CommonData.yaml#/components/responses/429'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
  Default:
    Description: Unexpected error
```

/ue-contexts/{ueContextId}/transfer-update

```
Method: Post
  Summary: Namf_Communication RegistrationStatusUpdate service Operation

  Tags:
    - Individual ueContext (Document)
  Operation ID: RegistrationStatusUpdate

  Parameters:
    - Name: ueContextId
      In: path
      Description: UE Context Identifier
      Required/Optional: true
      Schema:
        Type: string
        pattern:
'^(5g-guti-[0-9]{5,6}[0-9a-fA-F]{14}|imsi-[0-9]{5,15}|nai-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|.+)$'

  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/UeRegStatusUpdateReqData'
    Required/Optional: true

  Responses:
    '200':
      Description: UE context transfer status successfully updated.
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/UeRegStatusUpdateRspData'
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

```
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/ue-contexts/{ueContextId}/n1-n2-messages

```
    Method: Post
      Summary: Namf_Communication N1N2 Message Transfer (UE Specific) service Operation

      Tags:
        - n1N2Message collection (Document)
      Operation ID: N1N2MessageTransfer

      Parameters:
        - Name: ueContextId
          In: path
          Description: UE Context Identifier
          Required/Optional: true
          Schema:
            Type: string
            pattern:
'^(imsi-[0-9]{5,15}|nai-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|cid-.{1,255}|.+)$'
      Request Body:
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/N1N2MessageTransferReqData'
          Multipart/Related: # message with binary body part(s)
            Schema:
              Type: object
              Properties: # Request parts
                JSON Data:
                  Reference: '#/components/schemas/N1N2MessageTransferReqData'
                binaryDataN1Message:
                  Type: string
                  Format: binary
                binaryDataN2Information:
                  Type: string
                  Format: binary
              Encoding:
                JSON Data:
                  Content Type: application/json
                binaryDataN1Message:
                  Content Type: application/vnd.3gpp.5gnas
                  Headers:
                    Content ID:
                      Schema:
                        Type: string
                binaryDataN2Information:
                  Content Type: application/vnd.3gpp.ngap
                  Headers:
                    Content ID:
```

```
            Schema:
              Type: string
  Required/Optional: true

Responses:
  '202':
    Description: N1N2 Message Transfer accepted.
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N1N2MessageTransferRspData'
  '200':
    Description: N1N2 Message Transfer successfully initiated.
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N1N2MessageTransferRspData'
  '307':
    Description: Temporary Redirect
    Content:
      application/problem+json:
        Schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Reference: 'TS29571_CommonData.yaml#/components/responses/404'
  '409':
    Description: Conflicts
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N1N2MessageTransferError'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
    Reference: 'TS29571_CommonData.yaml#/components/responses/429'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
  '504':
    Description: Gateway Timeout
    Content:
      Application/JSON:
        Schema:
```

```
          Reference: '#/components/schemas/N1N2MessageTransferError'
      Default:
        Description: Unexpected error
    Callbacks:
      onN1N2TransferFailure:
        '{$request.body#/n1n2FailureTxfNotifURI}':
          Method: Post
          Summary: Namf_Communication N1N2Transfer Failure Notification service Operation


          Tags:
            - N1N2 Transfer Failure Notification
          Operation ID: N1N2TransferFailureNotification
          Request Body:
            Description: N1N2Transfer Failure Notification
            Content:
              Application/JSON:
                Schema:
                  Reference: '#/components/schemas/N1N2MsgTxfrFailureNotification'

          Responses:
            '204':
              Description: Expected response to a successful callback processing
            '400':
              Reference: 'TS29571_CommonData.yaml#/components/responses/400'
            '411':
              Reference: 'TS29571_CommonData.yaml#/components/responses/411'
            '413':
              Reference: 'TS29571_CommonData.yaml#/components/responses/413'
            '415':
              Reference: 'TS29571_CommonData.yaml#/components/responses/415'
            '429':
              Reference: 'TS29571_CommonData.yaml#/components/responses/429'
            '500':
              Reference: 'TS29571_CommonData.yaml#/components/responses/500'
            '503':
              Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

/non-ue-n2-messages/transfer

```
Method: Post
  Summary: Namf_Communication Non UE N2 Message Transfer service Operation

  Tags:
    - Non UE N2Messages collection (Document)
  Operation ID: NonUeN2MessageTransfer
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N2InformationTransferReqData'
```

```
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/N2InformationTransferReqData'
          binaryDataN2Information:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataN2Information:
          Content Type: application/vnd.3gpp.ngap
          Headers:
            Content ID:
              Schema:
                Type: string
  Required/Optional: true

Responses:
  '200':
    Description: Non UE N2 Message Transfer successfully initiated.
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N2InformationTransferRspData'
  '400':
    Description: Bad Request
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N2InformationTransferError'
  '403':
    Description: Forbidden
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N2InformationTransferError'
  '404':
    Description: Not Found
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/N2InformationTransferError'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
```

```
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Description: Internal Server Error
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/N2InformationTransferError'
    '503':
      Description: Service Unavailable
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/N2InformationTransferError'
    Default:
      Description: Unexpected error
```

/non-ue-n2-messages/subscriptions

```
  Method: Post
    Summary: Namf_Communication Non UE N2 Info Subscribe service Operation

    Tags:
      - Non UE N2Messages Subscriptions collection (Document)
    Operation ID: NonUeN2InfoSubscribe
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/NonUeN2InfoSubscriptionCreateData'
      Required/Optional: true

    Responses:
      '201':
        Description: Non UE N2 Info Subscription successfully created.
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure:
{apiRoot}/namf-comm/v1/non-ue-n2-messages/subscriptions/{n2NotifySubscriptionId}'
            Required/Optional: true
            Schema:
              Type: string
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/NonUeN2InfoSubscriptionCreatedData'
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '411':
```

```
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
  Callbacks:
    onN2InfoNotify:
      '{$request.body#/n2NotifyCallbackUri}':
        Method: Post
          Summary: Namf_Communication Non UE N2 Info Notify service Operation

          Tags:
            - Non UE N2 Info Notify
          Operation ID: NonUeN2InfoNotify
          Request Body:
            Description: Non UE N2 Informaiton Notification
            Content:
              Application/JSON:
                Schema:
                  Reference: '#/components/schemas/N2InformationNotification'
              Multipart/Related: # message with binary body part(s)
                Schema:
                  Type: object
                  Properties: # Request parts
                    JSON Data:
                      Reference: '#/components/schemas/N2InformationNotification'
                    binaryDataN2Information:
                      Type: string
                      Format: binary
                Encoding:
                  JSON Data:
                    Content Type: application/json
                  binaryDataN2Information:
                    Content Type: application/vnd.3gpp.ngap
                    Headers:
                      Content ID:
                        Schema:
                          Type: string

          Responses:
            '204':
              Description: Expected response to a successful callback processing
            '400':
              Reference: 'TS29571_CommonData.yaml#/components/responses/400'
```

```
        '411':
          Reference: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          Reference: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          Reference: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          Reference: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          Reference: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

/non-ue-n2-messages/subscriptions/{n2NotifySubscriptionId}

```
delete:
  Summary: Namf_Communication Non UE N2 Info UnSubscribe service Operation

  Tags:
    - Non UE N2 Message Notification Individual Subscription (Document)
  Operation ID: NonUeN2InfoUnSubscribe

  Parameters:
    - Name: n2NotifySubscriptionId
      In: path
      Description: N2 info Subscription Identifier
      Required/Optional: true
      Schema:
        Type: string

  Responses:
    '204':
      Description: Non UE N2 INfo Subscription successfully removed.
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

/subscriptions

```
Method: Post
  Summary: Namf_Communication AMF Status Change Subscribe service Operation

  Tags:
    - subscriptions collection (Document)
  Operation ID: AMFStatusChangeSubscribe
```

```
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SubscriptionData'
      Required/Optional: true

    Responses:
      '201':
        Description: N1N2 Message Subscription successfully created.
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/namf-comm/v1/subscriptions/{subscriptionId}'
            Required/Optional: true
            Schema:
              Type: string
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/SubscriptionData'
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
    Callbacks:
      onAmfStatusChange:
        '{$request.body#/amfStatusUri}':
          Method: Post
            Summary: Amf Status Change Notify service Operation

            Tags:
              - Amf Status Change Notify
            Operation ID: AmfStatusChangeNotify
            Request Body:
              Description: Amf Status Change Notification
              Content:
                Application/JSON:
```

```
        Schema:
          Reference: '#/components/schemas/AmfStatusChangeNotification'

    Responses:
      '204':
        Description: Expected response to a successful callback processing
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

/subscriptions/{subscriptionId}

```
delete:
  Summary: Namf_Communication AMF Status Change UnSubscribe service Operation

  Tags:
    - individual subscription (Document)
  Operation ID: AMFStatusChangeUnSubscribe

  Parameters:
    - Name: subscriptionId
      In: path
      Description: AMF Status Change Subscription Identifier
      Required/Optional: true
      Schema:
        Type: string

  Responses:
    '204':
      Description: N1N2 Message Subscription successfully removed.
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
```

```
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
put:
  Summary: Namf_Communication AMF Status Change Subscribe Modify service Operation

  Tags:
    - individual subscription (Document)
  Operation ID: AMFStatusChangeSubscribeModfy

  Parameters:
    - Name: subscriptionId
      In: path
      Description: AMF Status Change Subscription Identifier
      Required/Optional: true
      Schema:
        Type: string
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/SubscriptionData'
    Required/Optional: true

  Responses:
    '202':
      Description: N1N2 Message Subscription successfully updated.
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SubscriptionData'
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
  Callbacks:
    OnAmfStatusChange:
```

```
    '{$request.body#/amfStatusUri}':
      Method: Post
        Summary: Amf Status Change Notify service Operation

        Tags:
          - Amf Status Change Notify
        Operation ID: AmfStatusChangeNOtify
        Request Body:
          Description: Amf Status Change Notification
          Content:
            Application/JSON:
              Schema:
                Reference: '#/components/schemas/AmfStatusChangeNotification'

        Responses:
          '204':
            Description: Expected response to a successful callback processing
          '400':
            Reference: 'TS29571_CommonData.yaml#/components/responses/400'
          '403':
            Reference: 'TS29571_CommonData.yaml#/components/responses/403'
          '411':
            Reference: 'TS29571_CommonData.yaml#/components/responses/411'
          '413':
            Reference: 'TS29571_CommonData.yaml#/components/responses/413'
          '415':
            Reference: 'TS29571_CommonData.yaml#/components/responses/415'
          '429':
            Reference: 'TS29571_CommonData.yaml#/components/responses/429'
          '500':
            Reference: 'TS29571_CommonData.yaml#/components/responses/500'
          '503':
            Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          namf-comm: Access to the Namf_Communication API

schemas:
# STRUCTURED DATA TYPES
  SubscriptionData:
    Type: object
    Properties:
```

```
    amfStatusUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    guamiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      minItems: 1
  Required:
    - amfStatusUri
AmfStatusChangeNotification:
  Type: object
  Properties:
    amfStatusInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/AmfStatusInfo'
      minItems: 1
  Required:
    - amfStatusInfo
AmfStatusInfo:
  Type: object
  Properties:
    guamiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      minItems: 1
    statusChange:
      Reference: '#/components/schemas/StatusChange'
    targetAmfRemoval:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AmfName'
    targetAmfFailure:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AmfName'
  Required:
    - guamis
    - statusChange
AssignEbiData:
  Type: object
  Properties:
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    arpList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
      minItems: 1
    releasedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
  Required:
```

```
    - pduSessionId
AssignedEbiData:
  Type: object
  Properties:
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    assignedEbiList:
      Type: array
      Items:
        Reference: 'TS29502_Nsmf_PDUSession.yaml#/components/schemas/EbiArpMapping'
      minItems: 0
    failedArpList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
      minItems: 1
    releasedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
  Required:
    - pduSessionId
    - assignedEbis
AssignEbiFailed:
  Type: object
  Properties:
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    failedArpList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
      minItems: 1
  Required:
    - pduSessionId
UEContextRelease:
  Type: object
  Properties:
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    unauthenticatedSupi:
      Type: boolean
      Default: false
    ngapCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
  Required:
    - ngapCause
N2InformationTransferReqData:
  Type: object
  Properties:
    taiList:
```

```
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      minItems: 1
    ratSelector:
      Reference: '#/components/schemas/RatSelector'
    ecgiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ecgi'
      minItems: 1
    ncgiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ncgi'
      minItems: 1
    globalRanNodeList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/GlobalRanNodeId'
      minItems: 1
    n2Information:
      Reference: '#/components/schemas/N2InfoContainer'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - n2Information
NonUeN2InfoSubscriptionCreateData:
  Type: object
  Properties:
    globalRanNodeList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/GlobalRanNodeId'
      minItems: 1
    anTypeList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      minItems: 1
    n2InformationClass:
      Reference: '#/components/schemas/N2InformationClass'
    n2NotifyCallbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    nfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - n2InformationClass
    - n2NotifyCallbackUri
NonUeN2InfoSubscriptionCreatedData:
```

```
    Type: object
    Properties:
      n2NotifySubscriptionId:
        Type: string
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Required:
      - n2NotifySubscriptionId
  UeN1N2InfoSubscriptionCreateData:
    Type: object
    Properties:
      n2InformationClass:
        Reference: '#/components/schemas/N2InformationClass'
      n2NotifyCallbackUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      n1MessageClass:
        Reference: '#/components/schemas/N1MessageClass'
      n1NotifyCallbackUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      nfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  UeN1N2InfoSubscriptionCreatedData:
    Type: object
    Properties:
      n1n2NotifySubscriptionId:
        Type: string
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Required:
      - n1n2NotifySubscriptionId
  N2InformationNotification:
    Type: object
    Properties:
      n2NotifySubscriptionId:
        Type: string
      n2InfoContainer:
        Reference: '#/components/schemas/N2InfoContainer'
      toReleaseSessionList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
        minItems: 1
      lcsCorrelationId:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/CorrelationID'
      notifyReason:
        Reference: '#/components/schemas/N2InfoNotifyReason'
    Required:
      - n2NotifySubscriptionId
  N2InfoContainer:
    Type: object
```

```
    Properties:
      n2InformationClass:
        Reference: '#/components/schemas/N2InformationClass'
      smInfo:
        Reference: '#/components/schemas/N2SmInformation'
      ranInfo:
        Reference: '#/components/schemas/N2RanInformation'
      nrppaInfo:
        Reference: '#/components/schemas/NrppaInformation'
      pwsInfo:
        Reference: '#/components/schemas/PwsInformation'
    Required:
      - n2InformationClass
  N1MessageNotification:
    Type: object
    Properties:
      n1NotifySubscriptionId:
        Type: string
      n1MessageContainer:
        Reference: '#/components/schemas/N1MessageContainer'
      lcsCorrelationId:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/CorrelationID'
      registrationCtxtContainer:
        Reference: '#/components/schemas/RegistrationContextContainer'
    Required:
      - n1MessageContainer
  N1MessageContainer:
    Type: object
    Properties:
      n1MessageClass:
        Reference: '#/components/schemas/N1MessageClass'
      n1MessageContent:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
      nfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    Required:
      - n1MessageClass
      - n1MessageContent
  N1N2MessageTransferReqData:
    Type: object
    Properties:
      n1MessageContainer:
        Reference: '#/components/schemas/N1MessageContainer'
      n2InfoContainer:
        Reference: '#/components/schemas/N2InfoContainer'
      skipInd:
        Type: boolean
        Default: false
      lastMsgIndication:
        Type: boolean
      pduSessionId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
```

```
    lcsCorrelationId:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/CorrelationID'
    ppi:
      Reference: '#/components/schemas/Ppi'
    arp:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
    5qi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'
    n1n2FailureTxfNotifURI:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    smfReallocationInd:
      Type: boolean
      Default: false
    areaOfValidity:
      Reference: '#/components/schemas/AreaOfValidity'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
N1N2MessageTransferRspData:
  Type: object
  Properties:
    cause:
      Reference: '#/components/schemas/N1N2MessageTransferCause'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - cause
RegistrationContextContainer:
  Type: object
  Properties:
    ueContext:
      Reference: '#/components/schemas/UeContext'
    localTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    anType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    anN2ApId:
      Type: integer
    ranNodeId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/GlobalRanNodeId'
    initialAmfName:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AmfName'
    userLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    rrcEstCause:
      Type: string
      Pattern: '^[0-9a-fA-F]+$'
    ueContextRequest:
      Type: boolean
      Default: false
    anN2IPv4Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    anN2IPv6Addr:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    allowedNssai:
      Reference: 'TS29531_Nnssf_NSSelection.yaml#/components/schemas/AllowedNssai'
    configuredNssai:
      Type: array
      Items:
       Reference: 'TS29531_Nnssf_NSSelection.yaml#/components/schemas/ConfiguredSnssai'

      minItems: 1
    rejectedNssaiInPlmn:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
    rejectedNssaiInTa:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
  Required:
    - ueContext
    - anType
    - anN2ApId
    - ranNodeId
    - initialAmfName
    - userLocation
AreaOfValidity:
  Type: object
  Properties:
    taiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      minItems: 0
  Required:
    - taList
UeContextTransferReqData:
  Type: object
  Properties:
    reason:
      Reference: '#/components/schemas/TransferReason'
    accessType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    regRequest:
      Reference: '#/components/schemas/N1MessageContainer'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - reason
    - accessType
UeContextTransferRspData:
```

```
    Type: object
    Properties:
      ueContext:
        Reference: '#/components/schemas/UeContext'
      ueRadioCapability:
        Reference: '#/components/schemas/N2InfoContent'
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Required:
      - ueContext
  UeContext:
    Type: object
    Properties:
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      supiUnauthInd:
        Type: boolean
      gpsiList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
        minItems: 1
      pei:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
      udmGroupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
      ausfGroupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
      routingIndicator:
        Type: string
      groupList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
        minItems: 1
      drxParameter:
        Reference: '#/components/schemas/DrxParameter'
      subRfsp:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndex'
      usedRfsp:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndex'
      subUeAmbr:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ambr'
      smsSupport:
        Reference: '#/components/schemas/SmsSupport'
      smsfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      seafData:
        Reference: '#/components/schemas/SeafData'
      5gMmCapability:
        Reference: '#/components/schemas/5GMmCapability'
      pcfId:
```

```
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      pcfAmPolicyUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      amPolicyReqTriggerList:
        Type: array
        Items:
          Reference: '#/components/schemas/AMPolicyReqTrigger'
        minItems: 1
      hpcfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      restrictedRatList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
        minItems: 1
      forbiddenAreaList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Area'
        minItems: 1
      serviceAreaRestriction:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceAreaRestriction'
      restrictedCoreNwTypeList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/CoreNetworkType'
        minItems: 1
      eventSubscriptionList:
        Type: array
        Items:
          Reference:
'TS29518_Namf_EventExposure.yaml#/components/schemas/AmfEventSubscription'
        minItems: 1
      mmContextList:
        Type: array
        Items:
          Reference: '#/components/schemas/MmContext'
        minItems: 1
        maxItems: 2
      sessionContextList:
        Type: array
        Items:
          Reference: '#/components/schemas/PduSessionContext'
        minItems: 1
      traceData:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
  N2SmInformation:
    Type: object
    Properties:
      pduSessionId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
      n2InfoContent:
```

```
      Reference: '#/components/schemas/N2InfoContent'
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    subjectToHo:
      Type: boolean
  Required:
    - pduSessionId
N2InfoContent:
  Type: object
  Properties:
    ngapMessageType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
    ngapIeType:
      Reference: '#/components/schemas/NgapIeType'
    ngapData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
  Required:
    - ngapIeType
    - ngapData
NrppaInformation:
  Type: object
  Properties:
    nfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    nrppaPdu:
      Reference: '#/components/schemas/N2InfoContent'
  Required:
    - nfId
    - nrppaPdu
PwsInformation:
  Type: object
  Properties:
    messageIdentifier:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint16'
    serialNumber:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint16'
    pwsContainer:
      Reference: '#/components/schemas/N2InfoContent'
    sendRanResponse:
      Type: boolean
      Default: false
    omcId:
      Reference: '#/components/schemas/OmcIdentifier'
  Required:
    - messageIdentifier
    - serialNumber
    - pwsContainer
N1N2MsgTxfrFailureNotification:
  Type: object
  Properties:
    cause:
      Reference: '#/components/schemas/N1N2MessageTransferCause'
    n1n2MsgDataUri:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  Required:
    - cause
    - n1n2MsgDataUri
N1N2MessageTransferError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    errInfo:
      Reference: '#/components/schemas/N1N2MsgTxfrErrDetail'
  Required:
    - error
N1N2MsgTxfrErrDetail:
  Type: object
  Properties:
    retryAfter:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
    highestPrioArp:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
N2InformationTransferRspData:
  Type: object
  Properties:
    result:
      Reference: '#/components/schemas/N2InformationTransferResult'
    pwsRspData:
      Reference: '#/components/schemas/PWSResponseData'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - result
MmContext:
  Type: object
  Properties:
    accessType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    nasSecurityMode:
      Reference: '#/components/schemas/NasSecurityMode'
    nasDownlinkCount:
      Reference: '#/components/schemas/NasCount'
    nasUplinkCount:
      Reference: '#/components/schemas/NasCount'
    ueSecurityCapability:
      Reference: '#/components/schemas/UeSecurityCapability'
    s1UeNetworkCapability:
      Reference: '#/components/schemas/S1UeNetworkCapability'
    allowedNssai:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
    nssaiMappingList:
```

```
      Type: array
      Items:
        Reference: '#/components/schemas/NssaiMapping'
      minItems: 1
    nsInstanceList:
      Type: array
      Items:
        Reference: 'TS29531_Nnssf_NSSelection.yaml#/components/schemas/NsiId'
      minItems: 1
    expectedUEbehavior:
      Reference: '#/components/schemas/ExpectedUeBehavior'
  Required:
    - accessType
SeafData:
  Type: object
  Properties:
    ngKsi:
      Reference: '#/components/schemas/NgKsi'
    keyAmf:
      Reference: '#/components/schemas/KeyAmf'
    nh:
      Type: string
      Pattern: '^[A-Fa-f0-9]+$'
    ncc:
      Type: integer
      Minimum: 0
      Maximum: 7
    keyAmfChangeInd:
      Type: boolean
    keyAmfHDerivationInd:
      Type: boolean
  Required:
    - ngKsi
    - keyAmf
NasSecurityMode:
  Type: object
  Properties:
    integrityAlgorithm:
      Reference: '#/components/schemas/IntegrityAlgorithm'
    cipheringAlgorithm:
      Reference: '#/components/schemas/CipheringAlgorithm'
  Required:
    - integrityAlgorithm
    - cipheringAlgorithm
PduSessionContext:
  Type: object
  Properties:
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    smContextRef:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    sNssai:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    accessType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    allocatedEbiList:
      Type: array
      Items:
        Reference: 'TS29502_Nsmf_PDUSession.yaml#/components/schemas/EbiArpMapping'
      minItems: 1
    hsmfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    vsmfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    nsInstance:
      Reference: 'TS29531_Nnssf_NSSelection.yaml#/components/schemas/NsiId'
  Required:
    - pduSessionId
    - smContextRef
    - sNssai
    - dnn
    - accessType
    - allocatedEbiList
NssaiMapping:
  Type: object
  Properties:
    mappedSnssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    hSnssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
  Required:
    - mappedSnssai
    - hSnssai
UeRegStatusUpdateReqData:
  Type: object
  Properties:
    transferStatus:
      Reference: '#/components/schemas/UeContextTransferStatus'
    toReleaseSessionList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
      minItems: 1
    pcfReselectedInd:
      Type: boolean
  Required:
    - transferStatus
UeRegStatusUpdateRspData:
  Type: object
  Properties:
    regStatusTransferComplete:
      Type: boolean
  Required:
```

```
    - regStatusTransferComplete
AssignEbiError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    failureDetails:
      Reference: '#/components/schemas/AssignEbiFailed'
  Required:
    - error
    - failureDetails
UeContextCreateData:
  Type: object
  Properties:
    ueContext:
      Reference: '#/components/schemas/UeContext'
    targetId:
      Reference: '#/components/schemas/NgRanTargetId'
    sourceToTargetData:
      Reference: '#/components/schemas/N2InfoContent'
    pduSessionList:
      Type: array
      Items:
        Reference: '#/components/schemas/N2SmInformation'
      minItems: 1
    n2NotifyUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    ueRadioCapability:
      Reference: '#/components/schemas/N2InfoContent'
    ngapCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - ueContext
    - targetId
    - sourceToTargetData
    - pduSessions
UeContextCreatedData:
  Type: object
  Properties:
    ueContext:
      Reference: '#/components/schemas/UeContext'
    targetToSourceData:
      Reference: '#/components/schemas/N2InfoContent'
    pduSessionList:
      Type: array
      Items:
        Reference: '#/components/schemas/N2SmInformation'
      minItems: 1
    ngapCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
    failedSessionList:
```

```
      Type: array
      Items:
        Reference: '#/components/schemas/N2SmInformation'
      minItems: 1
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    pcfReselectedInd:
      Type: boolean
  Required:
    - ueContext
    - targetToSourceData
    - pduSessions
UeContextCreateError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    ngapCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
  Required:
    - error
NgRanTargetId:
  Type: object
  Properties:
    ranNodeId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/GlobalRanNodeId'
    tai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
  Required:
    - ranNodeId
    - tai
PWSResponseData:
  Type: object
  Properties:
    ngapMessageType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
    serialNumber:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint16'
    messageIdentifier:
      Type: integer
    unknownTaiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      minItems: 1
  Required:
    - ngapMessageType
    - serialNumber
    - messageIdentifier
PWSErrorData:
  Type: object
  Properties:
    namfCause:
```

```
      Type: integer
  Required:
    - namfCause
N2InformationTransferError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    pwdErrorInfo:
      Reference: '#/components/schemas/PWSErrorData'
  Required:
    - error
NgKsi:
  Type: object
  Properties:
    tsc:
      Reference: '#/components/schemas/ScType'
    ksi:
      Type: integer
      Minimum: 0
      Maximum: 6
  Required:
    - tsc
    - ksi
KeyAmf:
  Type: object
  Properties:
    keyType:
      Reference: '#/components/schemas/KeyAmfType'
    keyVal:
      Type: string
  Required:
    - keyType
    - keyVal
ExpectedUeBehavior:
  Type: object
  Properties:
    expMoveTrajectory:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
      minItems: 1
    validityTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - expMoveTrajectory
    - validityTime
N2RanInformation:
  Type: object
  Properties:
    n2InfoContent:
      Reference: '#/components/schemas/N2InfoContent'
  Required:
```

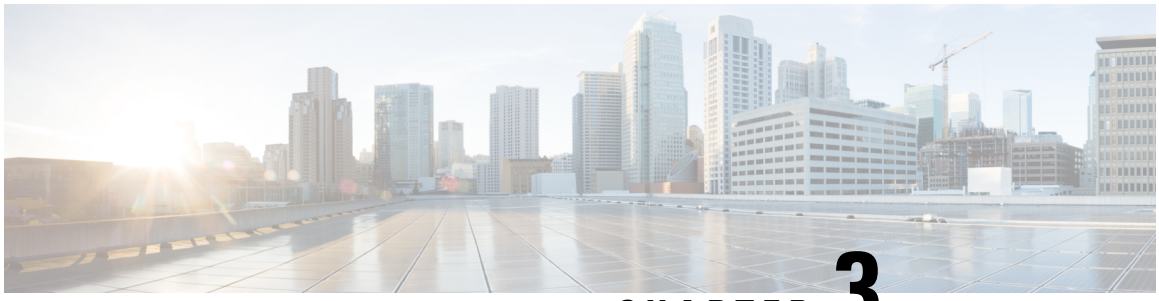
```
      - n2InfoContent
  # SIMPLE DATA TYPES
    EpsBearerId:
      Type: integer
      Minimum: 0
      Maximum: 15
    Ppi:
      Type: integer
      Minimum: 0
      Maximum: 7
    NasCount:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
    5GMmCapability:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    UeSecurityCapability:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    S1UeNetworkCapability:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    DrxParameter:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    OmcIdentifier:
      Type: string
  # ENUMERATIONS
    StatusChange:
      anyOf:
      - type: string
        enum:
          - AMF_UNAVAILABLE
          - AMF_AVAILABLE
      - type: string
    N2InformationClass:
      anyOf:
      - type: string
        enum:
          - SM
          - NRPPa
          - PWS
          - PWS-BCAL
          - PWS-RF
          - RAN
      - type: string
    N1MessageClass:
      anyOf:
      - type: string
        enum:
          - 5GMM
          - SM
          - LPP
          - SMS
          - UPDP
      - type: string
    N1N2MessageTransferCause:
      anyOf:
      - type: string
        enum:
          - ATTEMPTING_TO_REACH_UE
```

```
      - N1_N2_TRANSFER_INITIATED
      - WAITING_FOR_ASYNCHRONOUS_TRANSFER
      - UE_NOT_RESPONDING
      - N1_MSG_NOT_TRANSFERRED
      - UE_NOT_REACHABLE_FOR_SESSION
  - type: string
UeContextTransferStatus:
  anyOf:
  - type: string
    enum:
      - TRANSFERRED
      - NOT_TRANSFERRED
  - type: string
N2InformationTransferResult:
  anyOf:
  - type: string
    enum:
      - N2_INFO_TRANSFER_INITIATED
  - type: string
CipheringAlgorithm:
  anyOf:
  - type: string
    enum:
      - NEA0
      - NEA1
      - NEA2
      - NEA3
  - type: string
IntegrityAlgorithm:
  anyOf:
  - type: string
    enum:
      - NIA0
      - NIA1
      - NIA2
      - NIA3
  - type: string
SmsSupport:
  anyOf:
  - type: string
    enum:
      - 3GPP
      - NON_3GPP
      - BOTH
      - NONE
  - type: string
ScType:
  anyOf:
  - type: string
    enum:
      - NATIVE
      - MAPPED
  - type: string
KeyAmfType:
  anyOf:
  - type: string
    enum:
      - KAMF
      - KPRIMEAMF
```

```
  - type: string
TransferReason:
  anyOf:
  - type: string
    enum:
      - INIT_REG
      - MOBI_REG
      - MOBI_REG_UE_VALIDATED
  - type: string
AMPolicyReqTrigger:
  anyOf:
  - type: string
    enum:
      - LOCATION_CHANGE
      - PRA_CHANGE
      - SARI_CHANGE
      - RFSP_INDEX_CHANGE
  - type: string
RatSelector:
  anyOf:
  - type: string
    enum:
      - E-UTRA
      - NR
  - type: string
NgapIeType:
  anyOf:
  - type: string
    enum:
      - PDU_RES_SETUP_REQ
      - PDU_RES_REL_CMD
      - PDU_RES_MOD_REQ
      - HANDOVER_CMD
      - HANDOVER_REQUIRED
      - HANDOVER_PREP_FAIL
      - SRC_TO_TAR_CONTAINER
      - TAR_TO_SRC_CONTAINER
      - RAN_STATUS_TRANS_CONTAINER
      - SON_CONFIG_TRANSFER
      - NRPPA_PDU
      - UE_RADIO_CAPABILITY
  - type: string
N2InfoNotifyReason:
  anyOf:
  - type: string
    enum:
      - HANDOVER_COMPLETED
  - type: string
```

External Docs

```
Description: 3GPP TS 29.518 V15.2.0; 5G System; Access and Mobility Management Services
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.518/'
```



CHAPTER 3

Namf_EventExposure

- OpenAPI, on page 47
- Info, on page 47
- Servers, on page 47
- Security, on page 48
- Paths, on page 48
- Components, on page 55
- External Docs, on page 71

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: 1.1.2

Title: Namf_EventExposure

Description: |

AMF Event Exposure Service

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Servers

URL: '{apiRoot}/namf-evts/v1'

Variables:

API Root:

Default: https://example.com

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

Security

```
- {}
- oAuth2ClientCredentials:
    - namf-evts
```

Paths

/subscriptions:

Method: Post

Summary: Namf_EventExposure Subscribe service Operation

Tags:

- Subscriptions collection (Document)

Operation ID: CreateSubscription

Request Body:

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/AmfCreateEventSubscription'

Required/Optional: true

Responses:

'201':

Description: Subsription Created

Headers:

Location:

```
          description: 'Contains the URI of the newly created resource,
according to the structure:
{apiRoot}/namf-evts/apiVersion/subscriptions/{subscriptionId}'

          Required/Optional: true

          Schema:

            Type: string

        Content:

          Application/JSON:

            Schema:

              Reference: '#/components/schemas/AmfCreatedEventSubscription'

      '307':

        Description: temporary redirect

        Content:

          application/problem+json:

            Schema:

              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'

        Headers:

          Location:

            Description: 'An alternative URI of the resource located on an alternative
service instance within the same AMF or AMF (service) set'

            Required/Optional: true

            Schema:

              Type: string

          3gpp-Sbi-Target-Nf-Id:

            Description: ' Identifier of the target NF (service) instance ID towards
which the request is redirected'

            Schema:

              Type: string

      '308':

        Description: permanent redirect
```

```
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
        Headers:
          Location:
            Description: 'An alternative URI of the resource located on an alternative
service instance within the same AMF or AMF (service) set'
            Required/Optional: true
            Schema:
              Type: string
          3gpp-Sbi-Target-Nf-Id:
            Description: ' Identifier of the target NF (service) instance ID towards
which the request is redirected'
            Schema:
              Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
```

```
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
    Callbacks:
      onEventReport:
        '{$request.body#/subscription/eventNotifyUri}':
          Method: Post
            Summary: Event Notificaiton Delivery
            Request Body:
              Content:
                Application/JSON:
                  Schema:
                    Reference: '#/components/schemas/AmfEventNotification'
              Required/Optional: true
            Responses:
              '204':
                Description: Successful acknowledgement
              '307':
                Description: temporary redirect
                Content:
                  application/problem+json:
                    Schema:
                      Reference:
'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
                Headers:
                  Location:
                    Description: 'An alternative URI of the NF service consumer to which
 the notification should be sent'
```

```
      Required/Optional: true
      Schema:
        Type: string
    3gpp-Sbi-Target-Nf-Id:
      Description: ' Identifier of the target NF (service) instance ID
towards which the request is redirected'
      Schema:
        Type: string
  '308':
    Description: permanent redirect
    Content:
      application/problem+json:
        Schema:
          Reference:
'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    Headers:
      Location:
        Description: 'An alternative URI of the NF service consumer to which
 the notification should be sent'
        Required/Optional: true
        Schema:
          Type: string
      3gpp-Sbi-Target-Nf-Id:
        Description: ' Identifier of the target NF (service) instance ID
towards which the request is redirected'
        Schema:
          Type: string
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
```

```
        '413':
          Reference: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          Reference: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          Reference: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          Reference: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          Reference: 'TS29571_CommonData.yaml#/components/responses/503'
        Default:
          Description: Unexpected error
onSubscriptionIdChangeEvtReport:
  '{$request.body#/subscription/subsChangeNotifyUri}':
    Method: Post
      Summary: Event Notificaiton Delivery For Subscription Id Change
      Request Body:
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/AmfEventNotification'
        Required/Optional: true
      Responses:
        '204':
          Description: Successful acknowledgement
        '307':
          Description: temporary redirect
          Content:
            application/problem+json:
```

```
                    Schema:

                      Reference:
'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'

                  Headers:

                    Location:

                      Description: 'An alternative URI of the NF service consumer to which
 the notification should be sent'

                      Required/Optional: true

                      Schema:

                        Type: string

                    3gpp-Sbi-Target-Nf-Id:

                      Description: ' Identifier of the target NF (service) instance ID
towards which the request is redirected'

                      Schema:

                        Type: string

                '308':

                  Description: permanent redirect

                  Content:

                    application/problem+json:

                      Schema:

                        Reference:
'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'

                  Headers:

                    Location:

                      Description: 'An alternative URI of the NF service consumer to which
 the notification should be sent'

                      Required/Optional: true

                      Schema:

                        Type: string

                    3gpp-Sbi-Target-Nf-Id:

                      Description: ' Identifier of the target NF (service) instance ID
towards which the request is redirected'
```

```
        Schema:
          Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
```

```
        namf-evts: Access to the Namf_EventExposure API
schemas:
  AmfEventSubscription:
    Type: object
    Properties:
      eventList:
        Type: array
        Items:
          Reference: '#/components/schemas/AmfEvent'
        minItems: 1
      eventNotifyUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      notifyCorrelationId:
        Type: string
      nfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      subsChangeNotifyUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      subsChangeNotifyCorrelationId:
        Type: string
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      groupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
      gpsi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
      pei:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
      anyUE:
```

```
      Type: boolean
    options:
      Reference: '#/components/schemas/AmfEventMode'
  Required:
    - eventList
    - eventNotifyUri
    - notifyCorrelationId
    - nfId
AmfEvent:
  Type: object
  Properties:
    Type:
      Reference: '#/components/schemas/AmfEventType'
    immediateFlag:
      Type: boolean
      Default: false
    areaList:
      Type: array
      Items:
        Reference: '#/components/schemas/AmfEventArea'
      minItems: 1
    locationFilterList:
      Type: array
      Items:
        Reference: '#/components/schemas/LocationFilter'
      minItems: 1
    refId:
      Reference: 'TS29503_Nudm_EE.yaml#/components/schemas/ReferenceId'
    trafficDescriptorList:
```

```
      Type: array
      Items:
        Reference: '#/components/schemas/TrafficDescriptor'
      minItems: 1
    reportUeReachable:
      Type: boolean
      Default: false
    reachabilityFilter:
      Reference: '#/components/schemas/ReachabilityFilter'
    maxReports:
      Type: integer
  Required:
    - type
AmfEventNotification:
  Type: object
  Properties:
    notifyCorrelationId:
      Type: string
    subsChangeNotifyCorrelationId:
      Type: string
    reportList:
      Type: array
      Items:
        Reference: '#/components/schemas/AmfEventReport'
      minItems: 1
    eventSubsSyncInfo:
      Reference: '#/components/schemas/AmfEventSubsSyncInfo'
AmfEventReport:
```

```
Type: object
Properties:
  Type:
    Reference: '#/components/schemas/AmfEventType'
  state:
    Reference: '#/components/schemas/AmfEventState'
  timeStamp:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  subscriptionId:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  anyUe:
    Type: boolean
  supi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
  areaList:
    Type: array
    Items:
      Reference: '#/components/schemas/AmfEventArea'
    minItems: 1
  refId:
    Reference: 'TS29503_Nudm_EE.yaml#/components/schemas/ReferenceId'
  gpsi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
  pei:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
  location:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
  timezone:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
```

```
accessTypeList:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
  minItems: 1
rmInfoList:
  Type: array
  Items:
    Reference: '#/components/schemas/RmInfo'
  minItems: 1
cmInfoList:
  Type: array
  Items:
    Reference: '#/components/schemas/CmInfo'
  minItems: 1
reachability:
  Reference: '#/components/schemas/UeReachability'
commFailure:
  Reference: '#/components/schemas/CommunicationFailure'
lossOfConnectReason:
  Reference: '#/components/schemas/LossOfConnectivityReason'
numberOfUes:
  Type: integer
5gsUserStateList:
  Type: array
  Items:
    Reference: '#/components/schemas/5GsUserStateInfo'
  minItems: 1
```

```
    typeCode:
      Type: string
      Pattern: '^imeitac-[0-9]{8}$'
    registrationNumber:
      Type: integer
    maxAvailabilityTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    ueIdExt:
      Type: array
      Items:
        Reference: '#/components/schemas/UEIdExt'
      minItems: 1
  Required:
    - type
    - state
    - timeStamp
AmfEventMode:
  Type: object
  Properties:
    trigger:
      Reference: '#/components/schemas/AmfEventTrigger'
    maxReports:
      Type: integer
    expiry:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    repPeriod:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    sampRatio:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SamplingRatio'
```

```
    Required:
      - trigger
  AmfEventState:
    Type: object
    Properties:
      active:
        Type: boolean
      remainReports:
        Type: integer
      remainDuration:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    Required:
      - active
  RmInfo:
    Type: object
    Properties:
      rmState:
        Reference: '#/components/schemas/RmState'
      accessType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    Required:
      - rmState
      - accessType
  CmInfo:
    Type: object
    Properties:
      cmState:
        Reference: '#/components/schemas/CmState'
      accessType:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
  Required:
    - cmState
    - accessType
CommunicationFailure:
  Type: object
  Properties:
    nasReleaseCode:
      Type: string
    ranReleaseCode:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
AmfCreateEventSubscription:
  Type: object
  Properties:
    subscription:
      Reference: '#/components/schemas/AmfEventSubscription'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    oldGuami:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
  Required:
    - subscription
AmfCreatedEventSubscription:
  Type: object
  Properties:
    subscription:
      Reference: '#/components/schemas/AmfEventSubscription'
    subscriptionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
```

```
    reportList:
      Type: array
      Items:
        Reference: '#/components/schemas/AmfEventReport'
      minItems: 1
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - subscription
    - subscriptionId
AmfUpdateEventSubscriptionItem:
  Type: array
  Items:
    Type: object
    Properties:
      op:
        Type: string
        enum:
          - add
          - remove
          - replace
      path:
        Type: string
        Pattern: '\/eventList\/[0-]$|\/eventList\/[1-9][0-9]*$'
      value:
        Reference: '#/components/schemas/AmfEvent'
    Required:
      - op
      - path
  minItems: 1
```

```
AmfUpdateEventOptionItem:
  Type: object
  Properties:
    op:
      Type: string
      enum:
        - replace
    path:
      Type: string
      Pattern: '\/options\/expiry$'
    value:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - op
    - path
    - value
AmfUpdatedEventSubscription:
  Type: object
  Properties:
    subscription:
      Reference: '#/components/schemas/AmfEventSubscription'
    reportList:
      Type: array
      Items:
        Reference: '#/components/schemas/AmfEventReport'
      minItems: 1
  Required:
    - subscription
AmfEventArea:
```

```
    Type: object
    Properties:
      presenceInfo:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfo'
      ladnInfo:
        Reference: '#/components/schemas/LadnInfo'
      sNssai:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      nsiId:
        Reference: 'TS29531_Nnssf_NSSelection.yaml#/components/schemas/NsiId'
  LadnInfo:
    Type: object
    Properties:
      ladn:
        Type: string
      presence:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceState'
    Required:
      - ladn
  5GsUserStateInfo:
    Type: object
    Properties:
      5gsUserState:
        Reference: '#/components/schemas/5GsUserState'
      accessType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    Required:
      - 5gsUserState
      - accessType
```

```
TrafficDescriptor:
  Type: object
  Properties:
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dddTrafficDescriptorList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DddTrafficDescriptor'
      minItems: 1
UEIdExt:
  Type: object
  Properties:
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'


AmfEventSubsSyncInfo:
  Type: object
  Properties:
    subscriptionList:
      Type: array
      Items:
        Reference: '#/components/schemas/AmfEventSubscriptionInfo'
      minItems: 1
```

```
  Required:
    - subscriptionList

AmfEventSubscriptionInfo:
  Type: object
  Properties:
    subId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    notifyCorrelationId:
      Type: string
    refIdList:
      Type: array
      Items:
        Reference: 'TS29503_Nudm_EE.yaml#/components/schemas/ReferenceId'
      minItems: 1
    oldSubId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  Required:
    - subId
    - refIdList

AmfEventType:
  anyOf:
  - type: string
    enum:
      - LOCATION_REPORT
      - PRESENCE_IN_AOI_REPORT
      - TIMEZONE_REPORT
      - ACCESS_TYPE_REPORT
      - REGISTRATION_STATE_REPORT
```

```
        - CONNECTIVITY_STATE_REPORT
        - REACHABILITY_REPORT
        - COMMUNICATION_FAILURE_REPORT
        - UES_IN_AREA_REPORT
        - SUBSCRIPTION_ID_CHANGE
        - SUBSCRIPTION_ID_ADDITION
        - LOSS_OF_CONNECTIVITY
        - 5GS_USER_STATE_REPORT
        - AVAILABILITY_AFTER_DDN_FAILURE
        - TYPE_ALLOCATION_CODE_REPORT
        - FREQUENT_MOBILITY_REGISTRATION_REPORT
    - type: string
AmfEventTrigger:
  anyOf:
  - type: string
    enum:
      - ONE_TIME
      - CONTINUOUS
      - PERIODIC
  - type: string
LocationFilter :
  anyOf:
  - type: string
    enum:
      - TAI
      - CELL_ID
      - N3IWF
      - UE_IP
      - UDP_PORT
      - TNAP_ID
      - GLI
      - TWAP_ID
```

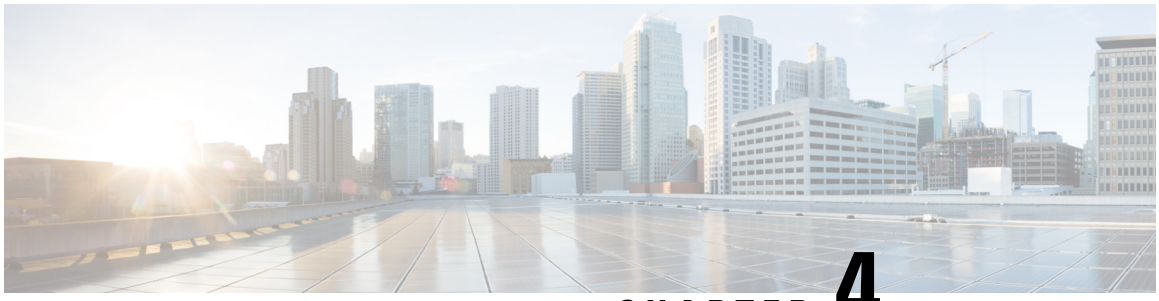
```
  - type: string
UeReachability:
  anyOf:
  - type: string
    enum:
      - UNREACHABLE
      - REACHABLE
      - REGULATORY_ONLY
  - type: string
RmState:
  anyOf:
  - type: string
    enum:
      - REGISTERED
      - DEREGISTERED
  - type: string
CmState:
  anyOf:
  - type: string
    enum:
      - IDLE
      - CONNECTED
  - type: string
5GsUserState:
  anyOf:
  - type: string
    enum:
      - DEREGISTERED
      - REGISTERED_NOT_REACHABLE_FOR_PAGING
      - REGISTERED_REACHABLE_FOR_PAGING
```

```
      - CONNECTED_NOT_REACHABLE_FOR_PAGING
      - CONNECTED_REACHABLE_FOR_PAGING
      - NOT_PROVIDED_FROM_AMF
  - type: string
LossOfConnectivityReason:
  anyOf:
  - type: string
    enum:
      - DEREGISTERED
      - MAX_DETECTION_TIME_EXPIRED
      - PURGED
  - type: string


ReachabilityFilter:
  anyOf:
  - type: string
    enum:
      - UE_REACHABILITY_STATUS_CHANGE
      - UE_REACHABLE_DL_TRAFFIC
  - type: string
```

External Docs

```
Description: 3GPP TS 29.518 V16.6.0; 5G System; Access and Mobility Management Services
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.518/'
```



CHAPTER 4

Namf_Location

The Namf_Location service enables NF service consumers to request the AMF for initiating positioning requests and providing location information. Additionally, it notifies location change events to the NF service consumers. The key functionalities of this NF service include:

- Allow NFs to request the current geodetic and optionally local and/or civic location of a target UE.
- Allow NFs to be notified of event information related to emergency sessions.
- Allow NFs to request Network Provided Location Information (NPLI) and/or local time zone corresponding to the location of a target UE.

- OpenAPI, on page 73
- Info, on page 73
- Servers, on page 74
- Security, on page 74
- Paths, on page 74
- Components, on page 77
- External Docs, on page 81

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: 1.1.0

Title: Namf_Location

Description: |

AMF Location Service

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Servers

URL: '{apiRoot}/namf-loc/v1'

Variables:

API Root:

Default: https://example.com

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

Security

- {}
- oAuth2ClientCredentials:
  - namf-loc

Paths

/{ueContextId}/provide-pos-info:

Method: Post

Summary: Namf_Location ProvidePositioningInfo service Operation

Tags:

- Individual UE context (Document)

Operation ID: ProvidePositioningInfo

Parameters:

- **Name**: ueContextId

  In: path

  Description: UE Context Identifier

  Required/Optional: true

```
        Schema:
          Type: string
          pattern:
'^(imsi-[0-9]{5,15}|nai-.+|gli-.+|gci-.+|imei-[0-9]{15}|imeisv-[0-9]{16}|.+)$'
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/RequestPosInfo'
      Required/Optional: true
    Responses:
      '200':
        Description: Expected response to a valid request
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/ProvidePosInfo'
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
```

```
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    '504':
      Reference: 'TS29571_CommonData.yaml#/components/responses/504'
    Default:
      Description: Unexpected error
  Callbacks:
    onUELocationNotification:
      '{$request.body#/locationNotificationUri}':
        Method: Post
          Request Body:
            Description: UE Location Event Notification
            Content:
              Application/JSON:
                Schema:
                  Reference: '#/components/schemas/NotifiedPosInfo'
          Responses:
            '204':
              Description: Expected response to a successful callback processing
            '400':
              Reference: 'TS29571_CommonData.yaml#/components/responses/400'
            '403':
              Reference: 'TS29571_CommonData.yaml#/components/responses/403'
            '411':
              Reference: 'TS29571_CommonData.yaml#/components/responses/411'
            '413':
```

```
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          namf-loc: Access to the Namf_Location API
schemas:
  RequestPosInfo:
    Type: object
    Properties:
      lcsClientType:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/ExternalClientType'
      lcsLocation:
        Reference: '#/components/schemas/LocationType'
      supi:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    priority:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LcsPriority'
    lcsQoS:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LocationQoS'
    velocityRequested:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/VelocityRequested'
    lcsSupportedGADShapes:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/SupportedGADShapes'
    additionalLcsSuppGADShapes:
      Type: array
      Items:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/SupportedGADShapes'

      minItems: 1
    locationNotificationUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    oldGuami:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    lcsServiceType:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LcsServiceType'
    ldrType:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LdrType'
```

```
      hgmlcCallBackURI:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      ldrReference:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LdrReference'
      periodicEventInfo:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/PeriodicEventInfo'
      areaEventInfo:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/AreaEventInfo'
      motionEventInfo:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/MotionEventInfo'
      externalClientIdentification:
        Reference:
'TS29515_Ngmlc_Location.yaml#/components/schemas/ExternalClientIdentification'
      afID:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      codeWord:
        Reference: 'TS29515_Ngmlc_Location.yaml#/components/schemas/CodeWord'
      uePrivacyRequirements:
       Reference: 'TS29515_Ngmlc_Location.yaml#/components/schemas/UePrivacyRequirements'

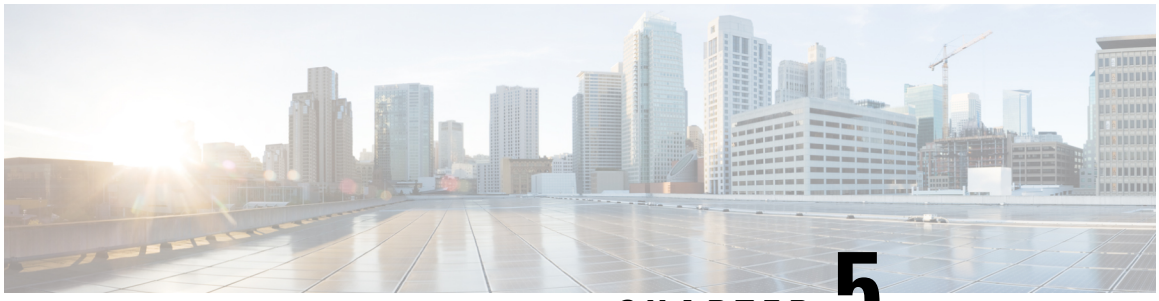
    Required:
      - lcsClientType
      - lcsLocation
  ProvidePosInfo:
    Type: object
    Properties:
      locationEstimate:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
      accuracyFulfilmentIndicator:
        Reference:
```

```
'TS29572_Nlmf_Location.yaml#/components/schemas/AccuracyFulfilmentIndicator'
      ageOfLocationEstimate:
       Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/AgeOfLocationEstimate'
      velocityEstimate:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/VelocityEstimate'
      positioningDataList:
        Type: array
        Items:
          Reference:
'TS29572_Nlmf_Location.yaml#/components/schemas/PositioningMethodAndUsage'
        minItems: 0
        maxItems: 9
      gnssPositioningDataList:
        Type: array
        Items:
          Reference:
'TS29572_Nlmf_Location.yaml#/components/schemas/GnssPositioningMethodAndUsage'
        minItems: 0
        maxItems: 9
      ecgi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ecgi'
      ncgi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ncgi'
      targetServingNode:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      civicAddress:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/CivicAddress'
      barometricPressure:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/BarometricPressure'
      altitude:
```

```
    Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/Altitude'
  supportedFeatures:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  servingLMFIdentification:
    Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LMFIdentification'
  locationPrivacyVerResult:
    Reference: '#/components/schemas/LocationPrivacyVerResult'
```

External Docs

```
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/'
```



CHAPTER 5

Namf_MT

Namf_MT service allows a NF to request information related to capabilities to send MT signaling or data to a target UE. The following are the key functionalities of this NF service.

- Paging UE if UE is in IDLE state and respond other NF after the UE enters CM-CONNECTED state.
- Response to the requester NF if UE is in CONNECTED state.
- Providing the terminating domain selection information for IMS voice to the consumer NF

- OpenAPI, on page 83
- Info, on page 83
- Servers, on page 83
- Security, on page 84
- Paths, on page 84
- Components, on page 86
- External Docs, on page 88

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: 1.0.2
Title: Namf_MT
Description: |
  AMF Mobile Termination Service
  © 2019, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
  All rights reserved.
```

Servers

```
URL: '{apiRoot}/namf-mt/v1'
```

```
  Variables:
    API Root:
      Default: https://example.com
      Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501
```

Security

```
- {}
- oAuth2ClientCredentials:
    - namf-mt
```

Paths

```
'/ue-contexts/{ueContextId}':
  get:
    Summary: Namf_MT Provide Domain Selection Info service Operation

    Tags:
      - ueContext (Document)
    Operation ID: Provide Domain Selection Info

    Parameters:
      - Name: ueContextId
        In: path
        Description: UE Context Identifier
        Required/Optional: true
        Schema:
          Type: string
          pattern: '^(imsi-[0-9]{5,15}|nai-.+|.+)$'
      - Name: info-class
        In: query
        Description: UE Context Information Class
        Schema:
          Reference: '#/components/schemas/UeContextInfoClass'
      - Name: supported-features
        In: query
        Description: Supported Features
        Schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'

    Responses:
      '200':
        Description: Requested UE Context Information returned
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/UeContextInfo'
      '307':
```

```
      Description: Temporary Redirect
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      Headers:
        Location:
        Description: 'The URI of the resource located on the target NF Service Consumer
(e.g. AMF) to which the request is redirected'
          Required/Optional: true
          Schema:
            Type: string
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '414':
      Reference: 'TS29571_CommonData.yaml#/components/responses/414'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
```

/ue-contexts/{ueContextId}/ue-reachind

```
put:
  Summary: Namf_MT EnableUEReachability service Operation

  Tags:
    - ueReachInd (Document)
  Operation ID: EnableUeReachability

  Parameters:
    - Name: ueContextId
      In: path
      Description: UE Context Identifier
      Required/Optional: true
      Schema:
        Type: string
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/EnableUeReachabilityReqData'
    Required/Optional: true
```

```
  Responses:
    '200':
      Description: UE has become reachable as desired
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/EnableUeReachabilityRspData'
    '307':
      Description: Temporary Redirect
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      Headers:
        Location:
        Description: 'The URI of the resource located on the target NF Service Consumer
(e.g. AMF) to which the request is redirected'
          Required/Optional: true
          Schema:
            Type: string
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    '504':
      Reference: 'TS29571_CommonData.yaml#/components/responses/504'
   Default:
     Description: Unexpected error
```

Components

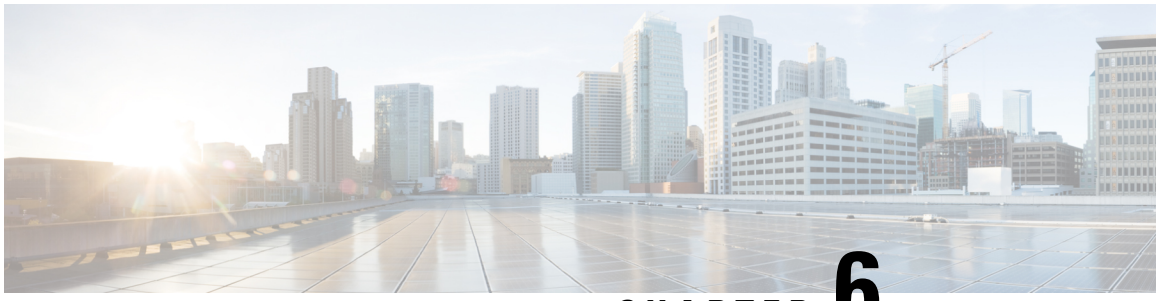
```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
```

```
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          namf-mt: Access to the Namf_MT API

schemas:
  EnableUeReachabilityReqData:
    Type: object
    Properties:
      reachability:
        Reference: 'TS29518_Namf_EventExposure.yaml#/components/schemas/UeReachability'
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Required:
      - reachability
  EnableUeReachabilityRspData:
    Type: object
    Properties:
      reachability:
        Reference: 'TS29518_Namf_EventExposure.yaml#/components/schemas/UeReachability'
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Required:
      - reachability
  UeContextInfo:
    Type: object
    Properties:
      supportVoPS:
        Type: boolean
      supportVoPSn3gpp:
        Type: boolean
      lastActTime:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
      accessType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      ratType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  UeContextInfoClass:
    anyOf:
    - type: string
      enum:
        - TADS
    - type: string
```

External Docs

Description: 3GPP TS 29.518 V15.3.0; 5G System; Access and Mobility Management Services
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.518/'



CHAPTER 6

Nausf_UEAuthentication

The Authentication Server Function (AUSF) acts as NF Service Producer. It provides UE authentication service to the requester NF. The NF Service Consumer is the AMF.

For this service, the following service operations are defined

- Authenticate

This service permits to authenticate the UE and to provide one or more master keys which are used by the AMF to derived subsequent keys.

Reference: 3GPP TS 33.501 v15.5.0

- OpenAPI, on page 89
- Info, on page 89
- Servers, on page 89
- Security, on page 90
- Paths, on page 90
- Components, on page 93
- External Docs, on page 95

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: 1.0.0
Title: AUSF API
Description: OpenAPI specification for AUSF

Servers

URL: '{apiRoot}/nausf-auth/v1'

```
  Variables:
    API Root:
      Default: https://example.com
      Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501.
```

Security

```
- {}
- oAuth2ClientCredentials:
    - nausf-auth
```

Paths

/ue-authentications

```
  Method: Post
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/AuthenticationInfo'
      Required/Optional: true

    Responses:
      '201':
        Description: UEAuthenticationCtx
        Content:
          application/3gppHal+json:
            Schema:
              Reference: '#/components/schemas/UEAuthenticationCtx'
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource
according to the structure': {apiRoot}/nausf-auth/v1/ue-authentications/{authCtxId}'
            Required/Optional: true
            Schema:
              Type: string
      '400':
        Description: Bad Request from the AMF
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      '403':
        Description: Fordidden due to serving network not authorized
        Content:
```

```
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      '500':
        Description: Internal Server Error
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
```

/ue-authentications/{authCtxId}/5g-aka-confirmation

```
put:

  Parameters:
    - Name: authCtxId
      In: path
      Required/Optional: true
      Schema:
        Type: string
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/ConfirmationData'

  Responses:
    '200':
      Description: Request processed (EAP success or Failure)
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/ConfirmationDataResponse'
    '400':
      Description: Bad Request
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '500':
      Description: Internal Server Error
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
```

/ue-authentications/{authCtxId}/eap-session

```
Method: Post
```

```
    Operation ID: EapAuthMethod

    Parameters:
      - Name: authCtxId
        In: path
        Required/Optional: true
        Schema:
          Type: string
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/EapSession'

    Responses:
      '200':
        Description: Use to handle or close the EAP session
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/EapSession'
          application/3gppHal+json:
            Schema:
              Type: object
              Properties:
                eapPayload:
                  Reference: '#/components/schemas/EapPayload'
                _links:
                  Type: object
                  description: 'URI : /{eapSessionUri}'
                  additionalProperties:
                    Reference:
'TS29571_CommonData.yaml#/components/schemas/LinksValueSchema'
                  minProperties: 1
              Required/Optional:
                - eapPayload
                - _links
        '400':
          Description: Bad Request
          Content:
            application/problem+json:
              Schema:
                Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
        '500':
          Description: Internal Server Error
          Content:
            application/problem+json:
              Schema:
                Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nausf-auth: Access to Nausf_UEAuthentication API

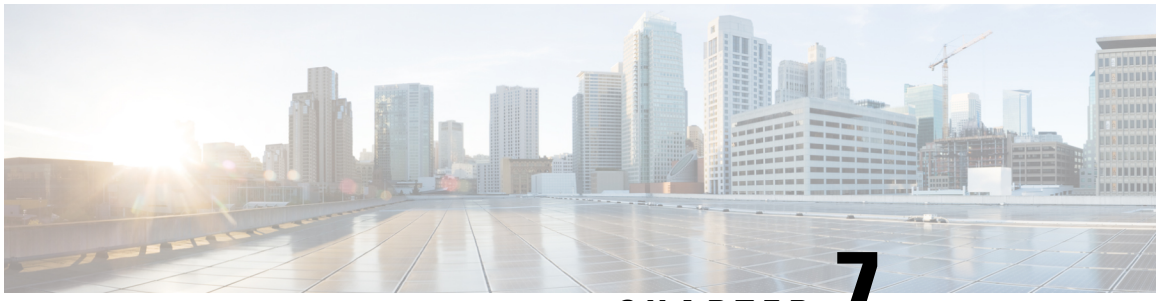
schemas:
  AuthenticationInfo:
    Type: object
    Properties:
      supiOrSuci:
        Reference: 'TS29503_Nudm_UEAU.yaml#/components/schemas/SupiOrSuci'
      servingNetworkName:
        Reference: 'TS29503_Nudm_UEAU.yaml#/components/schemas/ServingNetworkName'
      resynchronizationInfo:
        Reference: 'TS29503_Nudm_UEAU.yaml#/components/schemas/ResynchronizationInfo'
      traceData:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    Required:
      - supiOrSuci
      - servingNetworkName
  UEAuthenticationCtx:
    Type: object
    Properties:
      authType:
        Reference: '#/components/schemas/AuthType'
      5gAuthData:
        oneOf:
          - $ref: '#/components/schemas/Av5gAka'
          - $ref: '#/components/schemas/EapPayload'
      _links:
        Type: object
        additionalProperties:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/LinksValueSchema'
      servingNetworkName:
        Reference: 'TS29503_Nudm_UEAU.yaml#/components/schemas/ServingNetworkName'
    Required:
      - authType
      - 5gAuthData
      - _links
  Av5gAka:
    Type: object
    Required:
      - rand
      - hxresStar
      - autn
```

```
    Properties:
      rand:
        Reference: 'TS29503_Nudm_UEAU.yaml#/components/schemas/Rand'
      hxresStar:
        Reference: '#/components/schemas/HxresStar'
      autn:
        Reference: 'TS29503_Nudm_UEAU.yaml#/components/schemas/Autn'
  ConfirmationData:
    Type: object
    Required:
      - resStar
    Properties:
      resStar:
        Reference: '#/components/schemas/ResStar'
  ConfirmationDataResponse:
    Type: object
    Properties:
      authResult:
        Reference: '#/components/schemas/AuthResult'
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      kseaf:
        Reference: '#/components/schemas/Kseaf'
    Required:
      - authResult
  EapSession:
    Type: object
    Properties:
      eapPayload:
        Reference: '#/components/schemas/EapPayload'
      kSeaf:
        Reference: '#/components/schemas/Kseaf'
      _links:
        Type: object
        additionalProperties:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/LinksValueSchema'
      authResult:
        Reference: '#/components/schemas/AuthResult'
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    Required:
      - eapPayload
  AuthResult:
    Type: string
    enum:
      - AUTHENTICATION_SUCCESS
      - AUTHENTICATION_FAILURE
      - AUTHENTICATION_ONGOING
  EapPayload:
    Type: string
    format: base64
    Description: contains an EAP packet
  Kseaf:
```

```
  Type: string
  Pattern: '[A-Fa-f0-9]{64}'
ResStar:
  Type: string
  Pattern: '[A-Fa-f0-9]{32}'
HxresStar:
  Type: string
  Pattern: "[A-Fa-f0-9]{32}"
AuthType:
  anyOf:
    - type: string
      enum:
        - 5G_AKA
        - EAP_AKA_PRIME
        - EAP_TLS
    - type: string
```

External Docs

Description: 3GPP TS 29.509 V15.2.0; 5G System; 3GPP TS Authentication Server services.
URL: http://www.3gpp.org/ftp/Specs/archive/29_series/29.509



CHAPTER 7

Nlmf_Location

The Nlmf_Location service allows an NF to request location determination (including current geodetic and optionally local and/or civic location) for a target UE or to request periodic or triggered location for a target UE.

- OpenAPI, on page 97
- Info, on page 97
- Servers, on page 98
- Security, on page 98
- Paths, on page 98
- Components, on page 102
- External Docs, on page 134

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '1.1.1'

Title: 'LMF Location'

Description: |

  LMF Location Service.

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  All rights reserved.
```

Servers

URL: '{apiRoot}/nlmf-loc/v1'

Variables:

API Root:

Default: https://example.com

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

Security

- {}
- oAuth2ClientCredentials:
  - nlmf-loc

Paths

/determine-location:

Method: Post

Summary: Determine Location of an UE

Operation ID: DetermineLocation

Tags:

- Determine Location

Request Body:

Content:

Application/JSON:

Schema:

```
      Reference: '#/components/schemas/InputData'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/InputData'
          binaryDataLppMessage:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataLppMessage:
          Content Type: application/vnd.3gpp.lpp
          Headers:
            Content ID:
              Schema:
                Type: string
  Required/Optional: true
Responses:
  '200':
    Description: Expected response to a valid request
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/LocationData'
  '204':
    Description: Expected response for MO-LR requesting location assistance data.
```

```
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      Reference: 'TS29571_CommonData.yaml#/components/responses/401'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    '504':
      Reference: 'TS29571_CommonData.yaml#/components/responses/504'
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'
  Callbacks:
    EventNotify:
      '{$request.body#/hgmlcCallBackURI}':
        Method: Post
```

```
Request Body:
  Description: UE Event Notification
  Content:
    Application/JSON:
      Schema:
        Reference: '#/components/schemas/EventNotifyData'
Responses:
  '204':
    Description: Expected response to a valid notification
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    Reference: 'TS29571_CommonData.yaml#/components/responses/401'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Reference: 'TS29571_CommonData.yaml#/components/responses/404'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
    Reference: 'TS29571_CommonData.yaml#/components/responses/429'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
```

```
        '504':
          Reference: 'TS29571_CommonData.yaml#/components/responses/504'
        Default:
          Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nlmf-loc: Access to the Nlmf_Location API
schemas:
#
# COMPLEX TYPES
#
  InputData:
    Type: object
    not:
      Required: [ ecgi, ncgi ]
    Properties:
      externalClientType:
        Reference: '#/components/schemas/ExternalClientType'
      correlationID:
        Reference: '#/components/schemas/CorrelationID'
      amfId:
```

```
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
locationQoS:
    Reference: '#/components/schemas/LocationQoS'
supportedGADShapes:
    Type: array
    Items:
      Reference: '#/components/schemas/SupportedGADShapes'
    minItems: 1
supi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
pei:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
gpsi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
ecgi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ecgi'
ecgiOnSecondNode:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ecgi'
ncgi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ncgi'
ncgiOnSecondNode:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ncgi'
priority:
    Reference: '#/components/schemas/LcsPriority'
velocityRequested:
    Reference: '#/components/schemas/VelocityRequested'
ueLcsCap:
    Reference: '#/components/schemas/UeLcsCapability'
```

```
    lcsServiceType:
      Reference: '#/components/schemas/LcsServiceType'
    ldrType:
      Reference: '#/components/schemas/LdrType'
    hgmlcCallBackURI:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    vgmlcAddress:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    ldrReference:
      Reference: '#/components/schemas/LdrReference'
    periodicEventInfo:
      Reference: '#/components/schemas/PeriodicEventInfo'
    areaEventInfo:
      Reference: '#/components/schemas/AreaEventInfo'
    motionEventInfo:
      Reference: '#/components/schemas/MotionEventInfo'
    reportingAccessTypes:
      Reference: '#/components/schemas/ReportingAccessTypes'
    ueConnectivityStates:
      Reference: '#/components/schemas/UeConnectivityState'
    ueLocationServiceInd:
      Reference: '#/components/schemas/UeLocationServiceInd'
    lppMessage:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'

  LocationData:
    Type: object
    Required:
      - locationEstimate
```

```
Properties:
  locationEstimate:
    Reference: '#/components/schemas/GeographicArea'
  accuracyFulfilmentIndicator:
    Reference: '#/components/schemas/AccuracyFulfilmentIndicator'
  ageOfLocationEstimate:
    Reference: '#/components/schemas/AgeOfLocationEstimate'
  velocityEstimate:
    Reference: '#/components/schemas/VelocityEstimate'
  civicAddress:
    Reference: '#/components/schemas/CivicAddress'
  positioningDataList:
    Type: array
    Items:
      Reference: '#/components/schemas/PositioningMethodAndUsage'
    minItems: 1
  gnssPositioningDataList:
    Type: array
    Items:
      Reference: '#/components/schemas/GnssPositioningMethodAndUsage'
    minItems: 1
  ecgi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ecgi'
  ncgi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ncgi'
  altitude:
    Reference: '#/components/schemas/Altitude'
  barometricPressure:
    Reference: '#/components/schemas/BarometricPressure'
```

```
    servingLMFIdentification:
      Reference: '#/components/schemas/LMFIdentification'
GeographicArea:
  anyOf:
    - $ref: '#/components/schemas/Point'
    - $ref: '#/components/schemas/PointUncertaintyCircle'
    - $ref: '#/components/schemas/PointUncertaintyEllipse'
    - $ref: '#/components/schemas/Polygon'
    - $ref: '#/components/schemas/PointAltitude'
    - $ref: '#/components/schemas/PointAltitudeUncertainty'
    - $ref: '#/components/schemas/EllipsoidArc'
GADShape:
  Type: object
  Required:
    - shape
  Properties:
    shape:
      Reference: '#/components/schemas/SupportedGADShapes'
  discriminator:
    propertyName: shape
    mapping:
      POINT: '#/components/schemas/Point'
      POINT_UNCERTAINTY_CIRCLE: '#/components/schemas/PointUncertaintyCircle'
      POINT_UNCERTAINTY_ELLIPSE: '#/components/schemas/PointUncertaintyEllipse'
      POLYGON: '#/components/schemas/Polygon'
      POINT_ALTITUDE: '#/components/schemas/PointAltitude'
      POINT_ALTITUDE_UNCERTAINTY: '#/components/schemas/PointAltitudeUncertainty'
      ELLIPSOID_ARC: '#/components/schemas/EllipsoidArc'
Point:
```

```
    allOf:
      - $ref: '#/components/schemas/GADShape'
      - type: object
        Required:
          - point
        Properties:
          point:
            Reference: '#/components/schemas/GeographicalCoordinates'
  PointUncertaintyCircle:
    allOf:
      - $ref: '#/components/schemas/GADShape'
      - type: object
        Required:
          - point
          - uncertainty
        Properties:
          point:
            Reference: '#/components/schemas/GeographicalCoordinates'
          uncertainty:
            Reference: '#/components/schemas/Uncertainty'
  PointUncertaintyEllipse:
    allOf:
      - $ref: '#/components/schemas/GADShape'
      - type: object
        Required:
          - point
          - uncertaintyEllipse
          - confidence
        Properties:
          point:
```

```
        Reference: '#/components/schemas/GeographicalCoordinates'
      uncertaintyEllipse:
        Reference: '#/components/schemas/UncertaintyEllipse'
      confidence:
        Reference: '#/components/schemas/Confidence'
Polygon:
  allOf:
    - $ref: '#/components/schemas/GADShape'
    - type: object
      Required:
        - pointList
      Properties:
        pointList:
          Reference: '#/components/schemas/PointList'
PointAltitude:
  allOf:
    - $ref: '#/components/schemas/GADShape'
    - type: object
      Required:
        - point
        - altitude
      Properties:
        point:
          Reference: '#/components/schemas/GeographicalCoordinates'
        altitude:
          Reference: '#/components/schemas/Altitude'
PointAltitudeUncertainty:
  allOf:
    - $ref: '#/components/schemas/GADShape'
    - type: object
```

```
      Required:
        - point
        - altitude
        - uncertaintyEllipse
        - uncertaintyAltitude
        - confidence
      Properties:
        point:
          Reference: '#/components/schemas/GeographicalCoordinates'
        altitude:
          Reference: '#/components/schemas/Altitude'
        uncertaintyEllipse:
          Reference: '#/components/schemas/UncertaintyEllipse'
        uncertaintyAltitude:
          Reference: '#/components/schemas/Uncertainty'
        confidence:
          Reference: '#/components/schemas/Confidence'
  EllipsoidArc:
    allOf:
      - $ref: '#/components/schemas/GADShape'
      - type: object
        Required:
          - point
          - innerRadius
          - uncertaintyRadius
          - offsetAngle
          - includedAngle
          - confidence
        Properties:
          point:
```

```
        Reference: '#/components/schemas/GeographicalCoordinates'
      innerRadius:
        Reference: '#/components/schemas/InnerRadius'
      uncertaintyRadius:
        Reference: '#/components/schemas/Uncertainty'
      offsetAngle:
        Reference: '#/components/schemas/Angle'
      includedAngle:
        Reference: '#/components/schemas/Angle'
      confidence:
        Reference: '#/components/schemas/Confidence'
GeographicalCoordinates:
  Type: object
  Required:
    - lon
    - lat
  Properties:
    lon:
      Type: number
      format: double
      Minimum: -180
      Maximum: 180
    lat:
      Type: number
      format: double
      Minimum: -90
      Maximum: 90
UncertaintyEllipse:
  Type: object
```

```
    Required:
      - semiMajor
      - semiMinor
      - orientationMajor
    Properties:
      semiMajor:
        Reference: '#/components/schemas/Uncertainty'
      semiMinor:
        Reference: '#/components/schemas/Uncertainty'
      orientationMajor:
        Reference: '#/components/schemas/Orientation'
  PointList:
    Type: array
    Items:
      Reference: '#/components/schemas/GeographicalCoordinates'
    minItems: 3
    maxItems: 15
  LocationQoS:
    Type: object
    Properties:
      hAccuracy:
        Reference: '#/components/schemas/Accuracy'
      vAccuracy:
        Reference: '#/components/schemas/Accuracy'
      verticalRequested:
        Type: boolean
      responseTime:
        Reference: '#/components/schemas/ResponseTime'
      lcsQosClass:
```

```
      Reference: '#/components/schemas/LcsQosClass'
PositioningMethodAndUsage:
  Type: object
  Required:
    - method
    - mode
    - usage
  Properties:
    method:
      Reference: '#/components/schemas/PositioningMethod'
    mode:
      Reference: '#/components/schemas/PositioningMode'
    usage:
      Reference: '#/components/schemas/Usage'
    methodCode:
      Type: integer
      Minimum: 16
      Maximum: 31
GnssPositioningMethodAndUsage:
  Type: object
  Required:
    - mode
    - gnss
    - usage
  Properties:
    mode:
      Reference: '#/components/schemas/PositioningMode'
    gnss:
      Reference: '#/components/schemas/GnssId'
```

```
    usage:
      Reference: '#/components/schemas/Usage'
CivicAddress:
  Type: object
  Properties:
    country:
      Type: string
    A1:
      Type: string
    A2:
      Type: string
    A3:
      Type: string
    A4:
      Type: string
    A5:
      Type: string
    A6:
      Type: string
    PRD:
      Type: string
    POD:
      Type: string
    STS:
      Type: string
    HNO:
      Type: string
    HNS:
      Type: string
```

```
LMK:
  Type: string
LOC:
  Type: string
NAM:
  Type: string
PC:
  Type: string
BLD:
  Type: string
UNIT:
  Type: string
FLR:
  Type: string
ROOM:
  Type: string
PLC:
  Type: string
PCN:
  Type: string
POBOX:
  Type: string
ADDCODE:
  Type: string
SEAT:
  Type: string
RD:
  Type: string
```

```
    RDSEC:
      Type: string
    RDBR:
      Type: string
    RDSUBBR:
      Type: string
    PRM:
      Type: string
    POM:
      Type: string
VelocityEstimate:
  oneOf:
    - $ref: '#/components/schemas/HorizontalVelocity'
    - $ref: '#/components/schemas/HorizontalWithVerticalVelocity'
    - $ref: '#/components/schemas/HorizontalVelocityWithUncertainty'
    - $ref: '#/components/schemas/HorizontalWithVerticalVelocityAndUncertainty'
HorizontalVelocity:
  Type: object
  Required:
    - hSpeed
    - bearing
  Properties:
    hSpeed:
      Reference: '#/components/schemas/HorizontalSpeed'
    bearing:
      Reference: '#/components/schemas/Angle'
HorizontalWithVerticalVelocity:
  Type: object
  Required:
    - hSpeed
```

```
    - bearing
    - vSpeed
    - vDirection
  Properties:
    hSpeed:
      Reference: '#/components/schemas/HorizontalSpeed'
    bearing:
      Reference: '#/components/schemas/Angle'
    vSpeed:
      Reference: '#/components/schemas/VerticalSpeed'
    vDirection:
      Reference: '#/components/schemas/VerticalDirection'
HorizontalVelocityWithUncertainty:
  Type: object
  Required:
    - hSpeed
    - bearing
    - hUncertainty
  Properties:
    hSpeed:
      Reference: '#/components/schemas/HorizontalSpeed'
    bearing:
      Reference: '#/components/schemas/Angle'
    hUncertainty:
      Reference: '#/components/schemas/SpeedUncertainty'
HorizontalWithVerticalVelocityAndUncertainty:
  Type: object
  Required:
    - hSpeed
```

```
    - bearing
    - vSpeed
    - vDirection
    - hUncertainty
    - vUncertainty
  Properties:
    hSpeed:
      Reference: '#/components/schemas/HorizontalSpeed'
    bearing:
      Reference: '#/components/schemas/Angle'
    vSpeed:
      Reference: '#/components/schemas/VerticalSpeed'
    vDirection:
      Reference: '#/components/schemas/VerticalDirection'
    hUncertainty:
      Reference: '#/components/schemas/SpeedUncertainty'
    vUncertainty:
      Reference: '#/components/schemas/SpeedUncertainty'
UeLcsCapability:
  Type: object
  Properties:
    lppSupport:
      Type: boolean
      Default: true
    ciotOptimisation:
      Type: boolean
      Default: false
PeriodicEventInfo:
  Type: object
```

```
    Required:
      - reportingAmount
      - reportingInterval
    Properties:
      reportingAmount:
        Reference: '#/components/schemas/ReportingAmount'
      reportingInterval:
        Reference: '#/components/schemas/ReportingInterval'
  AreaEventInfo:
    Type: object
    Required:
      - areaDefinition
    Properties:
      areaDefinition:
        Type: array
        Items:
          Reference: '#/components/schemas/ReportingArea'
        minItems: 1
        maxItems: 250
      occurrenceInfo:
        Reference: '#/components/schemas/OccurrenceInfo'
      minimumInterval:
        Reference: '#/components/schemas/MinimumInterval'
      maximumInterval:
        Reference: '#/components/schemas/MaximumInterval'
      samplingInterval:
        Reference: '#/components/schemas/SamplingInterval'
      reportingDuration:
        Reference: '#/components/schemas/ReportingDuration'
```

```
    reportingLocationReq:
      Type: boolean
      Default: true
  ReportingArea:
    Type: object
    Required:
      - areaType
    Properties:
      areaType:
        Reference: '#/components/schemas/ReportingAreaType'
      tai:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      ecgi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ecgi'
      ncgi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ncgi'
  MotionEventInfo:
    Type: object
    Required:
      - linearDistance
    Properties:
      linearDistance:
        Reference: '#/components/schemas/LinearDistance'
      occurrenceInfo:
        Reference: '#/components/schemas/OccurrenceInfo'
      minimumInterval:
        Reference: '#/components/schemas/MinimumInterval'
      maximumInterval:
        Reference: '#/components/schemas/MaximumInterval'
```

```
    samplingInterval:
      Reference: '#/components/schemas/SamplingInterval'
    reportingDuration:
      Reference: '#/components/schemas/ReportingDuration'
    reportingLocationReq:
      Type: boolean
      Default: true
ReportingAccessTypes:
  Type: array
  Items:
    Reference: '#/components/schemas/ReportingAccessType'
  minItems: 1
CancelLocData:
  Type: object
  Required:
    - hgmlcCallBackURI
    - ldrReference
  Properties:
    hgmlcCallBackURI:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    ldrReference:
      Reference: '#/components/schemas/LdrReference'
LocContextData:
  Type: object
  Required:
    - amfId
    - ldrType
    - hgmlcCallBackURI
    - ldrReference
    - eventReportMessage
```

```
Properties:
  amfId:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
  locationQoS:
    Reference: '#/components/schemas/LocationQoS'
  supportedGADShapes:
    Type: array
    Items:
      Reference: '#/components/schemas/SupportedGADShapes'
    minItems: 1
  supi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
  gpsi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
  ldrType:
    Reference: '#/components/schemas/LdrType'
  hgmlcCallBackURI:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  ldrReference:
    Reference: '#/components/schemas/LdrReference'
  periodicEventInfo:
    Reference: '#/components/schemas/PeriodicEventInfo'
  areaEventInfo:
    Reference: '#/components/schemas/AreaEventInfo'
  motionEventInfo:
    Reference: '#/components/schemas/MotionEventInfo'
  eventReportMessage:
    Reference: '#/components/schemas/EventReportMessage'
```

```
    eventReportingStatus:
      Reference: '#/components/schemas/EventReportingStatus'
    ueLocationInfo:
      Reference: '#/components/schemas/UELocationInfo'
EventReportMessage:
  Type: object
  Required:
    - eventClass
    - eventContent
  Properties:
    eventClass:
      Reference: '#/components/schemas/EventClass'
    eventContent:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
EventReportingStatus:
  Type: object
  Properties:
    eventReportCounter:
      Reference: '#/components/schemas/EventReportCounter'
    eventReportDuration:
      Reference: '#/components/schemas/EventReportDuration'
UELocationInfo:
  Type: object
  Properties:
    locationEstimate:
      Reference: '#/components/schemas/GeographicArea'
    ageOfLocationEstimate:
      Reference: '#/components/schemas/AgeOfLocationEstimate'
    velocityEstimate:
```

```
      Reference: '#/components/schemas/VelocityEstimate'
    ageOfVelocityEstimate:
      Reference: '#/components/schemas/AgeOfLocationEstimate'

EventNotifyData:
  Type: object
  Required:
    - reportedEventType
    - ldrReference
  Properties:
    reportedEventType:
      Reference: '#/components/schemas/ReportedEventType'
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    hgmlcCallBackURI:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    ldrReference:
      Reference: '#/components/schemas/LdrReference'
    locationEstimate:
      Reference: '#/components/schemas/GeographicArea'
    ageOfLocationEstimate:
      Reference: '#/components/schemas/AgeOfLocationEstimate'
    civicAddress:
      Reference: '#/components/schemas/CivicAddress'
    positioningDataList:
      Type: array
      Items:
```

```
        Reference: '#/components/schemas/PositioningMethodAndUsage'
      minItems: 1
    gnssPositioningDataList:
      Type: array
      Items:
        Reference: '#/components/schemas/GnssPositioningMethodAndUsage'
      minItems: 1
    servingLMFidentification:
      Reference: '#/components/schemas/LMFIdentification'
    terminationCause:
      Reference: '#/components/schemas/TerminationCause'
    velocityEstimate:
      Reference: '#/components/schemas/VelocityEstimate'
    altitude:
      Reference: '#/components/schemas/Altitude'


  UeConnectivityState:
    Type: object
    Required:
      - accessType
    Properties:
      accessType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      connectivitystate:
        Reference: 'TS29518_Namf_EventExposure.yaml#/components/schemas/CmState'
#
#
# SIMPLE TYPES
#
```

Altitude:

Type: number

format: double

Minimum: -32767

Maximum: 32767

Angle:

Type: integer

Minimum: 0

Maximum: 360

Uncertainty:

Type: number

format: float

Minimum: 0

Orientation:

Type: integer

Minimum: 0

Maximum: 180

Confidence:

Type: integer

Minimum: 0

Maximum: 100

Accuracy:

Type: number

format: float

Minimum: 0

InnerRadius:

Type: integer

format: int32

Minimum: 0

```
    Maximum: 327675
  CorrelationID:
    Type: string
    minLength: 1
    maxLength: 255
  AgeOfLocationEstimate:
    Type: integer
    Minimum: 0
    Maximum: 32767
  HorizontalSpeed:
    Type: number
    format: float
    Minimum: 0
    Maximum: 2047
  VerticalSpeed:
    Type: number
    format: float
    Minimum: 0
    Maximum: 255
  SpeedUncertainty:
    Type: number
    format: float
    Minimum: 0
    Maximum: 255
  BarometricPressure:
    Type: integer
    Minimum: 30000
    Maximum: 115000
```

LcsServiceType:

Type: integer

Minimum: 0

Maximum: 127

LdrReference:

Type: string

minLength: 2

maxLength: 510

ReportingAmount:

Type: integer

Minimum: 1

Maximum: 8639999

ReportingInterval:

Type: integer

Minimum: 1

Maximum: 8639999

MinimumInterval:

Type: integer

Minimum: 1

Maximum: 32767

MaximumInterval:

Type: integer

Minimum: 1

Maximum: 86400

SamplingInterval:

Type: integer

Minimum: 1

Maximum: 3600

ReportingDuration:

```
      Type: integer
      Minimum: 1
      Maximum: 8640000
    LinearDistance:
      Type: integer
      Minimum: 1
      Maximum: 10000
    LMFIdentification:
      Type: string
    EventReportCounter:
      Type: integer
      Minimum: 1
      Maximum: 8640000
    EventReportDuration:
      Type: integer
      Minimum: 1
      Maximum: 8640000
#
# ENUMS
#
    ExternalClientType:
      anyOf:
        - type: string
          enum:
            - EMERGENCY_SERVICES
            - VALUE_ADDED_SERVICES
            - PLMN_OPERATOR_SERVICES
            - LAWFUL_INTERCEPT_SERVICES
            - PLMN_OPERATOR_BROADCAST_SERVICES
```

```
        - PLMN_OPERATOR_OM
        - PLMN_OPERATOR_ANONYMOUS_STATISTICS
        - PLMN_OPERATOR_TARGET_MS_SERVICE_SUPPORT
    - type: string
SupportedGADShapes:
  anyOf:
    - type: string
      enum:
        - POINT
        - POINT_UNCERTAINTY_CIRCLE
        - POINT_UNCERTAINTY_ELLIPSE
        - POLYGON
        - POINT_ALTITUDE
        - POINT_ALTITUDE_UNCERTAINTY
        - ELLIPSOID_ARC
    - type: string
ResponseTime:
  anyOf:
    - type: string
      enum:
        - LOW_DELAY
        - DELAY_TOLERANT
        - NO_DELAY
    - type: string
PositioningMethod:
  anyOf:
    - type: string
      enum:
        - CELLID
        - ECID
        - OTDOA
```

```
        - BAROMETRIC_PRESSURE
        - WLAN
        - BLUETOOTH
        - MBS
        - MOTION_SENSOR
        - DL_TDOA
        - DL_AOD
        - MULTI-RTT
        - NR_ECID
        - UL_TDOA
        - UL_AOA
        - NETWORK_SPECIFIC
    - type: string
PositioningMode:
  anyOf:
    - type: string
      enum:
        - UE_BASED
        - UE_ASSISTED
        - CONVENTIONAL
    - type: string
GnssId:
  anyOf:
    - type: string
      enum:
        - GPS
        - GALILEO
        - SBAS
        - MODERNIZED_GPS
        - QZSS
        - GLONASS
        - BDS
```

```
        - NAVIC
    - type: string
Usage:
  anyOf:
    - type: string
      enum:
        - UNSUCCESS
        - SUCCESS_RESULTS_NOT_USED
        - SUCCESS_RESULTS_USED_TO_VERIFY_LOCATION
        - SUCCESS_RESULTS_USED_TO_GENERATE_LOCATION
        - SUCCESS_METHOD_NOT_DETERMINED
    - type: string
LcsPriority:
  anyOf:
    - type: string
      enum:
        - HIGHEST_PRIORITY
        - NORMAL_PRIORITY
    - type: string
VelocityRequested:
  anyOf:
    - type: string
      enum:
        - VELOCITY_IS_NOT_REQUESTED
        - VELOCITY_IS_REQUESTED
    - type: string
AccuracyFulfilmentIndicator:
  anyOf:
    - type: string
      enum:
```

```
        - REQUESTED_ACCURACY_FULFILLED
        - REQUESTED_ACCURACY_NOT_FULFILLED
    - type: string
VerticalDirection:
  Type: string
  enum:
    - UPWARD
    - DOWNWARD
LdrType:
  anyOf:
    - type: string
      enum:
        - UE_AVAILABLE
        - PERIODIC
        - ENTERING_INTO_AREA
        - LEAVING_FROM_AREA
        - BEING_INSIDE_AREA
        - MOTION
    - type: string
ReportingAreaType:
  anyOf:
    - type: string
      enum:
        - EPS_TRACKING_AREA_IDENTITY
        - E-UTRAN_CELL_GLOBAL_IDENTIFICATION
        - 5GS_TRACKING_AREA_IDENTITY
        - NR_CELL_GLOBAL_IDENTITY
    - type: string
OccurrenceInfo:
  anyOf:
    - type: string
```

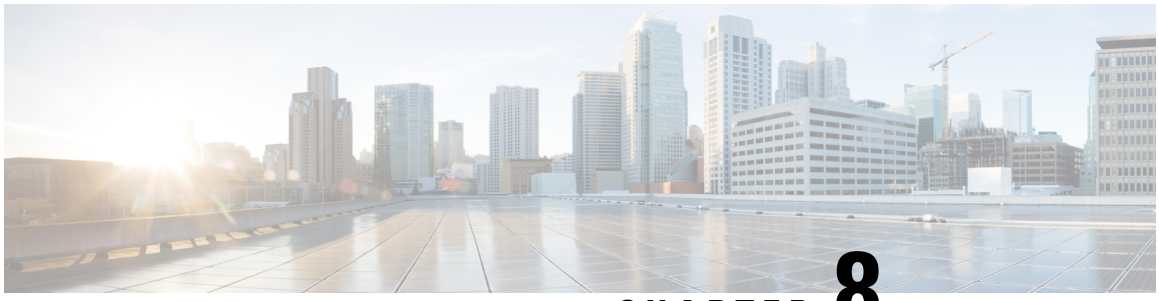
```
      enum:
        - ONE_TIME_EVENT
        - MULTIPLE_TIME_EVENT
    - type: string
ReportingAccessType:
  anyOf:
    - type: string
      enum:
        - NR
        - EUTRA_CONNECTED_TO_5GC
        - NON_3GPP_CONNECTED_TO_5GC
    - type: string
EventClass:
  anyOf:
    - type: string
      enum:
        - SUPPLEMENTARY_SERVICES
    - type: string
ReportedEventType:
  anyOf:
    - type: string
      enum:
        - PERIODIC_EVENT
        - ENTERING_AREA_EVENT
        - LEAVING_AREA_EVENT
        - BEING_INSIDE_AREA_EVENT
        - MOTION_EVENT
        - MAXIMUM_INTERVAL_EXPIRATION_EVENT
        - LOCATION_CANCELLATION_EVENT
    - type: string
TerminationCause:
```

```
    anyOf:
      - type: string
        enum:
          - TERMINATION_BY_UE
          - TERMINATION_BY_NETWORK
          - NORMAL_TERMINATION
      - type: string
  LcsQosClass:
    anyOf:
      - type: string
        enum:
          - BEST_EFFORT
          - ASSURED
      - type: string

  UeLocationServiceInd:
    anyOf:
      - type: string
        enum:
          - LOCATION_ESTIMATE
          - LOCATION_ASSISTANCE_DATA
      - type: string
```

External Docs

```
Description: 3GPP TS 29.572 V16.4.0; 5G System; Location Management Services; Stage 3
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.572/'
```



CHAPTER 8

Nnrf_AccessToken

The NRF offers an Nnrf_AccessToken service (used for OAuth2 authorization, see IETF RFC 6749 [16]), following the "Client Credentials" authorization grant, as specified in 3GPP TS 33.501 [15]. It exposes a "Token Endpoint" where the Access Token Request service can be requested by NF Service Consumers.

Reference: 3GPP TS 33.501 [15]

- OpenAPI, on page 135
- Info, on page 135
- External Documents, on page 135
- Paths, on page 136
- Components, on page 137

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: '1.0.0'

Title: 'NRF OAuth2'

Description: 'NRF OAuth2 Authorization'

External Documents

Description: 3GPP TS 29.510 V15.2.0; 5G System; Network Function Repository Services; Stage 3

URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.510/'

Paths

/oauth2/token

Method: Post

Summary: Access Token Request

Operation ID: AccessTokenRequest

Tags:

- Access Token Request

Request Body:

Content:

application/x-www-form-urlencoded:

Schema:

Reference: '#/components/schemas/AccessTokenReq'

Required/Optional: true

Responses:

'200' Successful Access Token Request

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/AccessTokenRsp'

Headers:

Cache-Control:

Reference: '#/components/headers/cache-control'

Pragma:

Reference: '#/components/headers/pragma'

'400' Error in the Access Token Request

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/AccessTokenErr'

Headers:

Cache-Control:

Reference: '#/components/headers/cache-control'

Pragma:

Reference: '#/components/headers/pragma'

Components

Headers

cache-control

Required: true

schema:

Type: string

enum:

- no-store

pragma

Required: true

schema:

Type: string

enum:

- no-cache

Schemas

AccessTokenReq

Type: object

Required:

- grant_type
- nfInstanceId
- scope

Properties:

grant_type:

Type: string

enum:

- client_credentials

nfInstanceId:

Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

nfType:

Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFType'

targetNfType:

Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFType'

scope:

Type: string

Pattern: '^([a-zA-Z0-9_-]+)([a-zA-Z0-9_-]+)*$'

targetNfInstanceId:

Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

requesterPlmn:

Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'

targetPlmn:

Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'

AccessTokenRsp

Type: object

Required:

- access_token

- token_type

Properties:

access_token:

Type: string

Description: JWS Compact Serialized representation of JWS signed JSON object (AccessTokenClaims)

token_type:

Type: string

expires_in:

Type: integer

scope:

Type: string

Pattern: '^([a-zA-Z0-9_-]+)([a-zA-Z0-9_-]+)*$'

AccessTokenClaims

Type: object

Required:

- issuer
- subject
- audience
- scope
- expiration

Properties:

issuer:

Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

subject:

Type: string

audience:

anyOf:

- $ref: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFType'
- type: array

Items:

Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

minItems: 1

scope:

Type: string

Pattern: '^([a-zA-Z0-9_-]+)([a-zA-Z0-9_-]+)*$'

expiration:

Type: integer

AccessTokenErr

Type: object

Required:

- error

Properties:

error:

Type: string

enum:

- invalid_request
- invalid_client
- invalid_grant
- unauthorized_client

- unsupported_grant_type

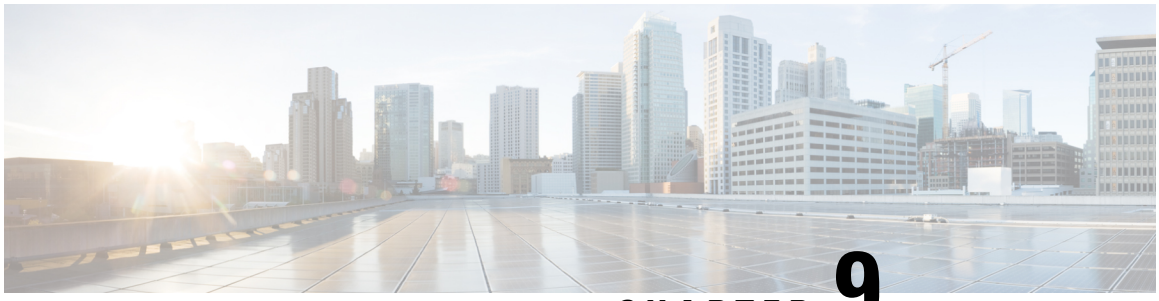
- invalid_scope

error_description:

Type: string

error_uri:

Type: string



CHAPTER 9

Nnrf_NFDiscovery

The Nnrf_NFDiscovery service allows a Network Function Instance to discover services offered by other Network Function Instances, by querying the local NRF.

It also allows an NRF in a PLMN to re-issue a discovery request towards an NRF in another PLMN (e.g., the HPLMN of a certain UE).

Reference: 3GPP TS 29.510 version 15.0.0 Release 15

- OpenAPI, on page 141
- Info, on page 141
- Servers, on page 141
- Security, on page 142
- Paths, on page 142
- Components, on page 147
- External Docs, on page 150

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '1.0.0'
Title: 'NRF NFDiscovery Service'
Description: 'NRF NFDiscovery  Service'
```

Servers

```
URL: '{apiRoot}/nnrf-disc/v1'
Variables:
  API Root:
```

```
      Default: https://example.com
      Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501
```

Security

```
- {}
- oAuth2ClientCredentials:
    - nnrf-disc
```

Paths

/nf-instances

```
  get:
    Summary: Search a collection of NF Instances
    Operation ID: SearchNFInstances

    Tags:
      - NF Instances (Store)

    Parameters:
      - Name: target-nf-type
        In: query
        Description: Type of the target NF
        Required/Optional: true
        Schema:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFType'
      - Name: requester-nf-type
        In: query
        Description: Type of the requester NF
        Required/Optional: true
        Schema:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFType'
      - Name: service-names
        In: query
        Description: Name of the service offered by the NF
        Schema:
          Type: array
          Items:
            Type: string
          Min Items: 1
        Style: form
        Explode: false
      - Name: requester-nf-instance-fqdn
        In: query
        Description: FQDN of the requester NF
        Schema:
```

```
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
- Name: target-plmn-list
  In: query
  Description: Id of the PLMN where the target NF is located
  Content:
    Application/JSON:
      Schema:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
        Min Items: 1
- Name: requester-plmn-list
  In: query
 Description: Id of the PLMN where the NF issuing the Discovery request is located

  Content:
    Application/JSON:
      Schema:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
        Min Items: 1
- Name: target-nf-instance-id
  In: query
  Description: Identity of the NF instance being discovered
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
- Name: target-nf-fqdn
  In: query
  Description: FQDN of the NF instance being discovered
  Schema:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
- Name: hnrf-uri
  In: query
  Description: Uri of the home NRF
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
- Name: snssais
  In: query
  Description: Slice info of the target NF
  Content:
    Application/JSON:
      Schema:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
        Min Items: 1
- Name: dnn
  In: query
  Description: Dnn supported by the BSF, SMF or UPF
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
```

```
- Name: nsi-list
  In: query
  Description: NSI IDs that are served by the services being discovered
  Schema:
    Type: array
    Items:
      Type: string
    Min Items: 1
  Style: form
  Explode: false
- Name: smf-serving-area
  In: query
  Schema:
    Type: string
- Name: tai
  In: query
  Description: Tracking Area Identity
  Content:
    Application/JSON:
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
- Name: amf-region-id
  In: query
  Description: AMF Region Identity
  Schema:
    Type: string
- Name: amf-set-id
  In: query
  Description: AMF Set Identity
  Schema:
    Type: string
- Name: guami
  In: query
  Description: Guami used to search for an appropriate AMF
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
- Name: supi
  In: query
  Description: SUPI of the user
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
- Name: ue-ipv4-address
  In: query
  Description: IPv4 address of the UE
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
- Name: ip-domain
  In: query
  Description: IP domain of the UE, which supported by BSF
  Schema:
    Type: string
```

```
- Name: ue-ipv6-prefix
  In: query
  Description: IPv6 prefix of the UE
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
- Name: pgw-ind
  In: query
  Description: Combined PGW-C and SMF or a standalone SMF
  Schema:
    Type: boolean
- Name: pgw
  In: query
  Description: PGW FQDN of a combined PGW-C and SMF
  Schema:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
- Name: gpsi
  In: query
  Description: GPSI of the user
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
- Name: external-group-identity
  In: query
  Description: external group identifier of the user
  Schema:
    Type: string
- Name: data-set
  In: query
  Description: data set supported by the NF
  Schema:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/DataSetId'
- Name: routing-indicator
  In: query
  Description: routing indicator in SUCI
  Schema:
    Type: string
    pattern: '^[0-9]{1,4}$'
- Name: group-id-list
  In: query
  Description: Group IDs of the NFs being discovered
  Schema:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    Min Items: 1
  Style: form
  Explode: false
- Name: dnai-list
  In: query
  Description: Data network access identifiers of the NFs being discovered
  Schema:
    Type: array
```

```
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnai'
        Min Items: 1
      Style: form
      Explode: false
    - Name: supported-features
      In: query
      Description: Features required to be supported by the target NF
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    - Name: upf-iwk-eps-ind
      In: query
      Description: UPF supporting interworking with EPS or not
      Schema:
        Type: boolean
    - Name: chf-supported-plmn
      In: query
      Description: PLMN ID supported by a CHF
      Content:
        Application/JSON:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    - Name: preferred-locality
      In: query
      Description: preferred target NF location
      Schema:
        Type: string
    - Name: access-type
      In: query
      Description: AccessType supported by the target NF
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    - Name: If-None-Match
      In: header
      Description: Validator for conditional requests, as described in IETF RFC 7232,
3.2
      Schema:
        Type: string

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SearchResult'
      Headers:
        Cache-Control:
          Description: Cache-Control containing max-age, described in IETF RFC 7234,
5.2
          Schema:
            Type: string
```

```
        ETag:
          Description: Entity Tag containing a strong validator, described in IETF RFC
7232, 2.3
          Schema:
            Type: string
      '307':
        Description: Temporary Redirect
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '/oauth2/token'
        scopes:
          nnrf-disc: Access to the Nnrf_NFDiscovery API

schemas:
  SearchResult:
    Type: object
    Required:
      - nfInstances
    Properties:
      validityPeriod:
        Type: integer
      nfInstances:
        Type: array
        Items:
```

```
        Reference: '#/components/schemas/NFProfile'
    NFProfile:
      Type: object
      Required:
        - nfInstanceId
        - nfType
        - nfStatus
      Properties:
        nfInstanceId:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
        nfType:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFType'
        nfStatus:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFStatus'
        plmnList:
          Type: array
          Items:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
          minItems: 1
        sNssais:
          Type: array
          Items:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
          minItems: 1
        nsiList:
          Type: array
          Items:
            Type: string
          minItems: 1
        fqdn:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
        ipv4Addresses:
          Type: array
          Items:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
          minItems: 1
        ipv6Addresses:
          Type: array
          Items:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
          minItems: 1
        capacity:
          Type: integer
          Minimum: 0
          Maximum: 65535
        load:
          Type: integer
          Minimum: 0
          Maximum: 100
        locality:
          Type: string
        priority:
```

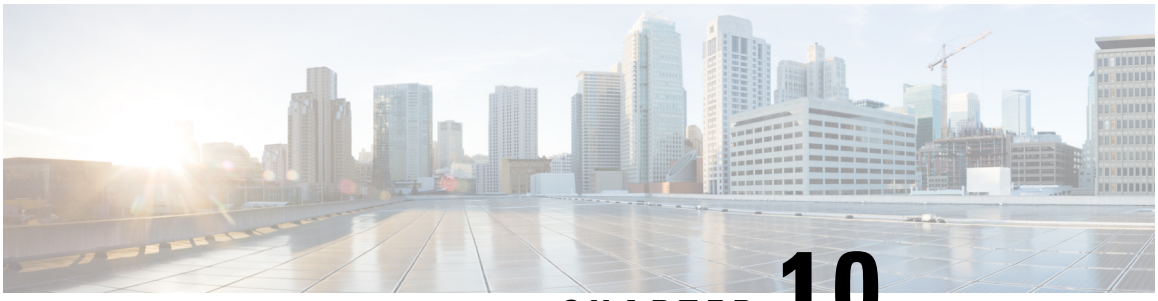
```
      Type: integer
      Minimum: 0
      Maximum: 65535
    udrInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UdrInfo'
    udmInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UdmInfo'
    ausfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AusfInfo'
    amfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AmfInfo'
    smfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/SmfInfo'
    upfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UpfInfo'
    pcfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PcfInfo'
    bsfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/BsfInfo'
    chfInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ChfInfo'
    customInfo:
      Type: object
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    nfServicePersistence:
      Type: boolean
      Default: false
    nfServices:
      Type: array
      Items:
        Reference: '#/components/schemas/NFService'
      minItems: 1
NFService:
  Type: object
  Required:
    - serviceInstanceId
    - serviceName
    - versions
    - scheme
    - nfServiceStatus
  Properties:
    serviceInstanceId:
      Type: string
    serviceName:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
    versions:
      Type: array
      Items:
       Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFServiceVersion'

      minItems: 1
    scheme:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UriScheme'
    nfServiceStatus:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NFServiceStatus'
    fqdn:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
    ipEndPoints:
      Type: array
      Items:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/IpEndPoint'
      minItems: 1
    apiPrefix:
      Type: string
    defaultNotificationSubscriptions:
      Type: array
      Items:
        Reference:
'TS29510_Nnrf_NFManagement.yaml#/components/schemas/DefaultNotificationSubscription'
      minItems: 1
    capacity:
      Type: integer
      Minimum: 0
      Maximum: 65535
    load:
      Type: integer
      Minimum: 0
      Maximum: 100
    priority:
      Type: integer
      Minimum: 0
      Maximum: 65535
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    chfServiceInfo:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ChfServiceInfo'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
```

External Docs

```
Description: 3GPP TS 29.510 V15.2.0; 5G System; Network Function Repository Services;
Stage 3
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.510/'
```



CHAPTER 10

Nnrf_NFManagement

The Nnrf_NFManagement service allows a Network Function instance in the serving PLMN to register, update or deregister its profile in the NRF.

It also allows an NF to subscribe to be notified of newly registered NF instances along with their NF services.

The NF profile consists of NF instance parameters. It also consists of different services parameters exposed by the NF Instance.

Reference: 3GPP TS 29.510 version 15.1.0 Release 15

- OpenAPI, on page 151
- Info, on page 151
- Servers, on page 151
- Security, on page 152
- Paths, on page 152
- Components, on page 160
- External Docs, on page 178

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '1.0.0'
Title: 'NRF NFManagement Service'
Description: 'NRF NFManagement Service'
```

Servers

```
URL: '{apiRoot}/nnrf-nfm/v1'
Variables:
  API Root:
```

```
      Default: https://example.com
      Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501
```

Security

```
- {}
- oAuth2ClientCredentials:
    - nnrf-nfm
```

Paths

/nf-instances

```
  get:
    Summary: Retrieves a collection of NF Instances
    Operation ID: GetNFInstances

    Tags:
      - NF Instances (Store)

    Parameters:
      - Name: nf-type
        In: query
        Description: Type of NF
        Required/Optional: false
        Schema:
          Reference: '#/components/schemas/NFType'
      - Name: limit
        In: query
        Description: How many items to return at one time
        Required/Optional: false
        Schema:
          Type: integer

    Responses:
      '200':
        Description: Expected response to a valid request
        Content:
          application/3gppHal+json:
            Schema:
              Type: object
              Properties:
                _links:
                  Type: object
                 Description: 'List of the URI of NF instances. It has two members whose
names are item and self. The item one contains an array of URIs.'
                  additionalProperties:
```

```
                  Reference:
'TS29571_CommonData.yaml#/components/schemas/LinksValueSchema'
            minProperties: 1
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/nf-instances/{nfInstanceID}

```
  get:
    Summary: Read the profile of a given NF Instance
    Operation ID: GetNFInstance

    Tags:
      - NF Instance ID (Document)

    Parameters:
      - Name: nfInstanceID
        In: path
        Description: Unique ID of the NF Instance
        Required/Optional: true
        Schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

    Responses:
      '200':
        Description: Expected response to a valid request
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/NFProfile'
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
```

```
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '501':
      Reference: 'TS29571_CommonData.yaml#/components/responses/501'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'
put:
  Summary: Register a new NF Instance
  Operation ID: RegisterNFInstance

  Tags:
    - NF Instance ID (Document)

  Parameters:
    - Name: nfInstanceID
      In: path
      Required/Optional: true
      Description: Unique ID of the NF Instance to register
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/NFProfile'
    Required/Optional: true

  Responses:
    '200':
      Description: OK (Profile Replacement)
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/NFProfile'
    '201':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/NFProfile'
      Headers:
```

```
        Location:
          description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/nnrf-nfm/v1/nf-instances/{nfInstanceId}'
          Required/Optional: true
          Schema:
            Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
  patch:
    Summary: Update NF Instance profile
    Operation ID: UpdateNFInstance

    Tags:
      - NF Instance ID (Document)

    Parameters:
      - Name: nfInstanceID
        In: path
        Required/Optional: true
        Description: Unique ID of the NF Instance to update
        Schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    Request Body:
      Content:
        application/json-patch+json:
          Schema:
            Type: array
            Items:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/PatchItem'
            Min Items: 1
      Required/Optional: true

    Responses:
      '200':
```

```
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/NFProfile'
    '204':
      Description: Expected response with empty body
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '501':
      Reference: 'TS29571_CommonData.yaml#/components/responses/501'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  Summary: Deregisters a given NF Instance
  Operation ID: DeregisterNFInstance

  Tags:
    - NF Instance ID (Document)

  Parameters:
    - Name: nfInstanceID
      In: path
      Required/Optional: true
      Description: Unique ID of the NF Instance to deregister
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

  Responses:
    '204':
      Description: Expected response to a successful deregistration
```

/subscriptions

```
Method: Post
  Summary: Create a new subscription
  Operation ID: CreateSubscription
```

```
    Tags:
      - Subscriptions (Collection)
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SubscriptionData'
      Required/Optional: true

    Responses:
      '201':
        Description: Expected response to a valid request
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/SubscriptionData'
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/nnrf-nfm/v1/subscriptions/{subscriptionId}'
            Required/Optional: true
            Schema:
              Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
    Callbacks:
      onNFStatusEvent:
        '{$request.body#/nfStatusNotificationUri}':
          Method: Post
            Request Body:
              Description: Notification Payload
              Content:
                Application/JSON:
```

```
          Schema:
            Reference: '#/components/schemas/NotificationData'

      Responses:
        '204':
          Description: Expected response to a successful callback processing
        '400':
          Reference: 'TS29571_CommonData.yaml#/components/responses/400'
        '403':
          Reference: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          Reference: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          Reference: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          Reference: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          Reference: 'TS29571_CommonData.yaml#/components/responses/415'
        '500':
          Reference: 'TS29571_CommonData.yaml#/components/responses/500'
        '501':
          Reference: 'TS29571_CommonData.yaml#/components/responses/501'
        '503':
          Reference: 'TS29571_CommonData.yaml#/components/responses/503'
        Default:
          Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/subscriptions/{subscriptionID}

```
patch:
  Summary: Updates a subscription
  Operation ID: UpdateSubscription

  Tags:
    - Subscription ID (Document)

  Parameters:
    - Name: subscriptionID
      In: path
      Required/Optional: true
      Description: Unique ID of the subscription to update
      Schema:
        Type: string
        pattern: '^([0-9]{5,6}-)?[^-]+$'
  Request Body:
    Content:
      application/json-patch+json:
        Schema:
          Type: array
          Items:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/PatchItem'
```

```
    Required/Optional: true

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SubscriptionData'
    '204':
      Description: No Content
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '501':
      Reference: 'TS29571_CommonData.yaml#/components/responses/501'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'
delete:
  Summary: Deletes a subscription
  Operation ID: RemoveSubscription

  Tags:
    - Subscription ID (Document)

  Parameters:
    - Name: subscriptionID
      In: path
      Required/Optional: true
      Description: Unique ID of the subscription to remove
      Schema:
        Type: string
        pattern: '^([0-9]{5,6}-)?[^-]+$'

  Responses:
    '204':
      Description: Expected response to a successful subscription removal
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
```

```
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '/oauth2/token'
        scopes:
          nnrf-nfm: Access to the Nnrf_NFManagement API

schemas:
  NFProfile:
    Type: object
    Required:
      - nfInstanceId
      - nfType
      - nfStatus
    anyOf:
      - required: [ fqdn ]
      - required: [ ipv4Addresses ]
      - required: [ ipv6Addresses ]
    Properties:
      nfInstanceId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      nfType:
        Reference: '#/components/schemas/NFType'
      nfStatus:
        Reference: '#/components/schemas/NFStatus'
      heartBeatTimer:
        Type: integer
```

```
plmnList:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
  minItems: 1
sNssais:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
  minItems: 1
nsiList:
  Type: array
  Items:
    Type: string
  minItems: 1
fqdn:
  Reference: '#/components/schemas/Fqdn'
interPlmnFqdn:
  Reference: '#/components/schemas/Fqdn'
ipv4Addresses:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
  minItems: 1
ipv6Addresses:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
  minItems: 1
allowedPlmns:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
  minItems: 1
allowedNfTypes:
  Type: array
  Items:
    Reference: '#/components/schemas/NFType'
  minItems: 1
allowedNfDomains:
  Type: array
  Items:
    Type: string
  minItems: 1
allowedNssais:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
  minItems: 1
priority:
  Type: integer
```

```
      Minimum: 0
      Maximum: 65535
    capacity:
      Type: integer
      Minimum: 0
      Maximum: 65535
    load:
      Type: integer
      Minimum: 0
      Maximum: 100
    locality:
      Type: string
    udrInfo:
      Reference: '#/components/schemas/UdrInfo'
    udmInfo:
      Reference: '#/components/schemas/UdmInfo'
    ausfInfo:
      Reference: '#/components/schemas/AusfInfo'
    amfInfo:
      Reference: '#/components/schemas/AmfInfo'
    smfInfo:
      Reference: '#/components/schemas/SmfInfo'
    upfInfo:
      Reference: '#/components/schemas/UpfInfo'
    pcfInfo:
      Reference: '#/components/schemas/PcfInfo'
    bsfInfo:
      Reference: '#/components/schemas/BsfInfo'
    chfInfo:
      Reference: '#/components/schemas/ChfInfo'
    nrfInfo:
      Reference: '#/components/schemas/NrfInfo'
    customInfo:
      Type: object
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    nfServicePersistence:
      Type: boolean
      Default: false
    nfServices:
      Type: array
      Items:
        Reference: '#/components/schemas/NFService'
      minItems: 1
NFService:
  Type: object
  Required:
    - serviceInstanceId
    - serviceName
    - versions
    - scheme
    - nfServiceStatus
```

```
Properties:
  serviceInstanceId:
    Type: string
  serviceName:
    Reference: '#/components/schemas/ServiceName'
  versions:
    Type: array
    Items:
      Reference: '#/components/schemas/NFServiceVersion'
    minItems: 1
  scheme:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/UriScheme'
  nfServiceStatus:
    Reference: '#/components/schemas/NFServiceStatus'
  fqdn:
    Reference: '#/components/schemas/Fqdn'
  interPlmnFqdn:
    Reference: '#/components/schemas/Fqdn'
  ipEndPoints:
    Type: array
    Items:
      Reference: '#/components/schemas/IpEndPoint'
    minItems: 1
  apiPrefix:
    Type: string
  defaultNotificationSubscriptions:
    Type: array
    Items:
      Reference: '#/components/schemas/DefaultNotificationSubscription'
    minItems: 1
  allowedPlmns:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    minItems: 1
  allowedNfTypes:
    Type: array
    Items:
      Reference: '#/components/schemas/NFType'
    minItems: 1
  allowedNfDomains:
    Type: array
    Items:
      Type: string
    minItems: 1
  allowedNssais:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    minItems: 1
  priority:
```

```
      Type: integer
      Minimum: 0
      Maximum: 65535
    capacity:
      Type: integer
      Minimum: 0
      Maximum: 65535
    load:
      Type: integer
      Minimum: 0
      Maximum: 100
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    chfServiceInfo:
      Reference: '#/components/schemas/ChfServiceInfo'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
NFType:
  anyOf:
    - type: string
      enum:
        - NRF
        - UDM
        - AMF
        - SMF
        - AUSF
        - NEF
        - PCF
        - SMSF
        - NSSF
        - UDR
        - LMF
        - GMLC
        - 5G_EIR
        - SEPP
        - UPF
        - N3IWF
        - AF
        - UDSF
        - BSF
        - CHF
        - NWDAF
    - type: string
Fqdn:
  Type: string
IpEndPoint:
  Type: object
  Properties:
    ipv4Address:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    ipv6Address:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    transport:
      Reference: '#/components/schemas/TransportProtocol'
    port:
      Type: integer
```

```
      Minimum: 0
      Maximum: 65535
SubscriptionData:
  Type: object
  Required:
    - nfStatusNotificationUri
    - subscriptionId
  Properties:
    nfStatusNotificationUri:
      Type: string
    subscrCond:
      oneOf:
        - $ref: '#/components/schemas/NfInstanceIdCond'
        - $ref: '#/components/schemas/NfTypeCond'
        - $ref: '#/components/schemas/ServiceNameCond'
        - $ref: '#/components/schemas/AmfCond'
        - $ref: '#/components/schemas/GuamiListCond'
        - $ref: '#/components/schemas/NetworkSliceCond'
        - $ref: '#/components/schemas/NfGroupCond'
    subscriptionId:
      Type: string
      Pattern: '^([0-9]{5,6}-)?[^-]+$'
      readOnly: true
    validityTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    reqNotifEvents:
      Type: array
      Items:
        Reference: '#/components/schemas/NotificationEventType'
      minItems: 1
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    notifCondition:
       Reference: '#/components/schemas/NotifCondition'
    reqNfType:
      Reference: '#/components/schemas/NFType'
    reqNfFqdn:
      Reference: '#/components/schemas/Fqdn'
NfInstanceIdCond:
  Type: object
  Required:
    - nfInstanceId
  Properties:
    nfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
NfTypeCond:
  Type: object
  Required:
    - nfType
  Properties:
    nfType:
      Reference: '#/components/schemas/NFType'
ServiceNameCond:
  Type: object
```

```
  Required:
    - serviceName
  Properties:
    serviceName:
      Reference: '#/components/schemas/ServiceName'
AmfCond:
  Type: object
  anyOf:
    - required: [ amfSetId ]
    - required: [ amfRegionId ]
  Properties:
    amfSetId:
      Type: string
    amfRegionId:
      Type: string
GuamiListCond:
  Type: object
  Required:
    - guamiList
  Properties:
    guamiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
NetworkSliceCond:
  Type: object
  Required:
    - snssaiList
  Properties:
    snssaiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    nsiList:
      Type: array
      Items:
        Type: string
NfGroupCond:
  Type: object
  Required:
    - nfType
    - nfGroupId
  Properties:
    nfType:
      Type: string
      enum:
        - UDM
        - AUSF
        - UDR
    nfGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
NotifCondition:
  Type: object
```

```
    not:
      Required: [ monitoredAttributes, unmonitoredAttributes ]
    Properties:
      monitoredAttributes:
        Type: array
        Items:
          Type: string
        minItems: 1
      unmonitoredAttributes:
        Type: array
        Items:
          Type: string
        minItems: 1
  UdrInfo:
    Type: object
    Properties:
      groupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
      supiRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/SupiRange'
        minItems: 1
      gpsiRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/IdentityRange'
        minItems: 1
      externalGroupIdentifiersRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/IdentityRange'
        minItems: 1
      supportedDataSets:
        Type: array
        Items:
          Reference: '#/components/schemas/DataSetId'
        minItems: 1
  SupiRange:
    Type: object
    Properties:
      start:
        Type: string
        Pattern: '^[0-9]+$'
      end:
        Type: string
        Pattern: '^[0-9]+$'
      Pattern:
        Type: string
  IdentityRange:
    Type: object
```

```
  Properties:
    start:
      Type: string
      Pattern: '^[0-9]+$'
    end:
      Type: string
      Pattern: '^[0-9]+$'
    Pattern:
      Type: string
DataSetId:
  anyOf:
    - type: string
      enum:
        - SUBSCRIPTION
        - POLICY
        - EXPOSURE
        - APPLICATION
    - type: string
UdmInfo:
  Type: object
  Properties:
    groupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    supiRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/SupiRange'
      minItems: 1
    gpsiRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/IdentityRange'
      minItems: 1
    externalGroupIdentifiersRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/IdentityRange'
      minItems: 1
    routingIndicators:
      Type: array
      Items:
        Type: string
        Pattern: '^[0-9]{1,4}$'
      minItems: 1
AusfInfo:
  Type: object
  Properties:
    groupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    supiRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/SupiRange'
```

```
      minItems: 1
    routingIndicators:
      Type: array
      Items:
        Type: string
        Pattern: '^[0-9]{1,4}$'
      minItems: 1
AmfInfo:
  Type: object
  Required:
    - amfSetId
    - amfRegionId
    - guamiList
  Properties:
    amfSetId:
      Type: string
    amfRegionId:
      Type: string
    guamiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      minItems: 1
    taiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      minItems: 1
    taiRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/TaiRange'
      minItems: 1
    backupInfoAmfFailure:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      minItems: 1
    backupInfoAmfRemoval:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      minItems: 1
    n2InterfaceAmfInfo:
      Reference: '#/components/schemas/N2InterfaceAmfInfo'
SmfInfo:
  Type: object
  Required:
    - sNssaiSmfInfoList
  Properties:
    sNssaiSmfInfoList:
      Type: array
```

```
      Items:
        Reference: '#/components/schemas/SnssaiSmfInfoItem'
      minItems: 1
    taiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      minItems: 1
    taiRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/TaiRange'
      minItems: 1
    pgwFqdn:
      Reference: '#/components/schemas/Fqdn'
    accessType:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      minItems: 1
SnssaiSmfInfoItem:
  Type: object
  Required:
    - sNssai
    - dnnSmfInfoList
  Properties:
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnnSmfInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/DnnSmfInfoItem'
      minItems: 1
DnnSmfInfoItem:
  Type: object
  Required:
    - dnn
  Properties:
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
UpfInfo:
  Type: object
  Required:
    - sNssaiUpfInfoList
  Properties:
    sNssaiUpfInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/SnssaiUpfInfoItem'
      minItems: 1
    smfServingArea:
      Type: array
```

```
      Items:
        Type: string
      minItems: 1
    interfaceUpfInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/InterfaceUpfInfoItem'
      minItems: 1
    iwkEpsInd:
      Type: boolean
      Default: false
SnssaiUpfInfoItem:
  Type: object
  Required:
    - sNssai
    - dnnUpfInfoList
  Properties:
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnnUpfInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/DnnUpfInfoItem'
      minItems: 1
DnnUpfInfoItem:
  Type: object
  Required:
    - dnn
  Properties:
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    dnaiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnai'
      minItems: 1
InterfaceUpfInfoItem:
  Type: object
  Required:
    - interfaceType
  Properties:
    interfaceType:
      Reference: '#/components/schemas/UPInterfaceType'
    ipv4EndpointAddresses:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
    ipv6EndpointAddresses:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
```

```
      minItems: 1
    endpointFqdn:
      Reference: '#/components/schemas/Fqdn'
    networkInstance:
      Type: string
UPInterfaceType:
  anyOf:
    - type: string
      enum:
        - N3
        - N6
        - N9
    - type: string
PcfInfo:
  Type: object
  Properties:
    dnnList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      minItems: 1
    supiRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/SupiRange'
      minItems: 1
    rxDiamHost:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DiameterIdentity'
    rxDiamRealm:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DiameterIdentity'
BsfInfo:
  Type: object
  Properties:
    dnnList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      minItems: 1
    ipDomainList:
      Type: array
      Items:
        Type: string
      minItems: 1
    ipv4AddressRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/Ipv4AddressRange'
      minItems: 1
    ipv6PrefixRanges:
      Type: array
      Items:
        Reference: '#/components/schemas/Ipv6PrefixRange'
```

```
      minItems: 1
ChfInfo:
  Type: object
  Properties:
    supiRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/SupiRange'
      minItems: 1
    gpsiRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/IdentityRange'
      minItems: 1
    plmnRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/PlmnRange'
      minItems: 1
Ipv4AddressRange:
  Type: object
  Properties:
    start:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    end:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
Ipv6PrefixRange:
  Type: object
  Properties:
    start:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
    end:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
DefaultNotificationSubscription:
  Type: object
  Required:
    - notificationType
    - callbackUri
  Properties:
    notificationType:
      Reference: '#/components/schemas/NotificationType'
    callbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    n1MessageClass:
      Reference: 'TS29518_Namf_Communication.yaml#/components/schemas/N1MessageClass'
    n2InformationClass:
     Reference: 'TS29518_Namf_Communication.yaml#/components/schemas/N2InformationClass'

NotificationType:
  anyOf:
    - type: string
      enum:
```

```
        - N1_MESSAGES
        - N2_INFORMATION
        - LOCATION_NOTIFICATION
        - DATA_REMOVAL_NOTIFICATION
        - DATA_CHANGE_NOTIFICATION
    - type: string
TransportProtocol:
  anyOf:
    - type: string
      enum:
        - TCP
    - type: string
NotificationEventType:
  anyOf:
    - type: string
      enum:
        - NF_REGISTERED
        - NF_DEREGISTERED
        - NF_PROFILE_CHANGED
    - type: string
NotificationData:
  Type: object
  Required:
    - event
    - nfInstanceUri
  allOf:
    - anyOf:
      - not:
          Properties:
            event:
              Type: string
              enum:
                - NF_PROFILE_CHANGED
      - oneOf:
          - required: [ nfProfile ]
          - required: [ profileChanges ]
    - anyOf:
      - not:
          Properties:
            event:
              Type: string
              enum:
                - NF_REGISTERED
      - required: [ nfProfile ]
  Properties:
    event:
      Reference: '#/components/schemas/NotificationEventType'
    nfInstanceUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    nfProfile:
      allOf:
        - $ref: '#/components/schemas/NFProfile'
        - not:
            Required: [ interPlmnFqdn ]
        - properties:
            nfServices:
              Type: array
```

```
            Items:
              allOf:
                - $ref: '#/components/schemas/NFService'
                - not:
                    Required: [ interPlmnFqdn ]
                - not:
                    Required: [ allowedPlmns ]
                - not:
                    Required: [ allowedNfTypes ]
                - not:
                    Required: [ allowedNfDomains ]
                - not:
                    Required: [ allowedNssais ]
    profileChanges:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/ChangeItem'
      minItems: 1
NFStatus:
  anyOf:
    - type: string
      enum:
        - REGISTERED
        - SUSPENDED
    - type: string
NFServiceVersion:
  Type: object
  Required:
    - apiVersionInUri
    - apiFullVersion
  Properties:
    apiVersionInUri:
      Type: string
    apiFullVersion:
      Type: string
    expiry:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
ServiceName:
  anyOf:
    - type: string
      enum:
        - nnrf-nfm
        - nnrf-disc
        - nudm-sdm
        - nudm-uecm
        - nudm-ueau
        - nudm-ee
        - nudm-pp
        - namf-comm
        - namf-evts
        - namf-mt
        - namf-loc
        - nsmf-pdusession
        - nsmf-event-exposure
        - nausf-auth
        - nausf-sorprotection
        - nnef-pfdmanagement
```

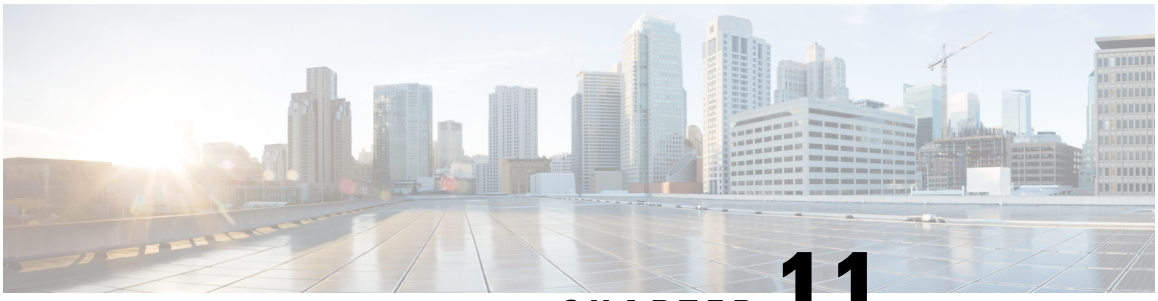
```
        - npcf-am-policy-control
        - npcf-smpolicycontrol
        - npcf-policyauthorization
        - npcf-bdtpolicycontrol
        - npcf-eventexposure
        - npcf-ue-policy-control
        - nsmsf-sms
        - nnssf-nsselection
        - nnssf-nssaiavailability
        - nudr-dr
        - nlmf-loc
        - n5g-eir-eic
        - nbsf-management
        - nchf-spendinglimitcontrol
        - nchf-convergedcharging
        - nnwdaf-eventssubscription
        - nnwdaf-analyticsinfo
    - type: string
N2InterfaceAmfInfo:
  Type: object
  Properties:
    ipv4EndpointAddress:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
    ipv6EndpointAddress:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
      minItems: 1
    amfName:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AmfName'
NFServiceStatus:
  anyOf:
    - type: string
      enum:
        - REGISTERED
        - SUSPENDED
    - type: string
TaiRange:
  Type: object
  Required:
    - plmnId
    - tacRangeList
  Properties:
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    tacRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/TacRange'
      minItems: 1
TacRange:
  Type: object
  Properties:
```

```
    start:
      Type: string
      Pattern: '^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})$'
    end:
      Type: string
      Pattern: '^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})$'
    Pattern:
      Type: string
ChfServiceInfo:
  Type: object
  not:
    Required: [ primaryChfServiceInstance, secondaryChfServiceInstance ]
  Properties:
    primaryChfServiceInstance:
      Type: string
    secondaryChfServiceInstance:
      Type: string
PlmnRange:
  Type: object
  Properties:
    start:
      Type: string
      Pattern: '^[0-9]{3}[0-9]{2,3}$'
    end:
      Type: string
      Pattern: '^[0-9]{3}[0-9]{2,3}$'
    Pattern:
      Type: string
NrfInfo:
  Type: object
  Properties:
    servedUdrInfo:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/UdrInfo'
      minProperties: 1
    servedUdmInfo:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/UdmInfo'
      minProperties: 1
    servedAusfInfo:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/AusfInfo'
      minProperties: 1
    servedAmfInfo:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/AmfInfo'
      minProperties: 1
```

```
servedSmfInfo:
  Type: object
  additionalProperties:
    Reference: '#/components/schemas/SmfInfo'
  minProperties: 1
servedUpfInfo:
  Type: object
  additionalProperties:
    Reference: '#/components/schemas/UpfInfo'
  minProperties: 1
servedPcfInfo:
  Type: object
  additionalProperties:
    Reference: '#/components/schemas/PcfInfo'
  minProperties: 1
servedBsfInfo:
  Type: object
  additionalProperties:
    Reference: '#/components/schemas/BsfInfo'
  minProperties: 1
servedChfInfo:
  Type: object
  additionalProperties:
    Reference: '#/components/schemas/ChfInfo'
  minProperties: 1
```

External Docs

```
Description: 3GPP TS 29.510 V15.2.0; 5G System; Network Function Repository Services;
Stage 3
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.510/'
```



CHAPTER 11

Npcf_AMPolicyControl

The Access and Mobility Policy Control Service (Npcf_AMPolicyControl) is part of the Npcf service-based interface exhibited by the Policy Control Function (PCF).

The known consumers of the Npcf_AMPolicyControl service are the Access and Mobility Management Function (AMF) and the Visited Policy Control Function (V-PCF).

Reference: 3GPP TS 29.507 version 15.0.0 Release 15

- OpenAPI, on page 179
- Info, on page 179
- Servers, on page 179
- Security, on page 180
- Paths, on page 180
- Components, on page 183

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Description: Access and Mobility Policy Control Service API
Version: "1.0.0"
Title: Npcf_AMPolicyControl
```

Servers

```
URL: '{apiRoot}/npcf-am-policy-control/v1'
Variables:
  API Root:
    Default: https://example.com
    Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501
```

Security

```
- {}
- oAuth2ClientCredentials:
  - npcf-am-policy-control
```

Paths

/policies

```
  Method: Post
    Request Body:
      Required/Optional: true
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/PolicyAssociationRequest'

    Responses:
      '201':
        Description: Created
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/PolicyAssociation'
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure': {apiRoot}/npcf-am-policy-control/v1/policies/{polAssoId}'

            Required/Optional: true
            Schema:
              Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
```

```
    '429':
      Reference: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'
Callbacks:
  policyUpdateNotification:
    '{$request.body#/notificationUri}/update':
      Method: Post
        Request Body:
          Required/Optional: true
          Content:
            Application/JSON:
              Schema:
                Reference: '#/components/schemas/PolicyUpdate'

        Responses:
          '204':
            Description: No Content, Notification was succesfull
          '307':
            Description: temporary redirect
          '400':
            Reference: 'TS29571_CommonData.yaml#/components/responses/400'
          '401':
            Reference: 'TS29571_CommonData.yaml#/components/responses/401'
          '403':
            Reference: 'TS29571_CommonData.yaml#/components/responses/403'
          '404':
            Reference: 'TS29571_CommonData.yaml#/components/responses/404'
          '411':
            Reference: 'TS29571_CommonData.yaml#/components/responses/411'
          '413':
            Reference: 'TS29571_CommonData.yaml#/components/responses/413'
          '415':
            Reference: 'TS29571_CommonData.yaml#/components/responses/415'
          '429':
            Reference: 'TS29571_CommonData.yaml#/components/responses/429'
          '500':
            Reference: 'TS29571_CommonData.yaml#/components/responses/500'
          '503':
            Reference: 'TS29571_CommonData.yaml#/components/responses/503'
          Default:
            Reference: 'TS29571_CommonData.yaml#/components/responses/default'
  policyAssocitionTerminationRequestNotification:
    '{$request.body#/notificationUri}/terminate':
      Method: Post
        Request Body:
          Required/Optional: true
          Content:
```

```
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/TerminationNotification'

    Responses:
      '204':
        Description: No Content, Notification was succesfull
      '307':
        Description: temporary redirect
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/policies/{polAssoId}

```
  delete:

    Parameters:
      - Name: polAssoId
        In: path
        Description: Identifier of a policy association
        Required/Optional: true
        Schema:
          Type: string

    Responses:
      '204':
        Description: No Content. Resource was succesfully deleted
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
```

```
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          npcf-am-policy-control: Access to the Npcf_AMPolicyControl API

schemas:
  PolicyAssociation:
    Type: object
    Properties:
      request:
        Reference: '#/components/schemas/PolicyAssociationRequest'
      triggers:
        Type: array
        Items:
          Reference: '#/components/schemas/RequestTrigger'
        minItems: 1
        Description: Request Triggers that the PCF subscribes. Only values "LOC_CH" and
 "PRA_CH" are permitted.
      servAreaRes:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceAreaRestriction'
      rfsp:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndex'
      pras:
        Type: object
        additionalProperties:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfo'
        minProperties: 1
      suppFeat:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Required:
      - suppFeat
```

```
PolicyAssociationRequest:
  Type: object
  Properties:
    notificationUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    altNotifIpv4Addrs:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
      Description: Alternate or backup IPv4 Address(es) where to send Notifications.
    altNotifIpv6Addrs:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
      minItems: 1
      Description: Alternate or backup IPv6 Address(es) where to send Notifications.
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    accessType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    userLoc:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    timeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    servingPlmn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NetworkId'
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    groupIds:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
      minItems: 1
    servAreaRes:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceAreaRestriction'
    rfsp:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndex'
    guami:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
    serviveName:
      Type: string
      Description: If the NF service consumer is an AMF, it should provide the name of
 a service produced by the AMF that makes use of information received within the
Npcf_AMPolicyControl_UpdateNotify service operation.
    traceReq:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    suppFeat:
```

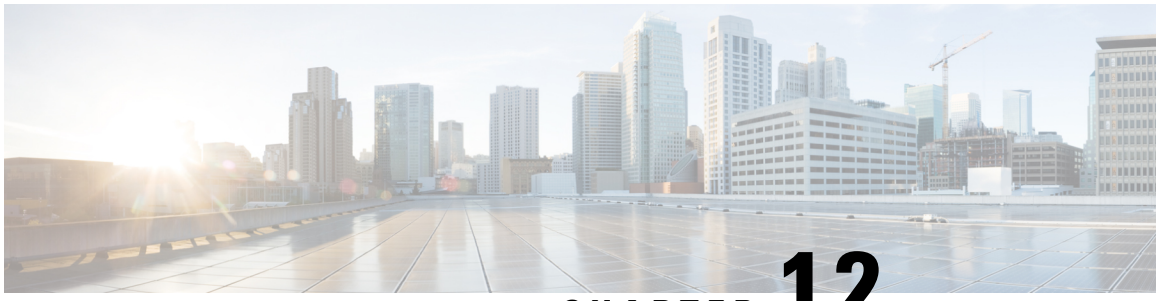
```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Required:
    - notificationUri
    - suppFeat
    - supi
PolicyAssociationUpdateRequest:
  Type: object
  Properties:
    notificationUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    altNotifIpv4Addrs:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
      Description: Alternate or backup IPv4 Address(es) where to send Notifications.
    altNotifIpv6Addrs:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
      minItems: 1
      Description: Alternate or backup IPv6 Address(es) where to send Notifications.
    triggers:
      Type: array
      Items:
        Reference: '#/components/schemas/RequestTrigger'
      minItems: 1
      Description: Request Triggers that the NF service consumer observes.
    servAreaRes:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceAreaRestriction'
    rfsp:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndex'
    praStatuses:
      Type: object
      additionalProperties:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfo'
      minProperties: 1
      Description: Map of PRA status information.
    userLoc:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    traceReq:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
PolicyUpdate:
  Type: object
  Properties:
    resourceUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    triggers:
      Type: array
      Items:
        Reference: '#/components/schemas/RequestTrigger'
      minItems: 1
```

```
      nullable: true
      Description: Request Triggers that the PCF subscribes. Only values "LOC_CH" and
"PRA_CH" are permitted.
    servAreaRes:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceAreaRestriction'
    rfsp:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndex'
    pras:
      Type: object
      additionalProperties:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfoRm'
      Description: Map of PRA information.
      minProperties: 1
      nullable: true
  Required:
    - resourceUri
 TerminationNotification:
  Type: object
  Properties:
    resourceUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    cause:
      Reference: '#/components/schemas/PolicyAssociationReleaseCause'
  Required:
    - resourceUri
    - cause
 RequestTrigger:
  anyOf:
  - type: string
    enum:
      - LOC_CH
      - PRA_CH
      - SERV_AREA_CH
      - RFSP_CH
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - LOC_CH: Location change (tracking area). The tracking area of the UE has changed.
   - PRA_CH: Change of UE presence in PRA. The UE is entering/leaving a Presence Reporting
Area.
    - SERV_AREA_CH: Service Area Restriction change. The UDM notifies the AMF that the
subscribed service area restriction information has changed.
    - RFSP_CH: RFSP index change. The UDM notifies the AMF that the subscribed RFSP index
has changed.
 PolicyAssociationReleaseCause:
  anyOf:
  - type: string
    enum:
      - UNSPECIFIED
      - UE_SUBSCRIPTION
      - INSUFFICIENT_RES
  - type: string
    Description:
```

```
        This string provides forward-compatibility with future
        extensions to the enumeration but is not used to encode
        content defined in the present version of this API.
```

Description:

```
      Possible values are
      - UNSPECIFIED: This value is used for unspecified reasons.
      - UE_SUBSCRIPTION: This value is used to indicate that the session needs to be
terminated because the subscription of UE has changed (e.g. was removed).
      - INSUFFICIENT_RES: This value is used to indicate that the server is overloaded and
 needs to abort the session.
```



CHAPTER 12

Nsmf_PDUSession

The Nsmf_PDUSession service operates on the PDU Sessions. The service operations exposed by this service allows other NFs to establish, modify and release the PDU Sessions. The following are the key functionalities of this NF service:

- Creation, modification and deletion of SM contexts for PDU Sessions upon receiving N1 message notification from AMF carrying the NAS SM messages. An SM context represents an association between the NF Service Consumer (for example, AMF) and the SMF for a PDU session;
- Retrieval of SM contexts of PDU sessions, for example, to move PDU sessions towards the EPC using the N26 interface;
- Creation, modification and deletion of PDU sessions between the V-SMF and H-SMF, in HR roaming scenarios;
- Association of policy and charging rules with PDU Sessions and binding the policy and charging rules to flows;
- Interacting with the UPF over N4 for creating, modifying and releasing user plane sessions;
- Process user plane events from the UPF and apply the corresponding policy and charging rules.

Reference: 3GPP TS 29.502 version 15.0.0 Release 15

- OpenAPI, on page 189
- Info, on page 190
- Servers, on page 190
- Security, on page 190
- Paths, on page 190
- Components, on page 203

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '1.0.0'
Title: 'Nsmf_PDUSession'
Description: 'SMF PDU Session Service'
```

Servers

```
  URL: '{apiRoot}/nsmf-pdusession/v1'
  Variables:
    API Root:
      Default: https://example.com
      Description: apiRoot as defined in subclause 4.4 of 3GPP TS 29.501. The sm-contexts
 and pdu-sessions resources can be distributed on different processing instances or hosts.
 Thus the authority and/or deployment-specific string of the apiRoot of the created individual
 sm context and pdu-session resources' URIs may differ from the authority and/or
deployment-specific string of the apiRoot of the sm-contexts and pdu-sessions collections'
 URIs.
```

Security

```
- {}
- oAuth2Clientcredentials:
  - nsmf-pdusession
```

Paths

/sm-contexts

```
  Method: Post
    Summary: Create SM Context

    Tags:
      - SM contexts collection
    Operation ID: PostSmContexts
    Request Body:
      Description: representation of the SM context to be created in the SMF
      Required/Optional: true
      Content:
        Multipart/Related:
          Schema:
            Type: object
            Properties: # Request parts
```

```
          JSON Data:
            Reference: '#/components/schemas/SmContextCreateData'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryDataN1SmMessage:
            Content Type: application/vnd.3gpp.5gnas
            Headers:
              Content ID:
                Schema:
                  Type: string
Callbacks:
  smContextStatusNotification:
    '{$request.body#/smContextStatusUri}':
      Method: Post
        Request Body: # contents of the callback message
          Required/Optional: true
          Content:
            Application/JSON:
              Schema:
                Reference: '#/components/schemas/SmContextStatusNotification'

        Responses:
          '204':
            Description: successful notification
          '307':
            Description: temporary redirect
          '400':
            Reference: 'TS29571_CommonData.yaml#/components/responses/400'
          '403':
            Reference: 'TS29571_CommonData.yaml#/components/responses/403'
          '404':
            Reference: 'TS29571_CommonData.yaml#/components/responses/404'
          '411':
            Reference: 'TS29571_CommonData.yaml#/components/responses/411'
          '413':
            Reference: 'TS29571_CommonData.yaml#/components/responses/413'
          '415':
            Reference: 'TS29571_CommonData.yaml#/components/responses/415'
          '429':
            Reference: 'TS29571_CommonData.yaml#/components/responses/429'
          '500':
            Reference: 'TS29571_CommonData.yaml#/components/responses/500'
          '503':
            Reference: 'TS29571_CommonData.yaml#/components/responses/503'

Responses:
  '201':
    Description: successful creation of an SM context
```

```
        Content:
          Application/JSON: # message without binary body part
            Schema:
              Reference: '#/components/schemas/SmContextCreatedData'
          Multipart/Related: # message with binary body part(s)
            Schema:
              Type: object
              Properties: # Request parts
                JSON Data:
                  Reference: '#/components/schemas/SmContextCreatedData'
                binaryDataN2SmInformation:
                  Type: string
                  Format: binary
            Encoding:
              JSON Data:
                Content Type: application/json
              binaryDataN2SmInformation:
                Content Type: application/vnd.3gpp.ngap
                Headers:
                  Content ID:
                    Schema:
                      Type: string
      Headers:
        Location:
          description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/nsmf-pdusession/v1/sm-contexts/{smContextRef}'

          Required/Optional: true
          Schema:
            Type: string
    '307':
      Description: temporary redirect
    '308':
      Description: permanent redirect
    '400':
      Description: unsuccessful creation of an SM context - bad request
      Content:
        Application/JSON: # message without binary body part
          Schema:
            Reference: '#/components/schemas/SmContextCreateError'
        Multipart/Related: # message with binary body part(s)
          Schema:
            Type: object
            Properties: # Request parts
              JSON Data:
                Reference: '#/components/schemas/SmContextCreateError'
              binaryDataN1SmMessage:
                Type: string
                Format: binary
          Encoding:
            JSON Data:
              Content Type: application/json
```

```
      binaryDataN1SmMessage:
        Content Type: application/vnd.3gpp.5gnas
        Headers:
          Content ID:
            Schema:
              Type: string
'403':
  Description: unsuccessful creation of an SM context - forbidden
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextCreateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextCreateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataN1SmMessage:
          Content Type: application/vnd.3gpp.5gnas
          Headers:
            Content ID:
              Schema:
                Type: string
'404':
  Description: unsuccessful creation of an SM context - not found
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextCreateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextCreateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataN1SmMessage:
          Content Type: application/vnd.3gpp.5gnas
          Headers:
```

```
          Content ID:
            Schema:
              Type: string
'411':
  Reference: 'TS29571_CommonData.yaml#/components/responses/411'
'413':
  Reference: 'TS29571_CommonData.yaml#/components/responses/413'
'415':
  Reference: 'TS29571_CommonData.yaml#/components/responses/415'
'429':
  Reference: 'TS29571_CommonData.yaml#/components/responses/429'
'500':
  Description: unsuccessful creation of an SM context - internal server error
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextCreateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextCreateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataN1SmMessage:
          Content Type: application/vnd.3gpp.5gnas
          Headers:
            Content ID:
              Schema:
                Type: string
'503':
  Description: unsuccessful creation of an SM context - service unavailable
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextCreateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextCreateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
      Encoding:
```

```
          JSON Data:
            Content Type: application/json
          binaryDataN1SmMessage:
            Content Type: application/vnd.3gpp.5gnas
            Headers:
              Content ID:
                Schema:
                  Type: string
    '504':
      Description: unsuccessful creation of an SM context - gateway timeout
      Content:
        Application/JSON: # message without binary body part
          Schema:
            Reference: '#/components/schemas/SmContextCreateError'
        Multipart/Related: # message with binary body part(s)
          Schema:
            Type: object
            Properties: # Request parts
              JSON Data:
                Reference: '#/components/schemas/SmContextCreateError'
              binaryDataN1SmMessage:
                Type: string
                Format: binary
          Encoding:
            JSON Data:
              Content Type: application/json
            binaryDataN1SmMessage:
              Content Type: application/vnd.3gpp.5gnas
              Headers:
                Content ID:
                  Schema:
                    Type: string
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/sm-contexts/{smContextRef}/retrieve

```
Method: Post
  Summary: Retrieve SM Context

  Tags:
    - Individual SM context
  Operation ID: RetrieveSmContext

  Parameters:
    - Name: smContextRef
      In: path
      Description: SM context reference
      Required/Optional: true
      Schema:
        Type: string
```

```
Request Body:
  Description: parameters used to retrieve the SM context
  Required/Optional: false
  Content:
    Application/JSON:
      Schema:
        Reference: '#/components/schemas/SmContextRetrieveData'

Responses:
  '200':
    Description: successful retrieval of an SM context
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/SmContextRetrievedData'
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Reference: 'TS29571_CommonData.yaml#/components/responses/404'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
    Reference: 'TS29571_CommonData.yaml#/components/responses/429'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
  Default:
    Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/sm-contexts/{smContextRef}/modify

```
Method: Post
  Summary: Update SM Context

  Tags:
    - Individual SM context
  Operation ID: UpdateSmContext

  Parameters:
    - Name: smContextRef
      In: path
      Description: SM context reference
      Required/Optional: true
      Schema:
```

```
      Type: string
Request Body:
  Description: representation of the updates to apply to the SM context
  Required/Optional: true
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextUpdateData'
    Multipart/Related: # message with binary body part(s)
        Schema:
          Type: object
          Properties: # Request parts
            JSON Data:
              Reference: '#/components/schemas/SmContextUpdateData'
            binaryDataN1SmMessage:
              Type: string
              Format: binary
            binaryDataN2SmInformation:
              Type: string
              Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryDataN1SmMessage:
            Content Type: application/vnd.3gpp.5gnas
            Headers:
              Content ID:
                Schema:
                  Type: string
          binaryDataN2SmInformation:
            Content Type: application/vnd.3gpp.ngap
            Headers:
              Content ID:
                Schema:
                  Type: string

Responses:
  '200':
    Description: successful update of an SM context with content in the response
    Content:
      Application/JSON: # message without binary body part
        Schema:
          Reference: '#/components/schemas/SmContextUpdatedData'
      Multipart/Related: # message with binary body part(s)
        Schema:
          Type: object
          Properties: # Request parts
            JSON Data:
              Reference: '#/components/schemas/SmContextUpdatedData'
            binaryDataN1SmMessage:
              Type: string
              Format: binary
```

```
          binaryDataN2SmInformation:
            Type: string
            Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryDataN1SmMessage:
            Content Type: application/vnd.3gpp.5gnas
            Headers:
              Content ID:
                Schema:
                  Type: string
          binaryDataN2SmInformation:
            Content Type: application/vnd.3gpp.ngap
            Headers:
              Content ID:
                Schema:
                  Type: string
'204':
  Description: successful update of an SM context without content in the response
'400':
  Description: unsuccessful update of an SM context - bad request
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextUpdateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextUpdateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
          binaryDataN2SmInformation:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataN1SmMessage:
          Content Type: application/vnd.3gpp.5gnas
          Headers:
            Content ID:
              Schema:
                Type: string
        binaryDataN2SmInformation:
          Content Type: application/vnd.3gpp.ngap
          Headers:
            Content ID:
```

```
            Schema:
              Type: string
'403':
  Description: unsuccessful update of an SM context - forbidden
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextUpdateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextUpdateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
          binaryDataN2SmInformation:
            Type: string
            Format: binary
      Encoding:
        JSON Data:
          Content Type: application/json
        binaryDataN1SmMessage:
          Content Type: application/vnd.3gpp.5gnas
          Headers:
            Content ID:
              Schema:
                Type: string
        binaryDataN2SmInformation:
          Content Type: application/vnd.3gpp.ngap
          Headers:
            Content ID:
              Schema:
                Type: string
'404':
  Description: unsuccessful update of an SM context - not found
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextUpdateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextUpdateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
          binaryDataN2SmInformation:
```

```
            Type: string
            Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryDataN1SmMessage:
            Content Type: application/vnd.3gpp.5gnas
            Headers:
              Content ID:
                Schema:
                  Type: string
          binaryDataN2SmInformation:
            Content Type: application/vnd.3gpp.ngap
            Headers:
              Content ID:
                Schema:
                  Type: string
'411':
  Reference: 'TS29571_CommonData.yaml#/components/responses/411'
'413':
  Reference: 'TS29571_CommonData.yaml#/components/responses/413'
'415':
  Reference: 'TS29571_CommonData.yaml#/components/responses/415'
'429':
  Reference: 'TS29571_CommonData.yaml#/components/responses/429'
'500':
  Description: unsuccessful update of an SM context - Internal server error
  Content:
    Application/JSON: # message without binary body part
      Schema:
        Reference: '#/components/schemas/SmContextUpdateError'
    Multipart/Related: # message with binary body part(s)
      Schema:
        Type: object
        Properties: # Request parts
          JSON Data:
            Reference: '#/components/schemas/SmContextUpdateError'
          binaryDataN1SmMessage:
            Type: string
            Format: binary
          binaryDataN2SmInformation:
            Type: string
            Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryDataN1SmMessage:
            Content Type: application/vnd.3gpp.5gnas
            Headers:
              Content ID:
                Schema:
```

```
                Type: string
            binaryDataN2SmInformation:
              Content Type: application/vnd.3gpp.ngap
              Headers:
                Content ID:
                  Schema:
                    Type: string
        '503':
          Description: unsuccessful update of an SM context - Service Unavailable
          Content:
            Application/JSON: # message without binary body part
              Schema:
                Reference: '#/components/schemas/SmContextUpdateError'
            Multipart/Related: # message with binary body part(s)
              Schema:
                Type: object
                Properties: # Request parts
                  JSON Data:
                    Reference: '#/components/schemas/SmContextUpdateError'
                  binaryDataN1SmMessage:
                    Type: string
                    Format: binary
                  binaryDataN2SmInformation:
                    Type: string
                    Format: binary
              Encoding:
                JSON Data:
                  Content Type: application/json
                binaryDataN1SmMessage:
                  Content Type: application/vnd.3gpp.5gnas
                  Headers:
                    Content ID:
                      Schema:
                        Type: string
                binaryDataN2SmInformation:
                  Content Type: application/vnd.3gpp.ngap
                  Headers:
                    Content ID:
                      Schema:
                        Type: string
        Default:
          Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

/sm-contexts/{smContextRef}/release

```
    Method: Post
      Summary: Release SM Context

      Tags:
        - Individual SM context
```

```
    Operation ID: ReleaseSmContext

    Parameters:
      - Name: smContextRef
        In: path
        Description: SM context reference
        Required/Optional: true
        Schema:
          Type: string
    Request Body:
      Description: representation of the data to be sent to the SMF when releasing the
SM context
      Required/Optional: false
      Content:
        Application/JSON: # message without binary body part
          Schema:
            Reference: '#/components/schemas/SmContextReleaseData'
        Multipart/Related: # message with binary body part(s)
            Schema:
              Type: object
              Properties: # Request parts
                JSON Data:
                  Reference: '#/components/schemas/SmContextReleaseData'
                binaryDataN2SmInformation:
                  Type: string
                  Format: binary
            Encoding:
              JSON Data:
                Content Type: application/json
              binaryDataN2SmInformation:
                Content Type: application/vnd.3gpp.ngap
                Headers:
                  Content ID:
                    Schema:
                      Type: string

    Responses:
      '204':
       Description: successful release of an SM context without content in the response

      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        Reference: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        Reference: 'TS29571_CommonData.yaml#/components/responses/415'
```

```
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Reference: 'TS29571_CommonData.yaml#/components/responses/default'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nsmf-pdusession: Access to the nsmf-pdusession API

schemas:
# STRUCTURED DATA TYPES
  SmContextCreateData:
    Type: object
    Properties:
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      unauthenticatedSupi:
        Type: boolean
        Default: false
      pei:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
      gpsi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
      pduSessionId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
      dnn:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      sNssai:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      hplmnSnssai:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      servingNfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      guami:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      serviceName:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
      servingNetwork:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    requestType:
      Reference: '#/components/schemas/RequestType'
    n1SmMsg:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    anType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    presenceInLadn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceState'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    smContextStatusUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    hSmfUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    additionalHsmfUri:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      minItems: 1
    oldPduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    pduSessionsActivateList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
      minItems: 1
    ueEpsPdnConnection:
      Reference: '#/components/schemas/EpsPdnCnxContainer'
    hoState:
      Reference: '#/components/schemas/HoState'
    pcfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    nrfUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    selMode:
      Reference: '#/components/schemas/DnnSelectionMode'
    backupAmfInfo:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
      minItems: 1
    traceData:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    udmGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    routingIndicator:
      Type: string
    epsInterworkingInd:
      Reference: '#/components/schemas/EpsInterworkingIndication'
    indirectForwardingFlag:
      Type: boolean
  Required:
    - servingNfId
    - servingNetwork
    - anType
    - smContextStatusUri
SmContextCreatedData:
  Type: object
  Properties:
    hSmfUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    upCnxState:
      Reference: '#/components/schemas/UpCnxState'
    n2SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfoType:
      Reference: '#/components/schemas/N2SmInfoType'
    allocatedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EbiArpMapping'
      minItems: 1
    hoState:
      Reference: '#/components/schemas/HoState'
    smfServiceInstanceId:
      Type: string
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
SmContextUpdateData:
  Type: object
  Properties:
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    servingNfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    guami:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
    servingNetwork:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    backupAmfInfo:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
      minItems: 1
      nullable: true
    anType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    presenceInLadn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceState'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    upCnxState:
      Reference: '#/components/schemas/UpCnxState'
    hoState:
      Reference: '#/components/schemas/HoState'
    toBeSwitched:
      Type: boolean
      Default: false
    failedToBeSwitched:
      Type: boolean
    n1SmMsg:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfoType:
      Reference: '#/components/schemas/N2SmInfoType'
    targetServingNfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    smContextStatusUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    dataForwarding:
      Type: boolean
      Default: false
    epsBearerSetup:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerContainer'
      minItems: 0
    revokeEbiList:
      Type: array
      Items:
```

```
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    release:
      Type: boolean
      Default: false
    cause:
      Reference: '#/components/schemas/Cause'
    ngApCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
    5gMmCauseValue:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5GMmCause'
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    traceData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    epsInterworkingInd:
      Reference: '#/components/schemas/EpsInterworkingIndication'
    anTypeCanBeChanged:
      Type: boolean
      Default: false
SmContextUpdatedData:
  Type: object
  Properties:
    upCnxState:
      Reference: '#/components/schemas/UpCnxState'
    hoState:
      Reference: '#/components/schemas/HoState'
    releaseEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    allocatedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EbiArpMapping'
      minItems: 1
    modifiedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EbiArpMapping'
      minItems: 1
    n1SmMsg:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfoType:
      Reference: '#/components/schemas/N2SmInfoType'
    epsBearerSetup:
      Type: array
      Items:
```

```
        Reference: '#/components/schemas/EpsBearerContainer'
      minItems: 1
    dataForwarding:
      Type: boolean
SmContextReleaseData:
  Type: object
  Properties:
    cause:
      Reference: '#/components/schemas/Cause'
    ngApCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
    5gMmCauseValue:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5GMmCause'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    vsmfReleaseOnly:
      Type: boolean
      Default: false
SmContextStatusNotification:
  Type: object
  Properties:
    statusInfo :
      Reference: '#/components/schemas/StatusInfo'
  Required:
    - statusInfo
PduSessionCreateData:
  Type: object
  Properties:
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    unauthenticatedSupi:
      Type: boolean
      Default: false
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    vsmfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    servingNetwork:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    requestType:
      Reference: '#/components/schemas/RequestType'
    epsBearerId:
```

```
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    pgwS8cFteid:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    vsmfPduSessionUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    vcnTunnelInfo:
      Reference: '#/components/schemas/TunnelInfo'
    anType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    n1SmInfoFromUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    unknownN1SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    hPcfId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    hoPreparationIndication:
      Type: boolean
    selMode:
      Reference: '#/components/schemas/DnnSelectionMode'
    alwaysOnRequested:
      Type: boolean
      Default: false
    udmGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    routingIndicator:
      Type: string
    epsInterworkingInd:
      Reference: '#/components/schemas/EpsInterworkingIndication'
    vSmfServiceInstanceId:
      Type: string
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    roamingChargingProfile:
      Reference:
'TS32291_Nchf_ConvergedCharging.yaml#/components/schemas/RoamingChargingProfile'
    chargingId:
      Type: string
```

```
    oldPduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
  Required:
    - dnn
    - vsmfId
    - servingNetwork
    - vsmfPduSessionUri
    - vcnTunnelInfo
    - anType
PduSessionCreatedData:
  Type: object
  Properties:
    pduSessionType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
    sscMode:
      Type: string
      Pattern: '^[0-7]$'
    hcnTunnelInfo:
      Reference: '#/components/schemas/TunnelInfo'
    sessionAmbr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ambr'
    qosFlowsSetupList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowSetupItem'
      minItems: 1
    hSmfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    enablePauseCharging:
      Type: boolean
      Default: false
    ueIpv4Address:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    ueIpv6Prefix:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
    n1SmInfoToUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    epsPdnCnxInfo:
      Reference: '#/components/schemas/EpsPdnCnxInfo'
    epsBearerInfo:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerInfo'
      minItems: 1
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    maxIntegrityProtectedDataRate:
      Reference: '#/components/schemas/MaxIntegrityProtectedDataRate'
    alwaysOnGranted:
```

```
      Type: boolean
      Default: false
    upSecurity:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UpSecurity'
    roamingChargingProfile:
      Reference:
'TS32291_Nchf_ConvergedCharging.yaml#/components/schemas/RoamingChargingProfile'
    hSmfServiceInstanceId:
      Type: string
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - pduSessionType
    - sscMode
    - hcnTunnelInfo
    - sessionAmbr
    - qosFlowsSetupList
    - hSmfInstanceId
HsmfUpdateData:
  Type: object
  Properties:
    requestIndication:
      Reference: '#/components/schemas/RequestIndication'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    vcnTunnelInfo:
      Reference: '#/components/schemas/TunnelInfo'
    servingNetwork:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    anType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    pauseCharging:
      Type: boolean
    pti:
      Reference: '#/components/schemas/ProcedureTransactionId'
    n1SmInfoFromUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    unknownN1SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    qosFlowsRelNotifyList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowItem'
      minItems: 1
    qosFlowsNotifyList:
```

```
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowNotifyItem'
      minItems: 1
    NotifyList:
      Type: array
      Items:
        Reference: '#/components/schemas/PduSessionNotifyItem'
      minItems: 1
    epsBearerId:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 0
    hoPreparationIndication:
      Type: boolean
    revokeEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    cause:
      Reference: '#/components/schemas/Cause'
    ngApCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
    5gMmCauseValue:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5GMmCause'
    alwaysOnRequested:
      Type: boolean
      Default: false
    epsInterworkingInd:
      Reference: '#/components/schemas/EpsInterworkingIndication'
    secondaryRatUsageReport:
      Type: array
      Items:
       Reference: 'TS29571_CommonData.yaml#/components/schemas/SecondaryRatUsageReport'

      minItems: 1
  Required:
    - requestIndication
HsmfUpdatedData:
  Type: object
  Properties:
    n1SmInfoToUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
ReleaseData:
  Type: object
  Properties:
    cause:
      Reference: '#/components/schemas/Cause'
    ngApCause:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
```

```
    5gMmCauseValue:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5GMmCause'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    secondaryRatUsageReport:
      Type: array
      Items:
       Reference: 'TS29571_CommonData.yaml#/components/schemas/SecondaryRatUsageReport'

      minItems: 1
ReleasedData:
  Type: object
VsmfUpdateData:
  Type: object
  Properties:
    requestIndication:
      Reference: '#/components/schemas/RequestIndication'
    sessionAmbr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ambr'
    qosFlowsAddModRequestList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowAddModifyRequestItem'
      minItems: 1
    qosFlowsRelRequestList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowReleaseRequestItem'
      minItems: 1
    epsBearerInfo:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerInfo'
      minItems: 1
    assignEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    revokeEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    modifiedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EbiArpMapping'
```

```
      minItems: 1
    pti:
      Reference: '#/components/schemas/ProcedureTransactionId'
    n1SmInfoToUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    alwaysOnGranted:
      Type: boolean
      Default: false
    cause:
      Reference: '#/components/schemas/Cause'
    n1smCause:
      Type: string
    backOffTimer:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
  Required:
    - requestIndication
VsmfUpdatedData:
  Type: object
  Properties:
    qosFlowsAddModList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowItem'
      minItems: 1
    qosFlowsRelList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowItem'
      minItems: 1
    qosFlowsFailedtoAddModList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowItem'
      minItems: 1
    qosFlowsFailedtoRelList:
      Type: array
      Items:
        Reference: '#/components/schemas/QosFlowItem'
      minItems: 1
    n1SmInfoFromUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    unknownN1SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    addUeLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    assignedEbiList:
      Type: array
      Items:
```

```
        Reference: '#/components/schemas/EbiArpMapping'
      minItems: 1
    failedToAssignEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    releasedEbiList:
      Type: array
      Items:
        Reference: '#/components/schemas/EpsBearerId'
      minItems: 1
    secondaryRatUsageReport:
      Type: array
      Items:
       Reference: 'TS29571_CommonData.yaml#/components/schemas/SecondaryRatUsageReport'

      minItems: 1
StatusNotification:
  Type: object
  Properties:
    statusInfo :
      Reference: '#/components/schemas/StatusInfo'
  Required:
    - statusInfo
QosFlowItem:
  Type: object
  Properties:
    qfi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Qfi'
    cause:
      Reference: '#/components/schemas/Cause'
  Required:
    - qfi
QosFlowSetupItem:
  Type: object
  Properties:
    qfi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Qfi'
    qosRules:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    ebi:
      Reference: '#/components/schemas/EpsBearerId'
    qosFlowDescription:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    qosFlowProfile:
      Reference: '#/components/schemas/QosFlowProfile'
  Required:
    - qfi
    - qosRules
QosFlowAddModifyRequestItem:
  Type: object
  Properties:
```

```
    qfi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Qfi'
    ebi:
      Reference: '#/components/schemas/EpsBearerId'
    qosRules:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    qosFlowDescription:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    qosFlowProfile:
      Reference: '#/components/schemas/QosFlowProfile'
  Required:
    - qfi
QosFlowReleaseRequestItem:
  Type: object
  Properties:
    qfi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Qfi'
    qosRules:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    qosFlowDescription:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
  Required:
    - qfi
QosFlowProfile:
  Type: object
  Properties:
    5qi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'
    nonDynamic5Qi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NonDynamic5Qi'
    dynamic5Qi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dynamic5Qi'
    arp:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
    gbrQosFlowInfo:
      Reference: '#/components/schemas/GbrQosFlowInformation'
    rqa:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ReflectiveQoSAttribute'
    additionalQosFlowInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AdditionalQosFlowInfo'
  Required:
    - 5qi
GbrQosFlowInformation:
  Type: object
  Properties:
    maxFbrDl:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    maxFbrUl:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    guaFbrDl:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    guaFbrUl:
```

```
      Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    notifControl:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NotificationControl'
    maxPacketLossRateDl:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketLossRate'
    maxPacketLossRateUl:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketLossRate'
  Required:
    - maxFbrDl
    - maxFbrUl
    - guaFbrDl
    - guaFbrUl
QosFlowNotifyItem:
  Type: object
  Properties:
    qfi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Qfi'
    notificationCause:
      Reference: '#/components/schemas/NotificationCause'
  Required:
    - qfi
    - notificationCause
SmContextRetrieveData:
  Type: object
  Properties:
    targetMmeCap:
      Reference: '#/components/schemas/MmeCapabilities'
SmContextRetrievedData:
  Type: object
  Properties:
    ueEpsPdnConnection:
      Reference: '#/components/schemas/EpsPdnCnxContainer'
  Required:
    - ueEpsPdnConnection
MmeCapabilities:
  Type: object
  Properties:
    nonIpSupported:
      Type: boolean
      Default: false
TunnelInfo:
  Type: object
  Properties:
    ipv4Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    ipv6Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    gtpTeid:
      Reference: '#/components/schemas/Teid'
  Required:
    - gtpTeid
StatusInfo:
  Type: object
```

```
    Properties:
      resourceStatus:
        Reference: '#/components/schemas/ResourceStatus'
      cause:
        Reference: '#/components/schemas/Cause'
    Required:
      - resourceStatus
  EpsPdnCnxInfo:
    Type: object
    Properties:
      pgwS8cFteid:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
      pgwNodeName:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    Required:
      - pgwS8cFteid
  EpsBearerInfo:
    Type: object
    Properties:
      ebi:
        Reference: '#/components/schemas/EpsBearerId'
      pgwS8uFteid:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
      bearerLevelQoS:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    Required:
      - ebi
      - pgwS8uFteid
      - bearerLevelQoS
  PduSessionNotifyItem:
    Type: object
    Properties:
      notificationCause:
        Reference: '#/components/schemas/NotificationCause'
    Required:
      - notificationCause
  EbiArpMapping:
    Type: object
    Properties:
      epsBearerId:
        Reference: '#/components/schemas/EpsBearerId'
      arp:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
    Required:
      - epsBearerId
      - arp
  SmContextCreateError:
    Type: object
    Properties:
      error:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      n1SmMsg:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
```

```
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - error
SmContextUpdateError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    n1SmMsg:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    n2SmInfoType:
      Reference: '#/components/schemas/N2SmInfoType'
    upCnxState:
      Reference: '#/components/schemas/UpCnxState'
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - error
PduSessionCreateError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    n1smCause:
      Type: string
      Pattern: '^[A-F0-9]{2}$'
    n1SmInfoToUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    backOffTimer:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    recoveryTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - error
HsmfUpdateError:
  Type: object
  Properties:
    error:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    pti:
      Reference: '#/components/schemas/ProcedureTransactionId'
    n1smCause:
      Type: string
      Pattern: '^[A-F0-9]{2}$'
    n1SmInfoToUe:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    backOffTimer:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    recoveryTime:
```

```
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    Required:
      - error
  VsmfUpdateError:
    Type: object
    Properties:
      error:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      pti:
        Reference: '#/components/schemas/ProcedureTransactionId'
      n1smCause:
        Type: string
        Pattern: '^[A-F0-9]{2}$'
      n1SmInfoFromUe:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
      unknownN1SmInfo:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
      failedToAssignEbiList:
        Type: array
        Items:
          Reference: '#/components/schemas/EpsBearerId'
        minItems: 1
      ngApCause:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
      5gMmCauseValue:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/5GMmCause'
      recoveryTime:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    Required:
      - error
# SIMPLE DATA TYPES
  ProcedureTransactionId:
    Type: integer
    Minimum: 0
    Maximum: 255
  EpsBearerId:
    Type: integer
    Minimum: 0
    Maximum: 15
  EpsPdnCnxContainer:
    Type: string
  EpsBearerContainer:
    Type: string
  Teid:
    Type: string
    Pattern: '^[A-F0-9]{8}$'
# ENUMERATIONS
  UpCnxState:
    anyOf:
    - type: string
      enum:
        - ACTIVATED
        - DEACTIVATED
```

```
      - ACTIVATING
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - ACTIVATED
    - DEACTIVATED
    - ACTIVATING
HoState:
  anyOf:
  - type: string
    enum:
      - NONE
      - PREPARING
      - PREPARED
      - COMPLETED
      - CANCELLED
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - NONE
    - PREPARING
    - PREPARED
    - COMPLETED
    - CANCELLED
RequestType:
  anyOf:
  - type: string
    enum:
      - INITIAL_REQUEST
      - EXISTING_PDU_SESSION
      - INITIAL_EMERGENCY_REQUEST
      - EXISTING_EMERGENCY_PDU_SESSION
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - INITIAL_REQUEST
    - EXISTING_PDU_SESSION
    - INITIAL_EMERGENCY_REQUEST
    - EXISTING_EMERGENCY_PDU_SESSION
RequestIndication:
  anyOf:
  - type: string
    enum:
      - UE_REQ_PDU_SES_MOD
      - UE_REQ_PDU_SES_REL
      - PDU_SES_MOB
      - NW_REQ_PDU_SES_AUTH
      - NW_REQ_PDU_SES_MOD
      - NW_REQ_PDU_SES_REL
```

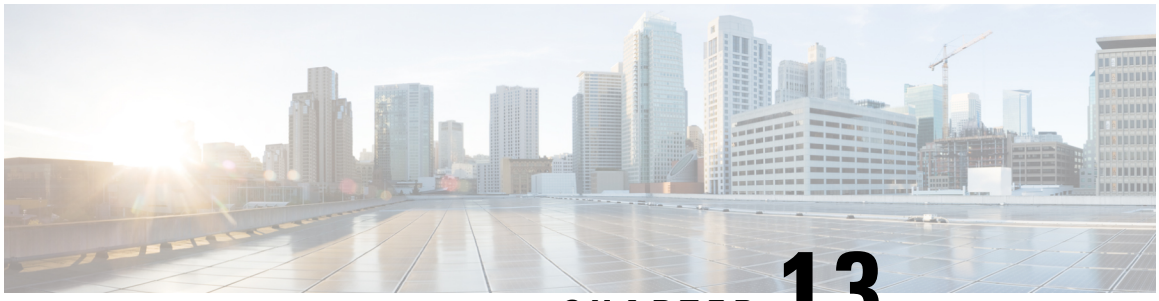
```
      - EBI_ASSIGNMENT_REQ
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - UE_REQ_PDU_SES_MOD
    - UE_REQ_PDU_SES_REL
    - PDU_SES_MOB
    - NW_REQ_PDU_SES_AUTH
    - NW_REQ_PDU_SES_MOD
    - NW_REQ_PDU_SES_REL
    - EBI_ASSIGNMENT_REQ
NotificationCause:
  anyOf:
  - type: string
    enum:
      - QOS_FULFILLED
      - QOS_NOT_FULFILLED
      - UP_SEC_FULFILLED
      - UP_SEC_NOT_FULFILLED
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - QOS_FULFILLED
    - QOS_NOT_FULFILLED
    - UP_SEC_FULFILLED
    - UP_SEC_NOT_FULFILLED
Cause:
  anyOf:
  - type: string
    enum:
      - REL_DUE_TO_HO
      - EPS_FALLBACK
      - REL_DUE_TO_UP_SEC
      - DNN_CONGESTION
      - S-NSSAI_CONGESTION
      - REL_DUE_TO_REACTIVATION
      - 5G_AN_NOT_RESPONDING
      - REL_DUE_TO_SLICE_NOT_AVAILABLE
      - REL_DUE_TO_DUPLICATE_SESSION_ID
      - PDU_SESSION_STATUS_MISMATCH
      - HO_FAILURE
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - REL_DUE_TO_HO
    - EPS_FALLBACK
    - REL_DUE_TO_UP_SEC
    - DNN_CONGESTION
    - S-NSSAI_CONGESTION
```

```
    - REL_DUE_TO_REACTIVATION
    - 5G_AN_NOT_RESPONDING
    - REL_DUE_TO_SLICE_NOT_AVAILABLE
    - REL_DUE_TO_DUPLICATE_SESSION_ID
    - PDU_SESSION_STATUS_MISMATCH
    - HO_FAILURE
ResourceStatus:
  anyOf:
  - type: string
    enum:
      - RELEASED
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - RELEASED
DnnSelectionMode:
  anyOf:
  - type: string
    enum:
      - VERIFIED
      - UE_DNN_NOT_VERIFIED
      - NW_DNN_NOT_VERIFIED
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - VERIFIED
    - UE_DNN_NOT_VERIFIED
    - NW_DNN_NOT_VERIFIED
EpsInterworkingIndication:
  anyOf:
  - type: string
    enum:
      - NONE
      - WITH_N26
      - WITHOUT_N26
  - type: string
    Description:
      This string provides forward-compatibility with future
      extensions to the enumeration but is not used to encode
      content defined in the present version of this API.
  Description:
    Possible values are
    - NONE
    - WITH_N26
    - WITHOUT_N26
N2SmInfoType:
  anyOf:
  - type: string
    enum:
      - PDU_RES_SETUP_REQ
      - PDU_RES_SETUP_RSP
      - PDU_RES_SETUP_FAIL
```

```
        - PDU_RES_REL_CMD
        - PDU_RES_REL_RSP
        - PDU_RES_MOD_REQ
        - PDU_RES_MOD_RSP
        - PDU_RES_MOD_FAIL
        - PDU_RES_NTY
        - PDU_RES_NTY_REL
        - PDU_RES_MOD_IND
        - PDU_RES_MOD_CFM
        - PATH_SWITCH_REQ
        - PATH_SWITCH_SETUP_FAIL
        - PATH_SWITCH_REQ_ACK
        - PATH_SWITCH_REQ_FAIL
        - HANDOVER_REQUIRED
        - HANDOVER_CMD
        - HANDOVER_PREP_FAIL
        - HANDOVER_REQ_ACK
        - HANDOVER_RES_ALLOC_FAIL
    - type: string
      Description:
        This string provides forward-compatibility with future
        extensions to the enumeration but is not used to encode
        content defined in the present version of this API.
    Description:
      Possible values are
      - PDU_RES_SETUP_REQ
      - PDU_RES_SETUP_RSP
      - PDU_RES_SETUP_FAIL
      - PDU_RES_REL_CMD
      - PDU_RES_REL_RSP
      - PDU_RES_MOD_REQ
      - PDU_RES_MOD_RSP
      - PDU_RES_MOD_FAIL
      - PDU_RES_NTY
      - PDU_RES_NTY_REL
      - PDU_RES_MOD_IND
      - PDU_RES_MOD_CFM
      - PATH_SWITCH_REQ
      - PATH_SWITCH_SETUP_FAIL
      - PATH_SWITCH_REQ_ACK
      - PATH_SWITCH_REQ_FAIL
      - HANDOVER_REQUIRED
      - HANDOVER_CMD
      - HANDOVER_PREP_FAIL
      - HANDOVER_REQ_ACK
      - HANDOVER_RES_ALLOC_FAIL
  MaxIntegrityProtectedDataRate:
    anyOf:
    - type: string
      enum:
        - 64_KBPS
        - MAX_UE_RATE
    - type: string
      Description:
        This string provides forward-compatibility with future
        extensions to the enumeration but is not used to encode
        content defined in the present version of this API.
    Description:
      Possible values are
        - 64_KBPS
        - MAX_UE_RATE
# HTTP responses
```

```
responses:
  'PduSessionCreateError':
    Description: unsuccessful creation of a PDU session
    content:
      application/json: # message without binary body part
        schema:
          Reference: '#/components/schemas/PduSessionCreateError'
      multipart/related: # message with binary body part(s)
        schema:
          Type: object
          Properties: # Request parts
            jsonData:
              Reference: '#/components/schemas/PduSessionCreateError'
            binaryDataN1SmInfoToUe:
              Type: string
              format: binary
        encoding:
          jsonData:
            contentType: application/json
          binaryDataN1SmInfoToUe:
            contentType: application/vnd.3gpp.5gnas
            headers:
              Content-Id:
                schema:
                  Type: string
  'HsmfUpdateError':
    Description: unsuccessful update of a PDU session
    content:
      application/json: # message without binary body part
        schema:
          Reference: '#/components/schemas/HsmfUpdateError'
      multipart/related: # message with binary body part(s)
        schema:
          Type: object
          Properties: # Request parts
            jsonData:
              Reference: '#/components/schemas/HsmfUpdateError'
            binaryDataN1SmInfoToUe:
              Type: string
              format: binary
        encoding:
          jsonData:
            contentType: application/json
          binaryDataN1SmInfoToUe:
            contentType: application/vnd.3gpp.5gnas
            headers:
              Content-Id:
                schema:
                  Type: string
  'VsmfUpdateError':
    Description: unsuccessful update of a PDU session
```

```
content:
  application/json: # message without binary body part
    schema:
      Reference: '#/components/schemas/VsmfUpdateError'
  multipart/related: # message with binary body part(s)
    schema:
      Type: object
      Properties: # Request parts
        jsonData:
          Reference: '#/components/schemas/VsmfUpdateError'
        binaryDataN1SmInfoFromUe:
          Type: string
          format: binary
        binaryDataUnknownN1SmInfo:
          Type: string
          format: binary
    encoding:
      jsonData:
        contentType: application/json
      binaryDataN1SmInfoFromUe:
        contentType: application/vnd.3gpp.5gnas
        headers:
          Content-Id:
            schema:
              Type: string
      binaryDataUnknownN1SmInfo:
        contentType: application/vnd.3gpp.5gnas
        headers:
          Content-Id:
            schema:
              Type: string
```



CHAPTER 13

Nsmsf_SMService

The Nsmsf_SMService service provides the service capability for the NF Service Consumer (for example, AMF) to authorize SMS and activate SMS for a service user on SMSF. The following are the key functionalities of this NF service:

- Activation or deactivation of SMS service for a given service user, which results in creating/updating/deleting an UE Context for SMS in SMSF.
- Send SMS payload in uplink direction to SMSF.

Reference: 3GPP TS 29.540, version 15.4.0, Release 15

- OpenAPI, on page 227
- Info, on page 227
- Servers, on page 228
- Security, on page 228
- Paths, on page 228
- Components, on page 231
- External Docs, on page 233

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '2.0.1'
Title: 'Nsmsf_SMService Service API'
Description: |
  SMSF SMService.
  ? 2019, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
  All rights reserved.
```

Servers

```
URL: '{apiRoot}/nsmsf-sms/v2'
Variables:
  API Root:
    Default: https://example.com
    Description: apiRoot as defined in subclause subclause 4.4 of 3GPP TS 29.501.
```

Security

```
- oAuth2ClientCredentials:
  - nsmsf-sms
- {}
```

Paths

/ue-contexts/{supi}

```
put:
  Summary: Activate SMS Service for a given UE
  Operation ID: SMServiceActivation

  Tags:
    - UEContext (Document)

  Parameters:
    - Name: supi
      In: path
      Required/Optional: true
      Description: Subscriber Permanent Identifier (SUPI)
      Schema:
        Type: string
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/UeSmsContextData'
    Required/Optional: true

  Responses:
    '201':
      Description: UE Context for SMS is created in SMSF
      Content:
        Application/JSON:
          Schema:
```

```
            Reference: '#/components/schemas/UeSmsContextData'
        Headers:
          Location:
              description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/nsmsf-sms/<apiVersion>/ue-contexts/{supi}'
            Required/Optional: true
            Schema:
              Type: string
      '204':
        Description: UE Context for SMS is updated in SMSF
      '400':
        Description: Invalid Service Request
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      '403':
        Description: Unable to create/update UE Context for SMS in SMSF
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      '404':
        Description: Unable to found subscription for service user or UE Context for SMS
in SMSF
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      '503':
        Description: Service Unavailable
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
      Default:
        Description: Unexpected error
        Content:
          application/problem+json:
            Schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
  delete:
    Summary: Deactivate SMS Service for a given UE
    Operation ID: SMServiceDeactivation

    Tags:
      - UEContext (Document)

    Parameters:
      - Name: supi
        In: path
        Required/Optional: true
```

```
    Description: Subscriber Permanent Identifier (SUPI)
    Schema:
      Type: string

  Responses:
    '204':
      Description: UE Context for SMS is deleted from SMSF
    '400':
      Description: Invalid Service Request
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '404':
      Description: Unable to found UE Context for SMS in SMSF
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '503':
      Description: Service Unavailable
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
```

/ue-contexts/{supi}/sendsms

```
Method: Post
  Summary: Send SMS payload for a given UE
  Operation ID: SendSMS

  Tags:
    - UEContext (Document)

  Parameters:
    - Name: supi
      In: path
      Required/Optional: true
      Description: Subscriber Permanent Identifier (SUPI)
      Schema:
        Type: string
  Request Body:
    Content:
      Multipart/Related:
        Schema:
          Type: object
          Properties:
            JSON Data:
              Reference: '#/components/schemas/SmsRecordData'
            binaryPayload:
```

```
            Type: string
            Format: binary
        Encoding:
          JSON Data:
            Content Type: application/json
          binaryPayload:
            Content Type: application/vnd.3gpp.sms
            Headers:
              Content ID:
                Schema:
                  Type: string
    Required/Optional: true

  Responses:
    '200':
      Description: SMS payload is received by SMSF, and is being delivered out
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SmsRecordDeliveryData'
    '400':
      Description: Invalid Service Request
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '403':
      Description: Unable to deliver SMS at SMSF
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '404':
      Description: Unable to found UE Context for SMS in SMSF
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '503':
      Description: Service Unavailable
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
```

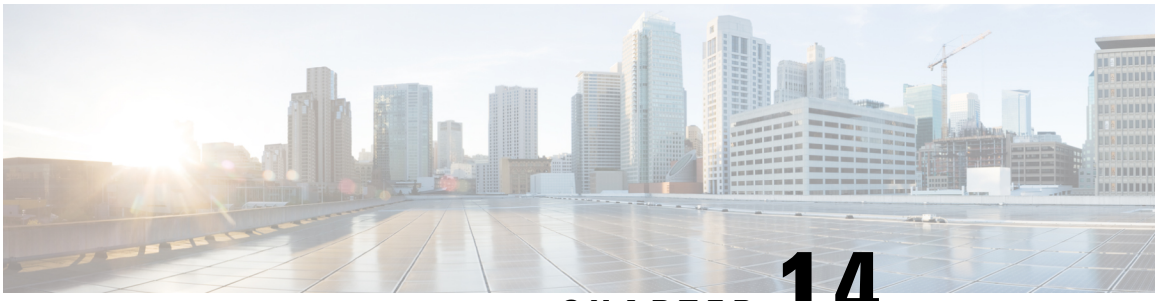
```
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nsmsf-sms: Access to the nsmsf-sms API

schemas:
  UeSmsContextData:
    Type: object
    Required:
      - supi
      - amfId
      - accessType
    Properties:
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      pei:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
      amfId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      guamis:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
        minItems: 1
      accessType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      gpsi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
      ueLocation:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
      ueTimeZone:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
      traceData:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
      backupAmfInfo:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
        minItems: 1
      udmGroupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
      routingIndicator:
        Type: string
  SmsRecordData:
    Type: object
    Required:
      - smsRecordId
      - smsPayload
    Properties:
      smsRecordId:
        Reference: '#/components/schemas/RecordId'
```

```
    smsPayload:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
    accessType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    ueLocation:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
RecordId:
  Type: string
SmsRecordDeliveryData:
  Type: object
  Required:
    - smsRecordId
    - deliveryStatus
  Properties:
    smsRecordId:
      Reference: '#/components/schemas/RecordId'
    deliveryStatus:
      Reference: '#/components/schemas/SmsDeliveryStatus'
SmsDeliveryStatus:
  Type: string
  enum:
    - SMS_DELIVERY_PENDING
    - SMS_DELIVERY_COMPLETED
    - SMS_DELIVERY_FAILED
```

External Docs

```
Description: 3GPP TS 29.540 V15.3.0; 5G System; SMS Services; Stage 3
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.540/'
```



CHAPTER 14

Nudm_SDM

This service is used by Consumer NFs (AMF, SMF, SMSF) to retrieve the UE's individual subscription data relevant to the consumer NF from the UDM.

Reference: 3GPP TS 29.503 Unified Data Management Services, version 15.3.0

- OpenAPI, on page 235
- Info, on page 235
- Servers, on page 235
- Security, on page 236
- Paths, on page 236
- Components, on page 242
- External Docs, on page 264

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '2.1.0.alpha-4'
Title: 'Nudm_SDM'
Description: |
  Nudm Subscriber Data Management Service.
  © 2020, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
  All rights reserved.
```

Servers

```
  URL: '{apiRoot}/nudm-sdm/v2'
  Variables:
    API Root:
      Default: https://example.com
      Description: apiRoot as defined in clause clause 4.4 of 3GPP TS 29.501.
```

Security

```
- oAuth2ClientCredentials:
  - nudm-sdm
- {}
```

Paths

/{supi}

```
get:
  Summary: retrieve multiple data sets
  Operation ID: GetDataSets

  Tags:
    - Retrieval of multiple data sets

  Parameters:
    - Name: supi
      In: path
      Description: Identifier of the UE
      Required/Optional: true
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    - Name: dataset-names
      In: query
      Style: form
      Explode: false
      Description: List of dataset names
      Required/Optional: true
      Schema:
         Reference: '#/components/schemas/DatasetNames'
    - Name: plmn-id
      In: query
      Description: serving PLMN ID
      Content:
        Application/JSON:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    - Name: supported-features
      In: query
      Description: Supported Features
      Schema:
         Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    - Name: If-None-Match
      In: header
      Description: Validator for conditional requests, as described in RFC 7232, 3.2
```

```
      Schema:
        Type: string
    - Name: If-Modified-Since
      In: header
      Description: Validator for conditional requests, as described in RFC 7232, 3.3
      Schema:
        Type: string

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SubscriptionDataSets'
      Headers:
        Cache-Control:
         Description: Cache-Control containing max-age, as described in RFC 7234, 5.2

          Schema:
            Type: string
        ETag:
          Description: Entity Tag, containing a strong validator, as described in RFC
7232, 2.3
          Schema:
            Type: string
        Last-Modified:
          Description: Timestamp for last modification of the resource, as described
in RFC 7232, 2.2
          Schema:
            Type: string
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
```

/{ueId}/sdm-subscriptions

```
Method: Post
  Summary: subscribe to notifications
  Operation ID: Subscribe

  Tags:
    - Subscription Creation
```

```
    Parameters:
      - Name: ueId
        In: path
        Description: Identity of the user
        Required/Optional: true
        Schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/SdmSubscription'
      Required/Optional: true

    Responses:
      '201':
        Description: Expected response to a valid request
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/SdmSubscription'
        Headers:
          Location:
              description: 'Contains the URI of the newly created resource,
 according to the structure:
{apiRoot}/nudm-sdm/<apiVersion>/{supi}/sdm-subscriptions/{subscriptionId}'
            Required/Optional: true
            Schema:
              Type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
    Callbacks:
      datachangeNotification:
        '{request.body#/callbackReference}':
          Method: Post
            Request Body:
              Required/Optional: true
              Content:
                Application/JSON:
                  Schema:
                    Reference: '#/components/schemas/ModificationNotification'
```

```
          Responses:
            '204':
              Description: Successful Notification response
            '307':
              Description: Temporary Redirect
              Content:
                application/problem+json:
                  Schema:
                    Reference:
'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
              Headers:
                Location:
                  Description: 'Contains the new Callback URI of the target NF Service
 Consumer (e.g. AMF) to which the request is redirected'
                  Required/Optional: true
                  Schema:
                    Type: string
            '308':
              Description: Permanent Redirect
              Content:
                application/problem+json:
                  Schema:
                    Reference:
'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
              Headers:
                Location:
                  Description: 'Contains the new Callback URI of the target NF Service
 Consumer (e.g. AMF) to which the request is redirected'
                  Required/Optional: true
                  Schema:
                    Type: string
            '400':
              Reference: 'TS29571_CommonData.yaml#/components/responses/400'
            '404':
              Reference: 'TS29571_CommonData.yaml#/components/responses/404'
            '500':
              Reference: 'TS29571_CommonData.yaml#/components/responses/500'
            '503':
              Reference: 'TS29571_CommonData.yaml#/components/responses/503'
            Default:
              Description: Unexpected error
```

/{ueId}/sdm-subscriptions/{subscriptionId}

```
  delete:
    Summary: unsubscribe from notifications
    Operation ID: Unsubscribe

    Tags:
      - Subscription Deletion
```

```
  Parameters:
    - Name: ueId
      In: path
      Description: Identity of the user
      Required/Optional: true
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - Name: subscriptionId
      In: path
      Description: Id of the SDM Subscription
      Required/Optional: true
      Schema:
        Type: string

  Responses:
    '204':
      Description: Successful response
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
patch:
  Summary: modify the subscription
  Operation ID: Modify

  Tags:
    - Subscription Modification

  Parameters:
    - Name: ueId
      In: path
      Description: Identity of the user
      Required/Optional: true
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - Name: subscriptionId
      In: path
      Description: Id of the SDM Subscription
      Required/Optional: true
      Schema:
        Type: string
    - Name: supported-features
      In: query
      Description: Features required to be supported by the target NF
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
```

```
  Request Body:
    Content:
      application/merge-patch+json:
        Schema:
          Reference: '#/components/schemas/SdmSubsModification'
    Required/Optional: true

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            oneOf:
              - $ref: '#/components/schemas/SdmSubscription'
              - $ref: 'TS29571_CommonData.yaml#/components/schemas/PatchResult'
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
```

/{supi}/am-data/sor-ack

```
put:
  Summary: Nudm_Sdm Info service operation
  Operation ID: SorAckInfo

  Tags:
    - Providing acknowledgement of Steering of Roaming

  Parameters:
    - Name: supi
      In: path
      Description: Identifier of the UE
      Required/Optional: true
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
  Request Body:
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/AcknowledgeInfo'
```

```
    Responses:
      '204':
        Description: Successful acknowledgement
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nudm-sdm: Access to the nudm-sdm API

schemas:
# COMPLEX TYPES:
  DatasetNames:
    Type: array
    Items:
      Reference: '#/components/schemas/DataSetName'
    minItems: 2
    uniqueItems: true
  SubscriptionDataSets:
    Type: object
    Properties:
      amData:
        Reference: '#/components/schemas/AccessAndMobilitySubscriptionData'
      smfSelData:
        Reference: '#/components/schemas/SmfSelectionSubscriptionData'
      uecSmfData:
        Reference: '#/components/schemas/UeContextInSmfData'
      uecSmsfData:
        Reference: '#/components/schemas/UeContextInSmsfData'
      smsSubsData:
        Reference: '#/components/schemas/SmsSubscriptionData'
      smData:
        Type: array
        Items:
          Reference: '#/components/schemas/SessionManagementSubscriptionData'
        minItems: 1
```

```
    traceData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    smsMngData:
      Reference: '#/components/schemas/SmsManagementSubscriptionData'
    lcsPrivacyData:
      Reference: '#/components/schemas/LcsPrivacyData'
    lcsMoData:
      Reference: '#/components/schemas/LcsMoData'
UeContextInSmsfData:
  Type: object
  Properties:
    smsfInfo3GppAccess:
      Reference: '#/components/schemas/SmsfInfo'
    smsfInfoNon3GppAccess:
      Reference: '#/components/schemas/SmsfInfo'
SmsfInfo:
  Type: object
  Required:
    - smsfInstanceId
    - plmnId
  Properties:
    smsfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
AccessAndMobilitySubscriptionData:
  Type: object
  Properties:
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    gpsis:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    internalGroupIds:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
      minItems: 1
    vnGroupInfo:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/VnGroupData'
      minProperties: 1
    sharedVnGroupDataIds:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/SharedDataId'
      minProperties: 1
    subscribedUeAmbr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AmbrRm'
    nssai:
```

```
    Reference: '#/components/schemas/Nssai'
  ratRestrictions:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
  forbiddenAreas:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Area'
  serviceAreaRestriction:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceAreaRestriction'
  coreNetworkTypeRestrictions:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/CoreNetworkType'
  rfspIndex:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/RfspIndexRm'
  subsRegTimer:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'
  ueUsageType:
    Reference: '#/components/schemas/UeUsageType'
  mpsPriority:
    Reference: '#/components/schemas/MpsPriorityIndicator'
  mcsPriority:
    Reference: '#/components/schemas/McsPriorityIndicator'
  activeTime:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'
  dlPacketCount:
    Reference: '#/components/schemas/DlPacketCount'
  sorInfo:
    Reference: '#/components/schemas/SorInfo'
  sorInfoExpectInd:
    Type: boolean
  sorafRetrieval:
    Type: boolean
    Default: false
  sorUpdateIndicatorList:
    Type: array
    Items:
      Reference: '#/components/schemas/SorUpdateIndicator'
    minItems: 1
  upuInfo:
    Reference: '#/components/schemas/UpuInfo'
  micoAllowed:
    Reference: '#/components/schemas/MicoAllowed'
  sharedAmDataIds:
    Type: array
    Items:
      Reference: '#/components/schemas/SharedDataId'
    minItems: 1
  odbPacketServices:
```

```
  Reference: '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:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
traceData:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
cagData:
  Reference: '#/components/schemas/CagData'
stnSr:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/StnSr'
cMsisdn:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/CMsisdn'
nbIoTUePriority:
  Reference: '#/components/schemas/NbIoTUePriority'
nssaiInclusionAllowed:
  Type: boolean
  Default: false
rgWirelineCharacteristics:
 Reference: 'TS29571_CommonData.yaml#/components/schemas/RgWirelineCharacteristics'

rgTMBR:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Tmbr'
ecRestrictionData:
  Reference: '#/components/schemas/EcRestrictionData'
expectedUeBehaviourList:
  Reference: '#/components/schemas/ExpectedUeBehaviourData'
maximumResponseTimeList:
  Type: array
  Items:
    Reference: '#/components/schemas/MaximumResponseTime'
  minItems: 1
maximumLatencyList:
  Type: array
  Items:
    Reference: '#/components/schemas/MaximumLatency'
  minItems: 1
primaryRatRestrictions:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
secondaryRatRestrictions:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
edrxParametersList:
  Type: array
  Items:
```

```
        Reference: '#/components/schemas/EdrxParameters'
      minItems: 1
    ptwParametersList:
      Type: array
      Items:
        Reference: '#/components/schemas/PtwParameters'
      minItems: 1
    iabOperationAllowed:
      Type: boolean
      Default: false
    nrV2xServicesAuth:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NrV2xAuth'
    lteV2xServicesAuth:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/LteV2xAuth'
    nrUePc5Ambr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    ltePc5Ambr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
CagData:
  Type: object
  Required:
    - cagInfos
  Properties:
    cagInfos:
     Description: A map (list of key-value pairs where PlmnId serves as key) of CagInfo

      Type: object
      additionalProperties:
        Reference: '#/components/schemas/CagInfo'
    provisioningTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
CagInfo:
  Type: object
  Required:
    - allowedCagList
  Properties:
    allowedCagList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/CagId'
    cagOnlyIndicator:
      Type: boolean
SmfSelectionSubscriptionData:
  Type: object
  Properties:
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    subscribedSnssaiInfos:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/SnssaiInfo'
    sharedSnssaiInfosId:
```

```
      Reference: '#/components/schemas/SharedDataId'
SnssaiInfo:
  Type: object
  Required:
    - dnnInfos
  Properties:
    dnnInfos:
      Type: array
      Items:
        Reference: '#/components/schemas/DnnInfo'
      minItems: 1
DnnInfo:
  Type: object
  Required:
    - dnn
  Properties:
    dnn:
      anyOf:
        - $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
        - $ref: 'TS29571_CommonData.yaml#/components/schemas/WildcardDnn'
    defaultDnnIndicator:
      Reference: '#/components/schemas/DnnIndicator'
    lboRoamingAllowed:
      Reference: '#/components/schemas/LboRoamingAllowed'
    iwkEpsInd:
      Reference: '#/components/schemas/IwkEpsInd'
    dnnBarred:
      Type: boolean
Nssai:
  Type: object
  Required:
   - defaultSingleNssais
  Properties:
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    defaultSingleNssais:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
    singleNssais:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
    provisioningTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    additionalSnssaiData:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/AdditionalSnssaiData'
      minProperties: 1
```

```
    nullable: true
  UeContextInSmfData:
    Type: object
    Properties:
      pduSessions:
        Description: A map (list of key-value pairs where PduSessionId serves as key) of
PduSessions
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/PduSession'
      pgwInfo:
        Type: array
        Items:
          Reference: '#/components/schemas/PgwInfo'
        minItems: 1
      emergencyInfo:
        Reference: '#/components/schemas/EmergencyInfo'
  EmergencyInfo:
    Type: object
    oneOf:
      - required:
        - pgwFqdn
      - required:
        - pgwIpAddress
    Properties:
      pgwFqdn:
        Type: string
      pgwIpAddress:
        Reference: '#/components/schemas/IpAddress'
      smfInstanceId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
  PduSession:
    Type: object
    Required:
      - dnn
      - smfInstanceId
      - plmnId
    Properties:
      dnn:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      smfInstanceId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      plmnId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
  PgwInfo:
    Type: object
    Required:
      - dnn
      - pgwFqdn
    Properties:
      dnn:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      pgwFqdn:
```

```
      Type: string
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
SessionManagementSubscriptionData:
  Type: object
  Required:
    - singleNssai
  Properties:
    singleNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnnConfigurations:
     Description: A map (list of key-value pairs where Dnn, or optionally the Wildcard
DNN, serves as key) of DnnConfigurations
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/DnnConfiguration'
    internalGroupIds:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
      minItems: 1
    vnGroupInfo:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/VnGroupData'
      minProperties: 1
    sharedVnGroupDataIds:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/SharedDataId'
      minProperties: 1
    sharedDnnConfigurationsId:
      Reference: '#/components/schemas/SharedDataId'
    odbPacketServices:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/OdbPacketServices'
    traceData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    sharedTraceDataId:
      Reference: '#/components/schemas/SharedDataId'
    expectedUeBehavioursList:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/ExpectedUeBehaviourData'
      minProperties: 1
    suggestedPacketNumDlList:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/SuggestedPacketNumDl'
      minProperties: 1
    3gppChargingCharacteristics:
      Reference: '#/components/schemas/3GppChargingCharacteristics'
DnnConfiguration:
```

```
    Type: object
    Required:
      - pduSessionTypes
      - sscModes
    Properties:
      pduSessionTypes:
        Reference: '#/components/schemas/PduSessionTypes'
      sscModes:
        Reference: '#/components/schemas/SscModes'
      iwkEpsInd:
        Reference: '#/components/schemas/IwkEpsInd'
      5gQosProfile:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SubscribedDefaultQos'
      sessionAmbr:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ambr'
      3gppChargingCharacteristics:
        Reference: '#/components/schemas/3GppChargingCharacteristics'
      staticIpAddress:
        Type: array
        Items:
          Reference: '#/components/schemas/IpAddress'
        minItems: 1
        maxItems: 2
      upSecurity:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/UpSecurity'
      pduSessionContinuityInd:
        Reference: '#/components/schemas/PduSessionContinuityInd'
      invokeNefSelection:
        Type: boolean
      niddNefId:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NefId'
      niddInfo:
        Reference: '#/components/schemas/NiddInformation'
      redundantSessionAllowed:
        Type: boolean
      acsInfo:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AcsInfo'
      ipv4FrameRouteList:
        Type: array
        Items:
          Reference: '#/components/schemas/FrameRouteInfo'
        minItems: 1
      ipv6FrameRouteList:
        Type: array
        Items:
          Reference: '#/components/schemas/FrameRouteInfo'
        minItems: 1
      atsssAllowed:
        Type: boolean
        Default: false
  NiddInformation:
    Type: object
```

```
  Required:
    - afId
  Properties:
    afId:
      Type: string
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    extGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/ExternalGroupId'
IpAddress:
  Type: object
  oneOf:
    - required:
      - ipv4Addr
    - required:
      - ipv6Addr
    - required:
      - ipv6Prefix
  Properties:
    ipv4Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    ipv6Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    ipv6Prefix:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
PduSessionTypes:
  Type: object
  Required:
    - defaultSessionType
  Properties:
    defaultSessionType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
    allowedSessionTypes:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
      minItems: 1
SscModes:
  Type: object
  Required:
    - defaultSscMode
  Properties:
    defaultSscMode:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SscMode'
    allowedSscModes:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SscMode'
      minItems: 1
      maxItems: 2
SmsSubscriptionData:
  Type: object
  Properties:
```

```
    smsSubscribed:
      Reference: '#/components/schemas/SmsSubscribed'
    sharedSmsSubsDataId:
      Reference: '#/components/schemas/SharedDataId'
SmsManagementSubscriptionData:
  Type: object
  Properties:
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    mtSmsSubscribed:
      Type: boolean
    mtSmsBarringAll:
      Type: boolean
    mtSmsBarringRoaming:
      Type: boolean
    moSmsSubscribed:
      Type: boolean
    moSmsBarringAll:
      Type: boolean
    moSmsBarringRoaming:
      Type: boolean
    sharedSmsMngDataIds:
      Type: array
      Items:
        Reference: '#/components/schemas/SharedDataId'
      minItems: 1
    traceData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
SdmSubscription:
  Type: object
  Required:
    - nfInstanceId
    - callbackReference
    - monitoredResourceUris
  Properties:
    nfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    implicitUnsubscribe:
      Type: boolean
    expires:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    callbackReference:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    amfServiceName:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
    monitoredResourceUris:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      minItems: 1
    singleNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
```

```
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    subscriptionId:
      Type: string
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    immediateReport:
      Type: boolean
      Default: false
    report:
      Reference: '#/components/schemas/SubscriptionDataSets'
SdmSubsModification:
  Type: object
  Properties:
    expires:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    monitoredResourceUris:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      minItems: 1
ModificationNotification:
  Type: object
  Required:
    - notifyItems
  Properties:
    notifyItems:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NotifyItem'
      minItems: 1
IdTranslationResult:
  Type: object
  Required:
    - supi
  Properties:
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
AcknowledgeInfo:
  Type: object
  Required:
    - provisioningTime
  Properties:
    sorMacIue:
      Reference: 'TS29509_Nausf_SoRProtection.yaml#/components/schemas/SorMac'
    upuMacIue:
      Reference: 'TS29509_Nausf_UPUProtection.yaml#/components/schemas/UpuMac'
    securedPacket:
```

```
      Reference: '#/components/schemas/SecuredPacket'
    provisioningTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
SorInfo:
  Type: object
  Properties:
    steeringContainer:
      Reference: '#/components/schemas/SteeringContainer'
    ackInd:
      Reference: 'TS29509_Nausf_SoRProtection.yaml#/components/schemas/AckInd'
    sorMacIausf:
      Reference: 'TS29509_Nausf_SoRProtection.yaml#/components/schemas/SorMac'
    countersor:
      Reference: 'TS29509_Nausf_SoRProtection.yaml#/components/schemas/CounterSor'
    provisioningTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - ackInd
    - provisioningTime
SharedDataIds:
  Type: array
  Items:
    Reference: '#/components/schemas/SharedDataId'
  minItems: 1
  uniqueItems: true
UpuInfo:
  Type: object
  Properties:
    upuDataList:
      Type: array
      Items:
        Reference: 'TS29509_Nausf_UPUProtection.yaml#/components/schemas/UpuData'
      minItems: 1
    upuRegInd:
      Reference: '#/components/schemas/UpuRegInd'
    upuAckInd:
      Reference: 'TS29509_Nausf_UPUProtection.yaml#/components/schemas/UpuAckInd'
    upuMacIausf:
      Reference: 'TS29509_Nausf_UPUProtection.yaml#/components/schemas/UpuMac'
    counterUpu:
      Reference: 'TS29509_Nausf_UPUProtection.yaml#/components/schemas/CounterUpu'
    provisioningTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  Required:
    - upuDataList
    - upuAckInd
    - upuRegInd
    - provisioningTime
SharedData:
  Type: object
  Required:
    - sharedDataId
  Properties:
```

```
    sharedDataId:
      Reference: '#/components/schemas/SharedDataId'
    sharedAmData:
      Reference: '#/components/schemas/AccessAndMobilitySubscriptionData'
    sharedSmsSubsData:
      Reference: '#/components/schemas/SmsSubscriptionData'
    sharedSmsMngSubsData:
      Reference: '#/components/schemas/SmsManagementSubscriptionData'
    sharedDnnConfigurations:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/DnnConfiguration'
    sharedTraceData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    sharedSnssaiInfos:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/SnssaiInfo'
    sharedVnGroupDatas:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/VnGroupData'
      minProperties: 1
TraceDataResponse:
  Type: object
  Properties:
    traceData:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'
    sharedTraceDataId:
      Reference: '#/components/schemas/SharedDataId'
SteeringContainer:
  oneOf:
    - type: array
      Items:
        Reference: 'TS29509_Nausf_SoRProtection.yaml#/components/schemas/SteeringInfo'

      minItems: 1
    - $ref: '#/components/schemas/SecuredPacket'
GroupIdentifiers:
  Type: object
  Properties:
    extGroupId:
      Reference: '#/components/schemas/ExtGroupId'
    intGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
    ueIdList:
      Type: array
      Items:
        Reference: '#/components/schemas/UeId'
      minItems: 1
VnGroupData:
  Type: object
```

```
  Properties:
    pduSessionTypes:
      Reference: '#/components/schemas/PduSessionTypes'
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    singleNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    appDescriptors:
      Type: array
      Items:
        Reference: '#/components/schemas/AppDescriptor'
      minItems: 1
AppDescriptor:
  Type: object
  Properties:
    osId:
      Reference: 'TS29519_Policy_Data.yaml#/components/schemas/OsId'
    appId:
      Type: string
AdditionalSnssaiData:
  Type: object
  Properties:
    requiredAuthnAuthz:
      Type: boolean
AppPortId:
  Type: object
  Properties:
    destinationPort:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint16'
    originatorPort:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint16'
LcsPrivacyData:
  Type: object
  Properties:
    lpi:
      Reference: '#/components/schemas/Lpi'
    unrelatedClasses:
      Type: array
      Items:
        Reference: '#/components/schemas/UnrelatedClass'
      minItems: 1
    plmnOperatorClasses:
      Type: array
      Items:
        Reference: '#/components/schemas/PlmnOperatorClass'
      minItems: 1
Lpi:
  Type: object
  Required:
    - locationPrivacyInd
  Properties:
    locationPrivacyInd:
```

```
      Reference: '#/components/schemas/LocationPrivacyInd'
    validTimePeriod:
      Reference: '#/components/schemas/ValidTimePeriod'
UnrelatedClass:
  Type: object
  Required:
    - nonExternalUnrelatedClass
  Properties:
    nonExternalUnrelatedClass:
      Reference: '#/components/schemas/NonExternalUnrelatedClass'
    externalUnrelatedClass:
      Reference: '#/components/schemas/ExternalUnrelatedClass'
    serviceTypeUnrelatedClasses:
      Type: array
      Items:
        Reference: '#/components/schemas/ServiceTypeUnrelatedClass'
      minItems: 1
PlmnOperatorClass:
  Type: object
  Required:
    - lcsClientClass
    - lcsClientIds
  Properties:
    lcsClientClass:
      Reference: '#/components/schemas/LcsClientClass'
    lcsClientIds:
      Type: array
      Items:
        Reference: '#/components/schemas/LcsClientId'
      minItems: 1
ValidTimePeriod:
  Type: object
  Properties:
    startTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    endTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
NonExternalUnrelatedClass:
  Properties:
    lcsClientNonExternals:
      Type: array
      Items:
        Reference: '#/components/schemas/LcsClientNonExternal'
      minItems: 1
    afNonExternals:
      Type: array
      Items:
        Reference: '#/components/schemas/AfNonExternal'
      minItems: 1
LcsClientNonExternal:
  Type: object
  Required:
```

```
    - lcsClientId
  Properties:
    lcsClientId:
      Reference: '#/components/schemas/LcsClientId'
    allowedGeographicArea:
      Type: array
      Items:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
      minItems: 1
    privacyCheckRelatedAction:
      Reference: '#/components/schemas/PrivacyCheckRelatedAction'
    codeWordInd:
      Reference: '#/components/schemas/CodeWordInd'
    validTimePeriod:
      Reference: '#/components/schemas/ValidTimePeriod'
AfNonExternal:
  Type: object
  Required:
    - afId
  Properties:
    afId:
      Type: string
    allowedGeographicArea:
      Type: array
      Items:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
      minItems: 1
    privacyCheckRelatedAction:
      Reference: '#/components/schemas/PrivacyCheckRelatedAction'
    codeWordInd:
      Reference: '#/components/schemas/CodeWordInd'
    validTimePeriod:
      Reference: '#/components/schemas/ValidTimePeriod'
ExternalUnrelatedClass:
  Properties:
    lcsClientExternals:
      Type: array
      Items:
        Reference: '#/components/schemas/LcsClientExternal'
      minItems: 1
    afExternals:
      Type: array
      Items:
        Reference: '#/components/schemas/AfExternal'
      minItems: 1
    lcsClientGroupExternals:
      Type: array
      Items:
        Reference: '#/components/schemas/LcsClientGroupExternal'
      minItems: 1
AfExternal:
  Type: object
```

```
    Properties:
      afId:
        Type: string
      allowedGeographicArea:
        Type: array
        Items:
          Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
        minItems: 1
      privacyCheckRelatedAction:
        Reference: '#/components/schemas/PrivacyCheckRelatedAction'
      validTimePeriod:
        Reference: '#/components/schemas/ValidTimePeriod'
  LcsClientExternal:
    Type: object
    Properties:
      allowedGeographicArea:
        Type: array
        Items:
          Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
        minItems: 1
      privacyCheckRelatedAction:
        Reference: '#/components/schemas/PrivacyCheckRelatedAction'
      validTimePeriod:
        Reference: '#/components/schemas/ValidTimePeriod'
  LcsClientGroupExternal:
    Type: object
    Properties:
      lcsClientGroupId:
        Reference: '#/components/schemas/ExtGroupId'
      allowedGeographicArea:
        Type: array
        Items:
          Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
        minItems: 1
      privacyCheckRelatedAction:
        Reference: '#/components/schemas/PrivacyCheckRelatedAction'
      validTimePeriod:
        Reference: '#/components/schemas/ValidTimePeriod'
  ServiceTypeUnrelatedClass:
    Type: object
    Required:
      - serviceType
    Properties:
      serviceType:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LcsServiceType'
      allowedGeographicArea:
        Type: array
        Items:
          Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/GeographicArea'
        minItems: 1
      privacyCheckRelatedAction:
        Reference: '#/components/schemas/PrivacyCheckRelatedAction'
```

```
      codeWordInd:
        Reference: '#/components/schemas/CodeWordInd'
      validTimePeriod:
        Reference: '#/components/schemas/ValidTimePeriod'
  LcsMoData:
    Type: object
    Required:
      - allowedServiceClasses
    Properties:
      allowedServiceClasses:
        Type: array
        Items:
          Reference: '#/components/schemas/LcsMoServiceClass'
        minItems: 1
  EcRestrictionData:
    Type: object
    Properties:
      ecModeARestricted:
        Type: boolean
      ecModeBRestricted:
        Type: boolean
  ExpectedUeBehaviourData:
    Type: object
    Properties:
      stationaryIndication:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/StationaryIndication'
      communicationDurationTime:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
      periodicTime:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
      scheduledCommunicationTime:
       Reference: 'TS29571_CommonData.yaml#/components/schemas/ScheduledCommunicationTime'

      scheduledCommunicationType:
       Reference: 'TS29571_CommonData.yaml#/components/schemas/ScheduledCommunicationType'

      expectedUmts:
        Type: array
        Items:
          Reference: 'TS29503_Nudm_PP.yaml#/components/schemas/LocationArea'
        minItems: 1
        Description: Identifies the UE's expected geographical movement. The attribute
is only applicable in 5G.
      trafficProfile:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/TrafficProfile'
      batteryIndication:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BatteryIndication'
      validityTime:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  MaximumResponseTime:
    Type: object
    Required:
```

```
    - maximumResponseTime
  Properties:
    maximumResponseTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    snssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    validityTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
MaximumLatency:
  Type: object
  Required:
    - maximumLatency
  Properties:
    maximumLatency:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    snssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    validityTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
SuggestedPacketNumDl:
  Type: object
  Required:
    - suggestedPacketNumDl
  Properties:
    suggestedPacketNumDl:
      Type: integer
      Minimum: 1
    validityTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
FrameRouteInfo:
  Type: object
  Properties:
    ipv4Mask:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4AddrMask'
    ipv6Prefix:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
SorUpdateInfo:
  Type: object
  Required:
    - vplmnId
  Properties:
    vplmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
EnhancedCoverageRestrictionData:
  Type: object
  Properties:
    plmnEcInfoList:
      Type: array
```

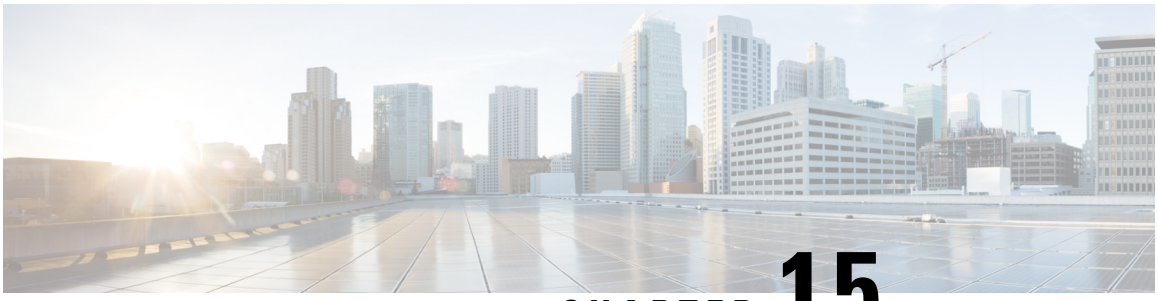
```
      Items:
        Reference: 'TS29503_Nudm_PP.yaml#/components/schemas/PlmnEcInfo'
      minItems: 1
  EdrxParameters:
    Type: object
    Required:
      - ratType
      - edrxValue
    Properties:
      ratType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
      edrxValue:
        Type: string
        Pattern: '^([0-1]{4})$'
  PtwParameters:
    Type: object
    Required:
      - operationMode
      - ptwValue
    Properties:
      operationMode:
        Reference: '#/components/schemas/OperationMode'
      ptwValue:
        Type: string
        Pattern: '^([0-1]{4})$'
  UeId:
    Type: object
    Required:
      - supi
    Properties:
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      gpsiList:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
        minItems: 1
# SIMPLE TYPES:
  UeUsageType:
    Type: integer
  MpsPriorityIndicator:
    Type: boolean
  McsPriorityIndicator:
    Type: boolean
  DnnIndicator:
    Type: boolean
  LboRoamingAllowed:
    Type: boolean
  SmsSubscribed:
    Type: boolean
  3GppChargingCharacteristics:
    Type: string
  DlPacketCount:
```

```
    Type: integer
    Minimum: -1
  MicoAllowed:
    Type: boolean
  SharedDataId:
    Type: string
    Pattern: '^[0-9]{5,6}-.+$'
  IwkEpsInd:
    Type: boolean
  SecuredPacket:
    Type: string
    format: base64
  UpuRegInd:
    Type: boolean
  ExtGroupId:
    Type: string
    Pattern: '^extgroupid-[^@]+@[^@]+$'
  NbIoTUePriority:
    Type: integer
  CodeWord:
    Type: string
  AfId:
    Type: string
  LcsClientId:
    Type: string
# ENUMS:
  DataSetName:
    anyOf:
      - type: string
        enum:
        - AM
        - SMF_SEL
        - UEC_SMF
        - UEC_SMSF
        - SMS_SUB
        - SM
        - TRACE
        - SMS_MNG
        - LCS_PRIVACY
        - LCS_MO
      - type: string
  PduSessionContinuityInd:
    anyOf:
      - type: string
        enum:
        - MAINTAIN_PDUSESSION
        - RECONNECT_PDUSESSION
        - RELEASE_PDUSESSION
      - type: string
  LocationPrivacyInd:
    anyOf:
      - type: string
        enum:
        - LOCATION_DISALLOWED
        - LOCATION_ALLOWED
      - type: string
```

```
PrivacyCheckRelatedAction:
  anyOf:
    - type: string
      enum:
      - LOCATION_NOT_ALLOWED
      - LOCATION_ALLOWED_WITH_NOTIFICATION
      - LOCATION_ALLOWED_WITHOUT_NOTIFICATION
      - LOCATION_ALLOWED_WITHOUT_RESPONSE
      - LOCATION_RESTRICTED_WITHOUT_RESPONSE
    - type: string
LcsClientClass:
  anyOf:
    - type: string
      enum:
      - BROADCAST_SERVICE
      - OM_IN_HPLMN
      - OM_IN_VPLMN
      - ANONYMOUS_LOCATION_SERVICE
      - SPECIFIC_SERVICE
    - type: string
LcsMoServiceClass:
  anyOf:
    - type: string
      enum:
      - BASIC_SELF_LOCATION
      - AUTONOMOUS_SELF_LOCATION
      - TRANSFER_TO_THIRD_PARTY
    - type: string
OperationMode:
  anyOf:
    - type: string
      enum:
      - WB_S1
      - NB_S1
      - WB_N1
      - NB_N1
    - type: string
SorUpdateIndicator:
  anyOf:
    - type: string
      enum:
      - INITIAL_REGISTRATION
      - EMERGENCY_REGISTRATION
    - type: string
CodeWordInd:
  anyOf:
    - type: string
      enum:
      - CODEWORD_CHECK_IN_UE
      - CODEWORD_CHECK_IN_GMLC
    - type: string
```

External Docs

```
Description: 3GPP TS 29.503 Unified Data Management Services, version 16.3.0
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.503/'
```



CHAPTER 15

Nudm_UECM

The Nudm Context Management Service provides the NF consumer of the information related to UE's transaction information, allows the NF consumer to register and deregister its information for the serving UE in the UDM, and allows the NF consumer to update some UE context information in the UDM.

Reference: 3GPP TS 29.503 Unified Data Management Services, version 15.3.0

- OpenAPI, on page 265
- Info, on page 265
- Servers, on page 265
- Security, on page 266
- Paths, on page 266
- Components, on page 270
- External Docs, on page 277

OpenAPI

OpenAPI Version: 3.0.0

Info

```
Version: '1.1.0.alpha-3'
Title: 'Nudm_UECM'
Description: |
  Nudm Context Management Service.
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  All rights reserved.
```

Servers

```
  URL: '{apiRoot}/nudm-uecm/v1'
  Variables:
    API Root:
```

```
      Default: https://example.com
      Description: apiRoot as defined in clause clause 4.4 of 3GPP TS 29.501.
```

Security

```
- oAuth2ClientCredentials:
  - nudm-uecm
- {}
```

Paths

/{ueId}/registrations/amf-3gpp-access

```
  put:
    Summary: register as AMF for 3GPP access
    Operation ID: 3GppRegistration

    Tags:
      - AMF registration for 3GPP access

    Parameters:
      - Name: ueId
        In: path
        Description: Identifier of the UE
        Required/Optional: true
        Schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    Request Body:
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/Amf3GppAccessRegistration'
      Required/Optional: true

    Responses:
      '201':
        Description: Created
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/Amf3GppAccessRegistration'
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure:
{apiRoot}/nudm-uecm/v1/{ueId}/registrations/amf-3gpp-access'
            Required/Optional: true
```

```
      Schema:
        Type: string
  '200':
    Description: OK
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/Amf3GppAccessRegistration'
  '204':
    Description: No content
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Reference: 'TS29571_CommonData.yaml#/components/responses/404'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
  Default:
    Description: Unexpected error
Callbacks:
  deregistrationeNotification:
    '{request.body#/deregCallbackUri}':
      Method: Post
        Request Body:
          Required/Optional: true
          Content:
            Application/JSON:
              Schema:
                Reference: '#/components/schemas/DeregistrationData'

        Responses:
          '204':
            Description: Successful Notification response
          '400':
            Reference: 'TS29571_CommonData.yaml#/components/responses/400'
          '404':
            Reference: 'TS29571_CommonData.yaml#/components/responses/404'
          '500':
            Reference: 'TS29571_CommonData.yaml#/components/responses/500'
          '503':
            Reference: 'TS29571_CommonData.yaml#/components/responses/503'
          Default:
            Description: Unexpected error
  pcscfRestorationNotification:
    '{request.body#/pcscfRestorationCallbackUri}':
      Method: Post
        Request Body:
          Required/Optional: true
          Content:
```

```
            Application/JSON:
              Schema:
                Reference: '#/components/schemas/PcscfRestorationNotification'

        Responses:
          '204':
            Description: Successful Notification response
          '400':
            Reference: 'TS29571_CommonData.yaml#/components/responses/400'
          '404':
            Reference: 'TS29571_CommonData.yaml#/components/responses/404'
          '500':
            Reference: 'TS29571_CommonData.yaml#/components/responses/500'
          '503':
            Reference: 'TS29571_CommonData.yaml#/components/responses/503'
          Default:
            Description: Unexpected error
patch:
  Summary: Update a parameter in the AMF registration for 3GPP access
  Operation ID: Update3GppRegistration

  Tags:
    - Parameter update in the AMF registration for 3GPP access

  Parameters:
    - Name: ueId
      In: path
      Description: Identifier of the UE
      Required/Optional: true
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    - Name: supported-features
      In: query
      Description: Features required to be supported by the target NF
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
  Request Body:
    Content:
      application/merge-patch+json:
        Schema:
          Reference: '#/components/schemas/Amf3GppAccessRegistrationModification'
    Required/Optional: true

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/PatchResult'
    '204':
      Description: Expected response to a valid request
```

```
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '422':
      Description: Unprocessable Request
      Content:
        application/problem+json:
          Schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Description: Unexpected error
get:
  Summary: retrieve the AMF registration for 3GPP access information
  Operation ID: Get3GppRegistration

  Tags:
    - AMF 3Gpp-access Registration Info Retrieval

  Parameters:
    - Name: ueId
      In: path
      Description: Identifier of the UE
      Required/Optional: true
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/VarUeId'
    - Name: supported-features
      In: query
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/Amf3GppAccessRegistration'
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
```

```
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'
      Default:
        Description: Unexpected error
```

Components

```
securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nudm-uecm: Access to the nudm-uecm API

schemas:
# COMPLEX TYPES:
  Amf3GppAccessRegistration:
    Type: object
    Required:
      - amfInstanceId
      - deregCallbackUri
      - guami
      - ratType
    Properties:
      amfInstanceId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      supportedFeatures:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      purgeFlag:
        Reference: '#/components/schemas/PurgeFlag'
      pei:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
      imsVoPs:
        Reference: '#/components/schemas/ImsVoPs'
      deregCallbackUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      amfServiceNameDereg:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
      pcscfRestorationCallbackUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      amfServiceNamePcscfRest:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
      initialRegistrationInd:
        Type: boolean
      guami:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      backupAmfInfo:
        Type: array
```

```
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
      minItems: 1
    drFlag:
      Reference: '#/components/schemas/DualRegistrationFlag'
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    urrpIndicator:
      Type: boolean
    amfEeSubscriptionId:
      Type: string
    epsInterworkingInfo:
      Reference: '#/components/schemas/EpsInterworkingInfo'
    ueSrvccCapability:
      Type: boolean
    nid:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Nid'
    registrationTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    vgmlcAddressIpv4:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    vgmlcAddressIpv6:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    vgmlcFqdn:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
Amf3GppAccessRegistrationModification:
  Type: object
  Required:
    - guami
  Properties:
    guami:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
    purgeFlag:
      Reference: '#/components/schemas/PurgeFlag'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    imsVoPs:
      Reference: '#/components/schemas/ImsVoPs'
    backupAmfInfo:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
    epsInterworkingInfo:
      Reference: '#/components/schemas/EpsInterworkingInfo'
    ueSrvccCapability:
      Type: boolean
      nullable: true
EpsInterworkingInfo:
  Type: object
  Properties:
    epsIwkPgws:
     Description: A map (list of key-value pairs where Dnn serves as key) of EpsIwkPgws
```

```
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/EpsIwkPgw'
EpsIwkPgw:
  Type: object
  Required:
    - pgwFqdn
    - smfInstanceId
  Properties:
    pgwFqdn:
      Type: string
    smfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
AmfNon3GppAccessRegistration:
  Type: object
  Required:
    - amfInstanceId
    - imsVoPs
    - deregCallbackUri
    - guami
    - ratType
  Properties:
    amfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    purgeFlag:
      Reference: '#/components/schemas/PurgeFlag'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    imsVoPs:
      Reference: '#/components/schemas/ImsVoPs'
    deregCallbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    amfServiceNameDereg:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
    pcscfRestorationCallbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    amfServiceNamePcscfRest:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ServiceName'
    guami:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
    backupAmfInfo:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
      minItems: 1
    ratType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
    urrpIndicator:
      Type: boolean
    amfEeSubscriptionId:
```

```
      Type: string
    nid:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Nid'
    registrationTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    vgmlcAddressIpv4:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    vgmlcAddressIpv6:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    vgmlcFqdn:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
AmfNon3GppAccessRegistrationModification:
  Type: object
  Required:
    - guami
  Properties:
    guami:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
    purgeFlag:
      Reference: '#/components/schemas/PurgeFlag'
    pei:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
    imsVoPs:
      Reference: '#/components/schemas/ImsVoPs'
    backupAmfInfo:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/BackupAmfInfo'
SmfRegistration:
  Type: object
  Required:
    - smfInstanceId
    - pduSessionId
    - singleNssai
    - plmnId
  Properties:
    smfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    smfSetId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    singleNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnn:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    emergencyServices:
      Type: boolean
    pcscfRestorationCallbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
```

```
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    pgwFqdn:
      Type: string
    epdgInd:
      Type: boolean
      Default: false
    deregCallbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    registrationReason:
      Reference: '#/components/schemas/RegistrationReason'
    registrationTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
SmsfRegistration:
  Type: object
  Required:
    - smsfInstanceId
    - plmnId
  Properties:
    smsfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    smsfSetId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    smsfMAPAddress:
      Reference: '#/components/schemas/E164Number'
    smsfDiameterAddress:
      Reference: '#/components/schemas/NetworkNodeDiameterAddress'
    registrationTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
DeregistrationData:
  Type: object
  Required:
    - deregReason
    - accessType
  Properties:
    deregReason:
      Reference: '#/components/schemas/DeregistrationReason'
    accessType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
    pduSessionId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
    newSmfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
PcscfRestorationNotification:
  Type: object
  Required:
    - supi
  Properties:
```

```
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
NetworkNodeDiameterAddress:
  Type: object
  Required:
    -name
    - realm
  Properties:
    name:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DiameterIdentity'
    realm:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DiameterIdentity'
TriggerRequest:
  Type: object
  Required:
    - supi
  Properties:
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
SmfRegistrationInfo:
  Type: object
  Required:
    - smfRegistrationList
  Properties:
    smfRegistrationList:
      Type: array
      Items:
        Reference: '#/components/schemas/SmfRegistration'
      minItems: 1
AmfDeregInfo:
  Type: object
  Required:
    - deregReason
  Properties:
    deregReason:
      Reference: '#/components/schemas/DeregistrationReason'
LocationInfo:
  Type: object
  Required:
    - registrationLocationInfoList
  Properties:
    supi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
    gpsi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
    registrationLocationInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/RegistrationLocationInfo'
      minItems: 1
      maxItems: 2
    supportedFeatures:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
```

```
    RegistrationLocationInfo:
      Type: object
    CmInfoReport:
      Type: object
      Required:
        - newCmInfoList
      Properties:
        oldCmInfoList:
          Type: array
          Items:
            Reference: 'TS29518_Namf_EventExposure.yaml#/components/schemas/CmInfo'
          minItems: 1
          maxItems: 2
        newCmInfoList:
          Type: array
          Items:
            Reference: 'TS29518_Namf_EventExposure.yaml#/components/schemas/CmInfo'
          minItems: 1
          maxItems: 2
    VgmlcAddress:
      Type: object
      Properties:
        vgmlcAddressIpv4:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
        vgmlcAddressIpv6:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
        vgmlcFqdn:
            Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
    PeiUpdateInfo:
      Type: object
      Required:
        - pei
      Properties:
        pei:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
  # SIMPLE TYPES:
    PurgeFlag:
      Type: boolean
    E164Number:
      Type: string
      Pattern: '^[0-9]{1,15}$'
    DualRegistrationFlag:
      Type: boolean
  # ENUMS:
    ImsVoPs:
      anyOf:
        - type: string
          enum:
          - HOMOGENEOUS_SUPPORT
          - HOMOGENEOUS_NON_SUPPORT
          - NON_HOMOGENEOUS_OR_UNKNOWN
        - type: string
    DeregistrationReason:
```

```
    anyOf:
      - type: string
        enum:
        - UE_INITIAL_REGISTRATION
        - UE_REGISTRATION_AREA_CHANGE
        - SUBSCRIPTION_WITHDRAWN
        - 5GS_TO_EPS_MOBILITY
        - 5GS_TO_EPS_MOBILITY_UE_INITIAL_REGISTRATION
        - REREGISTRATION_REQUIRED
        - SMF_CONTEXT_TRANSFERRED
      - type: string
  RegistrationReason:
    anyOf:
      - type: string
        enum:
        - SMF_CONTEXT_TRANSFERRED
      - type: string
```

External Docs

```
Description: 3GPP TS 29.503 Unified Data Management Services, version 16.3.0
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.503/'
```