



Ultra Cloud Core 5G Policy Control Function, Release 2023.01 - API Reference

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This preface describes the *Ultra Cloud Core 5G Policy Control Function API Reference*, the document conventions, and the customer support details.

- [Conventions Used, on page vii](#)
- [Contacting Customer Support, on page viii](#)

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 <i>variable</i>	This typeface represents a variable that is part of a command, for example: show card <i>slot_number</i> <i>slot_number</i> 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

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CHAPTER 1

Npcf_AMPolicyControl

The PCF uses the Npcf_AMPolicyControl API to communicate with the Access and Mobility Management Function (AMF) over the N15 Interface.

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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'
  policyAssociationTerminationRequestNotification:
    '{$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/{polAssold}

get:**Parameters:****- Name:** polAssoId**In:** path**Description:** Identifier of a policy association**Required/Optional:** true**Schema:****Type:** string**Responses:****'200':****Description:** OK. Resource representation is returned**Content:****Application/JSON:****Schema:****Reference:** '#/components/schemas/PolicyAssociation'

```
'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'  
'406':  
  Reference: 'TS29571_CommonData.yaml#/components/responses/406'  
'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'  
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'
```

/policies/{polAssold}/update

Method: Post

Request Body:

Required/Optional: true

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/PolicyAssociationUpdateRequest'

Parameters:

- **Name:** polAssoId

In: path

Description: Identifier of a policy association

Required/Optional: true

Schema:

Type: string

Responses:

'200':

Description: OK. Updated policies are returned

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/PolicyUpdate'

'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'

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 2

Nnrf_NFDiscovery

The Network Repository Function authorizes an NF client to perform the discovery operation using the Nnrf_NFDiscovery service to detect an NF.

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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:
  - nnrfdisc
```

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:** hnrfr-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_NFDDiscovery 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 3

Nnrf_NFManagement

The Network Repository Function uses the Nnrf_NFManagement service to manage the create, update, and delete an NF.

- [OpenAPI, on page 21](#)
- [Info, on page 21](#)
- [Servers, on page 21](#)
- [Security, on page 22](#)
- [Paths, on page 22](#)
- [Components, on page 30](#)
- [External Docs, on page 48](#)

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
    - UDSE
    - 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
            - npcfc-am-policy-control
            - npcfc-smpolicycontrol
            - npcfc-policyauthorization
            - npcfc-bdtpolicycontrol
            - npcfc-eventexposure

```

```

- npcf-ue-policy-control
- nsmsf-sms
- nnssf-nssselection
- 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 4

Npcf_SMPolicyControl

The Policy Control Function (PCF) uses the Npcf_SMPolicyControl service to create, update, and delete requests on the SMF.

- [OpenAPI, on page 49](#)
- [Info, on page 49](#)
- [Servers, on page 49](#)
- [Security, on page 50](#)
- [Paths, on page 50](#)
- [Components, on page 56](#)
- [External Docs, on page 94](#)

OpenAPI

OpenAPI Version: 3.0.0

Info

Description: Session Management Policy Control Service

Version: "1.1.5"

Title: Npcf_SMPolicyControl API

Servers

URL: '{apiRoot}/npcf-smpolicycontrol/v1'

Variables:

API Root:

Default: https://example.com

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

Security

```
- {}
- oAuth2Clientcredentials:
  - npcf-smpolicycontrol
```

Paths

/sm-policies

```
post:
  summary: Create a new Individual SM Policy
  operationId: Create SM Policy
  tags:
    - SM Policies (Collection)
  requestBody:
    required: true
    content:
      application/json:
        schema:
          Reference: '#/components/schemas/SmPolicyContextData'

  responses:
    '201':
      description: Created
      content:
        application/json:
          schema:
            Reference: '#/components/schemas/SmPolicyDecision'
      headers:
        location:
          description: 'Contains the URI of the newly created resource'
          required: true
          schema:
            type: string
    '308':
      description: Permanent Redirect
      headers:
        location:
          description: 'Contains the URI of the PCF within the existing PCF binding information stored in the BSF for the same UE ID, S-NSSAI and DNN combination '
          required: 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':
    Description: Not Found
  '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:
    SmPolicyUpdateNotification:
      '{$request.body#/notificationUri}/update':
        post:
          request Body:
            required: true
            content:
              application/json:
                schema:
                  Reference: '#/components/schemas/SmPolicyNotification'

          responses:
            '200':
              description: OK. The current applicable values corresponding to the policy
                control request trigger is reported
              content:
                application/json:
                  schema:
                    oneOf:
                      - $ref: '#/components/schemas/UeCampingRep'
                      - type: array
                        items:
                          $ref: '#/components/schemas/PartialSuccessReport'
                        Min Items: 1
                      - type: array
                        items:
                          $ref: '#/components/schemas/PolicyDecisionFailureCode'
                        Min Items: 1
            '204':
              description: No Content, Notification was successful
            '307':
              Reference: 'TS29571_CommonData.yaml#/components/responses/307'
            '308':

```

```

    Reference: 'TS29571_CommonData.yaml#/components/responses/308'
  '400':
    description: Bad Request.
    content:
      application/json:
        schema:
          Reference: '#/components/schemas/ErrorReport'
  '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'
SmPolicyControlTerminationRequestNotification:
  '{$request.body#/notificationUri}/terminate':
    post:
      request Body:
        required: true
        content:
          application/json:
            Schema:
              Reference: '#/components/schemas/TerminationNotification'

  responses:
    '204':
      description: No Content, Notification was succesful
    '307':
      Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    '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'

```

/sm-policies/{smPolicyId}

```

get:
  summary: Read an Individual SM Policy
  operationId: GetSMPolicy
  tags:
    - GetSMPolicy
    - Individual SM Policy (Document)
  parameters:
    - name: smPolicyId
      in: path
      description: Identifier of a policy association
      required: true
      schema:
        type: string
  responses:
    - GetSMPolicy
    - '200':
        description: OK. Resource representation is returned
        content:
          application/json:
            schema:
              Reference: '#/components/schemas/SmPolicyControl'
    - '307':
        Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    - '308':
        Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    - '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'
    - '406':
        Reference: 'TS29571_CommonData.yaml#/components/responses/406'

```

```

'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-policies/{smPolicyId}/update

```

post:
  summary: Update an existing Individual SM Policy
  operationId: UpdateSMPolicy
  tags:
    - Individual SM Policy (Document)
  requestBody:
    required: true
    content:
      application/json:
        schema:
          reference: '#/components/schemas/SmPolicyUpdateContextData'
  parameters:
    - name: smPolicyId
      in: path
      description: Identifier of a policy association
      required: true
      schema:
        type: string
  responses:
    '200':
      description: OK. Updated policies are returned
      content:
        application/json:
          schema:
            Reference: '#/components/schemas/SmPolicyDecision'
    '307':
      Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    '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'

```

/sm-policies/{smPolicyId}/delete

```

post:
  summary: Delete an existing Individual SM Policy
  operationId: DeleteSMPolicy
  tags:
    - Individual SM Policy (Document)
  requestBody:
    required: true
  content:
    application/json:
      schema:
        Reference: '#/components/schemas/SmPolicyDeleteData'
  parameters:
    - name: smPolicyId
      in: path
      description: Identifier of a policy association
      required: true
      schema:
        type: string
  responses:
    '204':
      description: No content
    '307':
      Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    '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'

```

Components

securitySchemes:

oAuth2ClientCredentials:

Type: oauth2

Flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

npcf-smpolicycontrol: Access to the Npcf_SMPolicyControl API

schemas:

SmPolicyControl :

Type: object

Properties:

context:

Reference: '#/components/schemas/SmPolicyContextData'

policy:

Reference: '#/components/schemas/SmPolicyDecision'

Required:

- context
- policy

SmPolicyContextData:

Type: object

Properties:

accNetChId:

Reference: '#/components/schemas/AccNetChId'

chargEntityAddr:

Reference: '#/components/schemas/AccNetChargingAddress'

gpsi:

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

supi:

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

invalidSupi:

Type: boolean

Description: When this attribute is included and set to true, it indicates that the supi attribute contains an invalid value. This attribute shall be present if the SUPI

is not available in the SMF or the SUPI is unauthenticated. When present it shall be set to true for an invalid SUPI and false (default) for a valid SUPI.

interGrpIds:
Type: array
Items:
Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
minItems: 1

pduSessionId:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'

pduSessionType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'

chargingcharacteristics:
Type: string

dnn:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'

dnnSelMode:
Reference: 'TS29502_Nsmf_PDUSession.yaml#/components/schemas/DnnSelectionMode'

notificationUri:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'

accessType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'

ratType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'

addAccessInfo:
Reference: '#/components/schemas/AdditionalAccessInfo'

servingNetwork:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'

userLocationInfo:
Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'

ueTimeZone:
Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'

pei:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'

ipv4Address:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6AddressPrefix:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'

ipDomain:
Type: string
Description: Indicates the IPv4 address domain

subsSessAmbr:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Ambr'

authProfIndex:
Type: string
Description: Indicates the DN-AAA authorization profile index

subsDefQos:
Reference: 'TS29571_CommonData.yaml#/components/schemas/SubscribedDefaultQos'

vplmnQos:
Reference: 'TS29502_Nsmf_PDUSession.yaml#/components/schemas/VplmnQos'

numOfPackFilter:
Type: integer
Description: Contains the number of supported packet filter for signalled QoS

rules.

- online:**
 - Type:** boolean
 - Description:** If it is included and set to true, the online charging is applied to the PDU session.
- offline:**
 - Type:** boolean
 - Description:** If it is included and set to true, the offline charging is applied to the PDU session.
- 3gppPsDataOffStatus:**
 - Type:** boolean
 - Description:** If it is included and set to true, the 3GPP PS Data Off is activated by the UE.
- refQosIndication:**
 - Type:** boolean
 - Description:** If it is included and set to true, the reflective QoS is supported by the UE.
- traceReq:**
 - Reference:** 'TS29571_CommonData.yaml#/components/schemas/TraceData'
- sliceInfo:**
 - Reference:** 'TS29571_CommonData.yaml#/components/schemas/Snssai'
- qosFlowUsage:**
 - Reference:** '#/components/schemas/QosFlowUsage'
- servNfId:**
 - Reference:** '#/components/schemas/ServingNfIdentity'
- suppFeat:**
 - Reference:** 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
- smfId:**
 - Reference:** 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
- recoveryTime:**
 - Reference:** 'TS29571_CommonData.yaml#/components/schemas/DateTime'
- maPduInd:**
 - Reference:** '#/components/schemas/MaPduIndication'
- atsssCapab:**
 - Reference:** '#/components/schemas/AtsssCapability'
- ipv4FrameRouteList:**
 - type:** array
 - items:**
 - Reference:** '#/components/schemas/Ipv4AddrMask'
 - minItems:** 1
- ipv6FrameRouteList:**
 - type:** array
 - items:**
 - Reference:** '#/components/schemas/Ipv6Prefix'
 - minItems:** 1
- Required:**
 - pduSessionId
 - pduSessionType
 - dnn
 - notificationUri
 - sliceInfo
- SmPolicyDecision:**
 - Type:** object

Properties:

- sessRules:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/SessionRule'
 - minProperties:** 1
 - Description:** A map of Sessionrules with the content being the SessionRule as described in subclause 5.6.2.7.
- pccRules:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/PccRule'
 - minProperties:** 1
 - Description:** A map of PCC rules with the content being the PCCRule as described in subclause 5.6.2.6.
 - nullable:** true
- pcscfRestIndication:**
 - Type:** boolean
 - Description:** If it is included and set to true, it indicates the P-CSCF Restoration is requested.
- qosDecs:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/QosData'
 - minProperties:** 1
 - Description:** Map of QoS data policy decisions.
- chgDecs:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/ChargingData'
 - minProperties:** 1
 - Description:** Map of Charging data policy decisions.
 - nullable:** true
- chargingInfo:**
 - Reference:** '#/components/schemas/ChargingInformation'
- traffContDecs:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/TrafficControlData'
 - minProperties:** 1
 - Description:** Map of Traffic Control data policy decisions.
- umDecs:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/UsageMonitoringData'
 - minProperties:** 1
 - Description:** Map of Usage Monitoring data policy decisions.
 - nullable:** true
- qosChars:**
 - Type:** object
 - additionalProperties:**
 - Reference:** '#/components/schemas/QosCharacteristics'

minProperties: 1

Description: Map of QoS characteristics for non standard 5QIs. This map uses the 5QI values as keys.

qosMonDecs:

Type: object

additionalProperties:

Reference: '#/components/schemas/QosMonitoringData'

minProperties: 1

Description: Map of QoS Monitoring data policy decisions.

nullable: true

reflectiveQoSTimer:

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

conds:

Type: object

additionalProperties:

Reference: '#/components/schemas/ConditionData'

minProperties: 1

Description: A map of condition data with the content being as described in subclause 5.6.2.9.

nullable: true

revalidationTime:

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

offline:

Type: boolean

Description: Indicates the offline charging is applicable to the PDU session when it is included and set to true.

online:

Type: boolean

Description: Indicates the online charging is applicable to the PDU session when it is included and set to true.

policyCtrlReqTriggers:

Type: array

Items:

Reference: '#/components/schemas/PolicyControlRequestTrigger'

minItems: 1

Description: Defines the policy control request triggers subscribed by the PCF.

nullable: true

lastReqRuleData:

Type: array

Items:

Reference: '#/components/schemas/RequestedRuleData'

minItems: 1

Description: Defines the last list of rule control data requested by the PCF.

lastReqUsageData:

Reference: '#/components/schemas/RequestedUsageData'

praInfos:

Type: object

additionalProperties:

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

minProperties: 1

Description: Map of PRA information.

nullable: true

```

ipv4Index:
  Reference: 'TS29519_Policy_Data.yaml#/components/schemas/IpIndex'
ipv6Index:
  Reference: 'TS29519_Policy_Data.yaml#/components/schemas/IpIndex'
qosFlowUsage:
  Reference: '#/components/schemas/QosFlowUsage'
relCause:
  Reference: '#/components/schemas/SmPolicyAssociationReleaseCause'
suppFeat:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
tsnBridgeManCont:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/BridgeManagementContainer'

tsnPortManContDstt:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/PortManagementContainer'

tsnPortManContDstt:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PortManagementContainer'

  minItems: 1
SmPolicyNotification:
  Type: object
  Properties:
    resourceUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    smPolicyDecision:
      Reference: '#/components/schemas/SmPolicyDecision'
PccRule:
  Type: object
  Properties:
    flowInfos:
      Type: array
      Items:
        Reference: '#/components/schemas/FlowInformation'
      minItems: 1
      Description: An array of IP flow packet filter information.
    appId:
      Type: string
      Description: A reference to the application detection filter configured at the
UPF.
    appDescriptor:
      Reference: '#/components/schemas/ApplicationDescriptor'
    contVer:
      Reference:
'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/ContentVersion'
    pccRuleId:
      Type: string
      Description: Univocally identifies the PCC rule within a PDU session.
    precedence:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UInteger'

```

afSigProtocol:
Reference: '#/components/schemas/AfSigProtocol'

appReloc:
Type: boolean
Description: Indication of application relocation possibility.

refQosData:
Type: array
Items:
Type: string
minItems: 1
maxItems: 1
Description: A reference to the QoSData policy decision type. It is the qosId described in subclause 5.6.2.8. (NOTE)

refAltQosParams:
Type: array
Items:
Type: string
minItems: 1
Description: A Reference to the QoSData policy decision type for the Alternative QoS parameter sets of the service data flow.

refTcData:
Type: array
Items:
Type: string
minItems: 1
maxItems: 1
Description: A reference to the TrafficControlData policy decision type. It is the tcId described in subclause 5.6.2.10.

refChgData:
Type: array
Items:
Type: string
minItems: 1
maxItems: 1
Description: A reference to the ChargingData policy decision type. It is the chgId described in subclause 5.6.2.11.
nullable: true

refChgN3gData:
Type: array
Items:
Type: string
minItems: 1
maxItems: 1
Description: A reference to the ChargingData policy decision type only applicable to Non-3GPP access if "ATSSS" feature is supported. It is the chgId described in subclause 5.6.2.11.
nullable: true

refUmData:
Type: array
Items:
Type: string
minItems: 1
maxItems: 1

Description: A reference to UsageMonitoringData policy decision type. It is the umId described in subclause 5.6.2.12.

nullable: true

refUmN3gData:

Type: array

Items:

Type: string

minItems: 1

maxItems: 1

Description: A reference to UsageMonitoringData policy decision type only applicable to Non-3GPP access if "ATSSS" feature is supported. It is the umId described in subclause 5.6.2.12.

nullable: true

refCondData:

Type: string

Description: A reference to the condition data. It is the condId described in subclause 5.6.2.9.

nullable: true

refQosMon:

Type: array

Items:

Type: string

minItems: 1

maxItems: 1

Description: A reference to the QosMonitoringData policy decision type. It is the qmId described in subclause 5.6.2.40.

nullable: true

addrPreserInd:

Type: boolean

nullable: true

tscaiInputDl:

Reference:

'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

tscaiInputUl:

Reference:

'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/TscaiInputContainer'

ddNotifCtrl:

Reference: '#/components/schemas/DownlinkDataNotificationControl'

ddNotifCtrl2:

Reference: '#/components/schemas/DownlinkDataNotificationControlRm'

disUeNotif:

Type: boolean

nullable: true

Required:

- pccRuleId

nullable: true

SessionRule:

Type: object

Properties:

authSessAmbr:

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

authDefQos:

Reference: '#/components/schemas/AuthorizedDefaultQos'

sessRuleId:
Type: string
Description: Univocally identifies the session rule within a PDU session.

refUmData:
Type: string
Description: A reference to UsageMonitoringData policy decision type. It is the umId described in subclause 5.6.2.12.
nullable: true

refUmN3gData:
Type: string
Description: A reference to UsageMonitoringData policy decision type to apply for Non-3GPP access. It is the umId described in subclause 5.6.2.
nullable: true

refCondData:
Type: string
Description: A reference to the condition data. It is the condId described in subclause 5.6.2.9.
nullable: true

Required:
- sessRuleId

nullable: true

QosData:
Type: object
Properties:

qosId:
Type: string
Description: Univocally identifies the QoS control policy data within a PDU session.

5qi:
Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'

maxbrUl:
Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'

maxbrDl:
Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'

gbrUl:
Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'

gbrDl:
Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'

arp:
Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'

qnc:
Type: boolean
Description: Indicates whether notifications are requested from 3GPP NG-RAN when the GBR can no longer (or again) be guaranteed for a QoS Flow during the lifetime of the QoS Flow.

priorityLevel:
Reference: 'TS29571_CommonData.yaml#/components/schemas/5QiPriorityLevelRm'

averWindow:
Reference: 'TS29571_CommonData.yaml#/components/schemas/AverWindowRm'

maxDataBurstVol:
Reference: 'TS29571_CommonData.yaml#/components/schemas/MaxDataBurstVolRm'

reflectiveQos:
Type: boolean

Description: Indicates whether the QoS information is reflective for the corresponding service data flow.

sharingKeyDl:
Type: string
Description: Indicates, by containing the same value, what PCC rules may share resource in downlink direction.

sharingKeyUl:
Type: string
Description: Indicates, by containing the same value, what PCC rules may share resource in uplink direction.

maxPacketLossRateDl:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketLossRateRm'

maxPacketLossRateUl:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketLossRateRm'

defQosFlowIndication:
Type: boolean
Description: Indicates that the dynamic PCC rule shall always have its binding with the QoS Flow associated with the default QoS rule

extMaxDataBurstVol:
Reference: 'TS29571_CommonData.yaml#/components/schemas/ExtMaxDataBurstVolRm'

packetDelayBudget:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketDelBudget'

packetErrorRate:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketErrRate'

Required:
- qosId

nullable: true

ConditionData:
Type: object
Properties:
condId:
Type: string
Description: Uniquely identifies the condition data within a PDU session.

activationTime:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTimeRm'

deactivationTime:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTimeRm'

accessType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'

ratType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'

Required:
- condId

nullable: true

TrafficControlData:
Type: object
Properties:
tcId:
Type: string
Description: Univocally identifies the traffic control policy data within a PDU session.

flowStatus:
Reference: 'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/FlowStatus'

```

redirectInfo:
  Reference: '#/components/schemas/RedirectInformation'
addRedirectInfo:
  Type: array
  Items:
    Reference: '#/components/schemas/RedirectInformation'
    minItems: 1
muteNotif:
  Type: boolean
  Description: Indicates whether applicat'on's start or stop notification is to be
muted.
trafficSteeringPolIdDl:
  Type: string
  Description: Reference to a pre-configured traffic steering policy for downlink
traffic at the SMF.
  nullable: true
trafficSteeringPolIdUl:
  Type: string
  Description: Reference to a pre-configured traffic steering policy for uplink
traffic at the SMF.
  nullable: true
routeToLocs:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/RouteToLocation'
  minItems: 1
  Description: A list of location which the traffic shall be routed to for the AF
request
traffCorreInd:
  Type: boolean
upPathChgEvent:
  Reference: '#/components/schemas/UpPathChgEvent'
steerFun:
  Reference: '#/components/schemas/SteeringFunctionality'
  :
  Reference: '#/components/schemas/SteeringMode'
  :
  Reference: '#/components/schemas/SteeringMode'
  :
  Reference: '#/components/schemas/MulticastAccessControl'
Required:
  - tcId
nullable: true
ChargingData:
  Type: object
  Properties:
    chgId:
      Type: string
      Description: Univocally identifies the charging control policy data within a PDU
session.
    meteringMethod:
      Reference: '#/components/schemas/MeteringMethod'

```

offline:
Type: boolean
Description: Indicates the offline charging is applicable to the PDU session when it is included and set to true..

online:
Type: boolean
Description: Indicates the online charging is applicable to the PDU session when it is included and set to true..

ratingGroup:
Reference: 'TS29571_CommonData.yaml#/components/schemas/RatingGroup'

reportingLevel:
Reference: '#/components/schemas/ReportingLevel'

serviceId:
Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceId'

sponsorId:
Type: string
Description: Indicates the sponsor identity.

appSvcProvId:
Type: string
Description: Indicates the application service provider identity.

afChargingIdentifier:
Reference: 'TS29571_CommonData.yaml#/components/schemas/ChargingId'

afChargId:
Reference: 'TS29571_CommonData.yaml#/components/schemas/ApplicationChargingId'

Required:
- chgId

nullable: true

UsageMonitoringData:
Type: object
Properties:
umId:
Type: string
Description: Univocally identifies the usage monitoring policy data within a PDU session.

volumeThreshold:
Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'

volumeThresholdUplink:
Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'

volumeThresholdDownlink:
Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'

timeThreshold:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'

monitoringTime:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTimeRm'

nextVolThreshold:
Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'

nextVolThresholdUplink:
Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'

nextVolThresholdDownlink:
Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'

nextTimeThreshold:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'

inactivityTime:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'

exUsagePccRuleIds:
Type: array
Items:
Type: string
minItems: 1
Description: Contains the PCC rule identifier(s) which corresponding service data flow(s) shall be excluded from PDU Session usage monitoring. It is only included in the UsageMonitoringData instance for session level usage monitoring.
nullable: true

Required:
- umId
nullable: true

RedirectInformation:
Type: object
Properties:
redirectEnabled:
Type: boolean
Description: Indicates the redirect is enable.
redirectAddressType:
Reference: '#/components/schemas/RedirectAddressType'
redirectServerAddress:
Type: string
Description: Indicates the address of the redirect server. If "redirectAddressType" attribute indicates the IPV4_ADDR, the encoding is the same as the Ipv4Addr data type defined in 3GPP TS 29.571. If "redirectAddressType" attribute indicates the IPV6_ADDR, the encoding is the same as the Ipv6Addr data type defined in 3GPP TS 29.571. If "redirectAddressType" attribute indicates the URL or SIP_URI, the encoding is the same as the Uri data type defined in 3GPP TS 29.571.

FlowInformation:
Type: object
Properties:
flowDescription:
Reference: '#/components/schemas/FlowDescription'
ethFlowDescription:
Reference:
'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'

packFiltId:
Type: string
Description: An identifier of packet filter.

packetFilterUsage:
Type: boolean
Description: The packet shall be sent to the UE.

tosTrafficClass:
Type: string
Description: Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and mask field.
nullable: true

spi:
Type: string
Description: the security parameter index of the IPSec packet.
nullable: true

```

    flowLabel:
      Type: string
      Description: the Ipv6 flow label header field.
      nullable: true
    flowDirection:
      Reference: '#/components/schemas/FlowDirectionRm'
SmPolicyDeleteData:
  Type: object
  Properties:
    userLocationInfo:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
    ueTimeZone:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
    servingNetwork:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
    userLocationInfoTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    ranNasRelCauses:
      Type: array
      Items:
        Reference: '#/components/schemas/RanNasRelCause'
      minItems: 1
      Description: Contains the RAN and/or NAS release cause.
    accuUsageReports:
      Type: array
      Items:
        Reference: '#/components/schemas/AccuUsageReport'
      minItems: 1
      Description: Contains the usage report
    pduSessRelCause:
      Reference: '#/components/schemas/PduSessionRelCause'
    qosMonReports:
      Type: array
      Items:
        Reference: '#/components/schemas/QosMonitoringReport'
      minItems: 1
QosCharacteristics:
  Type: object
  Properties:
    5qi:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'
    resourceType:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/QosResourceType'
    priorityLevel:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/5QipriorityLevel'
    packetDelayBudget:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketDelBudget'
    packetErrorRate:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketErrRate'
    averagingWindow:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/AverWindow'

```

```

maxDataBurstVol:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/MaxDataBurstVol'
extMaxDataBurstVol:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/ExtMaxDataBurstVol'
Required:
  - 5qi
  - resourceType
  - priorityLevel
  - packetDelayBudget
  - packetErrorRate
ChargingInformation:
Type: object
Properties:
  primaryChfAddress:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  secondaryChfAddress:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  primaryChfAddress:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
  primaryChfAddress:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
  secondaryChfAddress:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
  secondaryChfAddress:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
Required:
  - primaryChfAddress
  - secondaryChfAddress
AccuUsageReport:
Type: object
Properties:
  refUmIds:
    Type: string
    Description: An id referencing UsageMonitoringData objects associated with this
    usage report.
  volUsage:
    Reference: 'TS29122_CommonData.yaml#/components/schemas/Volume'
  volUsageUplink:
    Reference: 'TS29122_CommonData.yaml#/components/schemas/Volume'
  volUsageDownlink:
    Reference: 'TS29122_CommonData.yaml#/components/schemas/Volume'
  timeUsage:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
  nextVolUsage:
    Reference: 'TS29122_CommonData.yaml#/components/schemas/Volume'
  nextVolUsageUplink:
    Reference: 'TS29122_CommonData.yaml#/components/schemas/Volume'
  nextVolUsageDownlink:
    Reference: 'TS29122_CommonData.yaml#/components/schemas/Volume'
  nextTimeUsage:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
Required:
  - refUmIds

```

SmPolicyUpdateContextData:**Type:** object**Properties:****repPolicyCtrlReqTriggers:****Type:** array**Items:****Reference:** '#/components/schemas/PolicyControlRequestTrigger'**minItems:** 1**Description:** The policy control request triggers which are met.**accNetChIds:****Type:** array**Items:****Reference:** '#/components/schemas/AccNetChId'**minItems:** 1**Description:** Indicates the access network charging identifier for the PCC rule(s) or whole PDU session.**accessType:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/AccessType'**ratType:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/RatType'**addAccessInfo:****Reference:** '#/components/schemas/AdditionalAccessInfo'**relAccessInfo:****Reference:** '#/components/schemas/AdditionalAccessInfo'**servingNetwork:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'**userLocationInfo:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/UserLocation'**ueTimeZone:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/TimeZone'**relIpv4Address:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'**ipv4Address:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'**ipDomain:****Type:** string**Description:** Indicates the IPv4 address domain**ipv6AddressPrefix:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'**relIpv6AddressPrefix:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'**addIpv6AddressPrefix:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'**addrelIpv6AddressPrefix:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'**relUeMac:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/MacAddr48'**ueMac:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/MacAddr48'**subsSessAmbr:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/Ambr'**authProfIndex:**

Type: string
Description: Indicates the DN-AAA authorization profile index
subsDefQos:
Reference: 'TS29571_CommonData.yaml#/components/schemas/SubscribedDefaultQos'
vplmnQos:
Reference: 'TS29571_CommonData.yaml#/components/schemas/VplmnQos'
numOfPackFilter:
Type: integer
Description: Contains the number of supported packet filter for signalled QoS rules.

accuUsageReports:
Type: array
Items:
Reference: '#/components/schemas/AccuUsageReport'
minItems: 1
Description: Contains the usage report
3gppPsDataOffStatus:
Type: boolean
Description: If it is included and set to true, the 3GPP PS Data Off is activated by the UE.

appDetectionInfos:
Type: array
Items:
Reference: '#/components/schemas/AppDetectionInfo'
minItems: 1
Description: Report the start/stop of the application traffic and detected SDF descriptions if applicable.

ruleReports:
Type: array
Items:
Reference: '#/components/schemas/RuleReport'
minItems: 1
Description: Used to report the PCC rule failure.

qncReports:
Type: array
Items:
Reference: '#/components/schemas/QosNotificationControlInfo'
minItems: 1
Description: QoS Notification Control information.

qosMonReports:
Type: array
Items:
Reference: '#/components/schemas/QosMonitoringReport'
minItems: 1

userLocationInfoTime:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'

repPraInfos:
Type: object
additionalProperties:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfo'
minProperties: 1
Description: Reports the changes of presence reporting area.

ueInitResReq:
Reference: '#/components/schemas/UeInitiatedResourceRequest'

refQosIndication:
Type: boolean
Description: If it is included and set to true, the reflective QoS is supported by the UE. If it is included and set to false, the reflective QoS is revoked by the UE.

qosFlowUsage:
Reference: '#/components/schemas/QosFlowUsage'

creditManageStatus:
Reference: '#/components/schemas/CreditManagementStatus'

servNfId:
Reference: '#/components/schemas/ServingNfIdentity'

traceReq:
Reference: 'TS29571_CommonData.yaml#/components/schemas/TraceData'

maPduInd:
Reference: '#/components/schemas/MapduIndication'

atsssCapab:
Reference: '#/components/schemas/AtsssCapability'

tsnBridgeInfo:
Reference: '#/components/schemas/TsnBridgeInfo'

tsnBridgeManCont:
Reference: '#/components/schemas/BridgeManagementContainer'

tsnPortManContDstt:
Reference: '#/components/schemas/PortManagementContainer'

tsnPortManContNwtts:
Type: array
Items:
Reference: '#/components/schemas/PortManagementContainer'
minItems: 1

mulAddrInfos:
Type: array
Items:
Reference: '#/components/schemas/IpMulticastAddressInfo'
minItems: 1

policyDecFailureReports:
Type: array
Items:
Reference: '#/components/schemas/PolicyDecisionFailureCode'
minItems: 1

trafficDescriptors:
Type: array
Items:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DddTrafficDescriptor'
minItems: 1

pccRuleId:
Type: string
Description: Contains the identifier of the PCC rule which is used for traffic detection of event.

interGrpIds:
Type: array
Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
minItems: 1

```

    typesOfNotif:
      Type: array
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'
      minItems: 1
  UpPathChgEvent:
    Type: object
    Properties:
      notificationUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      notifCorreId:
        Type: string
        Description: It is used to set the value of Notification Correlation ID in the
notification sent by the SMF.
      dnaiChgType:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DnaiChangeType'
      afAckInd:
        Type: boolean
      Required:
        - notificationUri
        - notifCorreId
        - dnaiChgType
      nullable: true
  TerminationNotification:
    Type: object
    Properties:
      resourceUri:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      cause:
        Reference: '#/components/schemas/SmPolicyAssociationReleaseCause'
      Required:
        - resourceUri
        - cause
  AppDetectionInfo :
    Type: object
    Properties:
      appId:
        Type: string
        Description: A reference to the application detection filter configured at the
UPF
      instanceId:
        Type: string
        Description: Identifier dynamically assigned by the SMF in order to allow
correlation of application Start and Stop events to the specific service data flow
description, if service data flow descriptions are deducible.
      sdfDescriptions:
        Type: array
        Items:
          Reference: '#/components/schemas/FlowInformation'
        minItems: 1
        Description: Contains the detected service data flow descriptions if they are
deducible.
      Required:
        - appId
  AccNetChId:

```

Type: object

Properties:

accNetChaIdValue:

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

refPccRuleIds:

Type: array

Items:

Type: string

minItems: 1

Description: Contains the identifier of the PCC rule(s) associated to the provided Access Network Charging Identifier.

sessionChScope:

Type: boolean

Description: When it is included and set to true, indicates the Access Network Charging Identifier applies to the whole PDU Session

Required:

- accNetChaIdValue

AccNetChargingAddress:

Description: Describes the network entity within the access network performing charging

Type: object

anyOf:

- required: [anChargIpv4Addr]
- required: [anChargIpv6Addr]

Properties:

anChargIpv4Addr:

Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'

anChargIpv6Addr:

Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'

RequestedRuleData:

Type: object

Properties:

refPccRuleIds:

Type: array

Items:

Type: string

minItems: 1

Description: An array of PCC rule id references to the PCC rules associated with the control data.

reqData:

Type: array

Items:

Reference: '#/components/schemas/RequestedRuleDataType'

minItems: 1

Description: Array of requested rule data type elements indicating what type of rule data is requested for the corresponding referenced PCC rules.

Required:

- refPccRuleIds
- reqData

RequestedUsageData:

Type: object

Properties:

refUmIds:

```

    Type: array
    Items:
      Type: string
    minItems: 1
    Description: An array of usage monitoring data id references to the usage
    monitoring data instances for which the PCF is requesting a usage report. This attribute
    shall only be provided when allUmIds is not set to true.
    allUmIds:
      Type: boolean
      Description: This boolean indicates whether requested usage data applies to
    all usage monitoring data instances. When it's not included, it means requested usage data
    shall only apply to the usage monitoring data instances referenced by the refUmIds attribute.

UeCampingRep:
Type: object
Properties:
  accessType:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
  ratType:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
  servingNetwork:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NetworkId'
  userLocationInfo:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
  ueTimeZone:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
  netLocAccSupp:
    Reference: '#/components/schemas/NetLocAccessSupport'

RuleReport:
Type: object
Properties:
  pccRuleIds:
    Type: array
    Items:
      Type: string
    minItems: 1
    Description: Contains the identifier of the affected PCC rule(s).
  ruleStatus:
    Reference: '#/components/schemas/RuleStatus'
  contVers:
    Type: array
    Items:
      Reference:
'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/ContentVersion'
    minItems: 1
    Description: Indicates the version of a PCC rule.
  failureCode:
    Reference: '#/components/schemas/FailureCode'
  finUnitAct:
    Reference: 'TS32291_Nchf_ConvergedCharging.yaml#/components/schemas/FinalUnitAction'

ranNasRelCauses:
Type: array

```

```

    Items:
      Reference: '#/components/schemas/RanNasRelCause'
    minItems: 1
    Description: indicates the RAN or NAS release cause code information.
Required:
  - pccRuleIds
  - ruleStatus
  - failureCode
RanNasRelCause:
Type: object
Properties:
  ngApCause:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NgApCause'
  5gMmCause:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/5GMmCause'
  5gSmCause:
    Reference: '#/components/schemas/5GSmCause'
  epsCause:
    Reference: '#/components/schemas/EpsRanNasRelCause'
UeInitiatedResourceRequest:
Type: object
Properties:
  packFiltOp:
    Reference: '#/components/schemas/PacketFilterOperation'
    Description: Indicates a UE requests specific QoS handling for selected SDF.
  packFiltInfo:
    Type: array
    Items:
      Reference: '#/components/schemas/PacketFilterInfo'
    minItems: 1
  reqQos:
    Reference: '#/components/schemas/RequestedQos'
    Description: Contains the QoS information requested by the UE.
Required:
  - packFiltOp
  - packFiltInfo
PacketFilterInfo:
Type: object
Properties:
  packFiltId:
    Type: string
    Description: An identifier of packet filter.
  precedence:
    Type: integer
    Description: The requested order for the PCC rule generated fromt the packet
    filter information.
  packFiltCont:
    Reference: '#/components/schemas/PacketFilterContent'
    Description: Contains the content of the packet filter as requested by the UE
    and required by the PCF to create the PCC rules.
  tosTrafficClass:
    Type: string
    Description: Contains the Ipv4 Type-of-Service and mask field or the Ipv6

```

Traffic-Class field and mask field.

spi:

Type: string

Description: The security parameter index of the IPSec packet.

flowLabel:

Type: string

Description: The Ipv6 flow label header field.

flowDirection:

Reference: '#/components/schemas/FlowDirection'

Description: Indicates the direction/directions that a filter is applicable, downlink only, uplink only or both down- and uplink (bidirectional).

RequestedQos:

Type: object

Properties:

5qi:

Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'

gbrUl:

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

gbrDl:

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

Required:

- 5qi

QosNotificationControlInfo:

Type: object

Properties:

refPccRuleIds:

Type: array

Items:

Type: string

minItems: 1

Description: An array of PCC rule id references to the PCC rules associated with the QoS notification control info.

notifType:

Reference: 'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/QosNotifType'

contVer:

Reference:

'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

altQosParamId:

Type: string

Required:

- refPccRuleIds
- notifType

PartialSuccessReport:

Type: object

Properties:

failureCause:

Type: string

Description: Application error cause specific to this report.

ruleReports:

Type: array

Items:

Reference: '#/components/schemas/RuleReport'

```

    minItems: 1
    Description: Information about the PCC rules provisioned by the PCF not
successfully installed/activated.
    ueCampingRep:
      Reference: '#/components/schemas/UeCampingRep'
    policyDecFailureReports:
      Type: array
      Items:
        Reference: '#/components/schemas/PolicyDecisionFailureCode'
        minItems: 1
      Description: Contains the type(s) of failed policy decision and/or condition
data.
    Required:
      - failureCause
      - ruleReports
    AuthorizedDefaultQos:
      Type: object
      Properties:
        5qi:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'
        arp:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Arp'
        priorityLevel:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/5QiPriorityLevelRm'
        averWindow:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/AverWindowRm'
        maxDataBurstVol:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/MaxDataBurstVolRm'
        maxbrUl:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'
        maxbrDl:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'
        gbrUl:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'
        gbrDl:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/BitRateRm'
        extMaxDataBurstVol:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/ExtMaxDataBurstVolRm'
    ErrorReport:
      Type: object
      Properties:
        error:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/ProblemDetails'
        ruleReports:
          Type: array
          Items:
            Reference: '#/components/schemas/RuleReport'
          minItems: 1
          Description: Used to report the PCC rule failure.
        sessRuleReports:
          Type: array
          Items:

```

```

      Reference: '#/components/schemas/SessionRuleReport'
      minItems: 1      Description: Used to report the PCC rule failure.
    polDecFailureReports:
      Type: array
      Items:
        Reference: '#/components/schemas/PolicyDecisionFailureCode'
        minItems: 1
      Description: Used to report failure of the policy decision and/or condition data.

    altQosParamId:
      Type: string
  SessionRuleReport:
    Type: object
    Properties:
      ruleIds:
        Type: array
        Items:
          Type: string
          minItems: 1
        Description: Contains the identifier of the affected session rule(s).
      rulestatus:
        Reference: '#/components/schemas/RuleStatus'
      SessionFailureCode:
        Reference: '#/components/schemas/SessionRuleFailureCode'
      policyDecFailureReports:
        Type: array
        Items:
          Reference: '#/components/schemas/PolicyDecisionFailureCode'
          minItems: 1
        Description: Contains the type(s) of failed policy decision and/or condition
data.
    required:
      - ruleIds
      - ruleStatus
  ServingNfIdentity:
    type: object
    properties:
      servNfInstId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      guami:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
      anGwAddr:
        Reference: 'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/AnGwAddress'

  SteeringMode:
    type: object
    properties:
      SteeringModeValue:
        Reference: '#/components/schemas/SteerModeValue'
      active:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      standby:

```



```

Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessTypeRm'
3gLoad:
Reference: 'TS29571_CommonData.yaml#/components/schemas/UInteger'
prioAcc:
Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
required::
- steerModeValue
AdditionalAccessInfo:
type: object
properties:
accessType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
ratType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
required::
- accessType
QosMonitoringData:
type: object
properties:
qmId:
type: string
description: Univocally identifies the QoS monitoring policy data within a PDU
session.
reqQosMonParams:
type: array
items:
Reference: '#/components/schemas/RequestedQosMonitoringParameter'
minItems: 1
description: indicates the UL packet delay, DL packet delay and/or round trip
packet delay between the UE and the UPF is to be monitored when the QoS Monitoring for
URLLC is enabled for the service data flow.
repFreqs:
type: array
items:
Reference: '#/components/schemas/ReportingFrequency'
minItems: 1
repThreshDl:
type: integer
description: Unsigned integer identifying a period of time in units of
milliseconds for DL packet delay.
nullable: true
repThreshUl:
type: integer
description: Unsigned integer identifying a period of time in units of
milliseconds for UL packet delay.
nullable: true
repThreshRp:
type: integer
description: Unsigned integer identifying a period of time in units of
milliseconds for round trip packet delay.
nullable: true
waitTime:
Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'

```

```

    repPeriod:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'
    notifyUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    notifyCorreId:
      type: string
  required:
    - qmId
    - reqQosMonParams
    - repFreqs
  nullable: true
QosMonitoringReport:
  type: object
  properties:
    refPccRuleIds:
      type: array
      items:
        type: string
      minItems: 1
      description: An array of PCC rule id references to the PCC rules associated
with the QoS monitoring report.
    ulDelays:
      type: array
      items:
        type: integer
      minItems: 1
    dlDelays:
      type: array
      items:
        type: integer
      minItems: 1
    rtDelays:
      type: array
      items:
        type: integer
      minItems: 1
  required:
    - refPccRuleIds
#
TsnBridgeInfo:
  type: object
  properties:
    bridgeId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint64'
    dsttAddr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/MacAddr48'
    dsttPortNum:
      Reference: '#/components/schemas/TsnPortNumber'
    dsttResidTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/UInteger'
#
PortManagementContainer:
  type: object

```

```

properties:
  portManCont:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
  portNum:
    Reference: '#/components/schemas/TsnPortNumber'
required:
  - portManCont
  - portNum
BridgeManagementContainer:
  type: object
  properties:
    bridgeManCont:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
  required:
  - bridgeManCont
IpMulticastAddressInfo:
  type: object
  properties:
    srcIpv4Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    ipv4MulAddr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    srcIpv6Addr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
    ipv6MulAddr:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
DownlinkDataNotificationControl:
  description: Contains the downlink data notification control information.
  type: object
  properties:
    notifCtrlInds:
      type: array
      items:
        Reference: '#/components/schemas/NotificationControlIndication'
      minItems: 1
    typesOfNotif:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'

      minItems: 1
DownlinkDataNotificationControlRm:
  description: this data type is defined in the same way as the
DownlinkDataNotificationControl data type, but with the OpenAPI nullable property set to
true.
  type: object
  properties:
    notifCtrlInds:
      type: array
      items:
        Reference: '#/components/schemas/NotificationControlIndication'
      minItems: 1
      nullable: true

```

```

    typesOfNotif:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'

      minItems: 1
      nullable: true
    nullable: true
  5GSmCause:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/UInteger'
  EpsRanNasRelCause:
    type: string
    Description: Defines the EPS RAN/NAS release cause.
  PacketFilterContent:
    Type: string
    Description: Defines a packet filter for an IP flow.Refer to subclause 5.3.54 of 3GPP
    TS 29.212 [23] for encoding.
  FlowDescription:
    Type: string
    Description: Defines a packet filter for an IP flow.Refer to subclause 5.4.2 of 3GPP
    TS 29.212 [23] for encoding.
  TsnPortNumber:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/UInteger'
  ApplicationDescriptor:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
  FlowDirection:
    anyOf:
      - type: string
        enum:
          - DOWNLINK
          - UPLINK
          - BIDIRECTIONAL
          - UNSPECIFIED
      - 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
          - DOWNLINK: The corresponding filter applies for traffic to the UE.
          - UPLINK: The corresponding filter applies for traffic from the UE.
          - BIDIRECTIONAL: The corresponding filter applies for traffic both to and from the
    UE.
      - UNSPECIFIED: The corresponding filter applies for traffic to the UE (downlink), but
        has no specific direction declared. The service data flow detection shall apply the filter
        for uplink traffic as if the filter was bidirectional. The PCF shall not use the value
        UNSPECIFIED in filters created by the network in NW-initiated procedures. The PCF shall
        only include the value UNSPECIFIED in filters in UE-initiated procedures if the same value
        is received from the SMF.
  FlowDirectionRm:
    - type: string
      enum:
        - DOWNLINK
        - UPLINK
        - BIDIRECTIONAL
        - UNSPECIFIED

```

- NULL

ReportingLevel:**anyOf:**

- type: string

enum:

- SER_ID_LEVEL
- RAT_GR_LEVEL
- SPON_CON_LEVEL

- \$ref: 'TS29571_CommonData.yaml#/components/schemas/NullValue'

- 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

- SER_ID_LEVEL: Indicates that the usage shall be reported on service id and rating group combination level.
- RAT_GR_LEVEL: Indicates that the usage shall be reported on rating group level.
- SPON_CON_LEVEL: Indicates that the usage shall be reported on sponsor identity and rating group combination level.

MeteringMethod:**anyOf:**

- type: string

enum:

- DURATION
- VOLUME
- DURATION_VOLUME
- EVENT

- \$ref: 'TS29571_CommonData.yaml#/components/schemas/NullValue'

- 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

- DURATION: Indicates that the duration of the service data flow traffic shall be metered.
- VOLUME: Indicates that volume of the service data flow traffic shall be metered.
- DURATION_VOLUME: Indicates that the duration and the volume of the service data flow traffic shall be metered.
- EVENT: Indicates that events of the service data flow traffic shall be metered.

PolicyControlRequestTrigger:**anyOf:**

- type: string

enum:

- PLMN_CH
- RES_MO_RE
- AC_TY_CH
- UE_IP_CH
- UE_MAC_CH
- AN_CH_COR
- US_RE
- APP_STA
- APP_STO
- AN_INFO
- CM_SES_FAIL
- PS_DA_OFF
- DEF_QOS_CH
- SE_AMBR_CH

- QOS_NOTIF
 - NO_CREDIT
 - REALLO_OF_CREDIT
 - PRA_CH
 - SAREA_CH
 - SCNN_CH
 - RE_TIMEOUT
 - RES_RELEASE
 - SUCC_RES_ALLO
 - RAT_TY_CH
 - REF_QOS_IND_CH
 - AUTH_PROF_CH
 - QOS_MONITORING
 - SCELL_CH
 - EPS_FALLBACK
 - MA_PDU
 - TSN_BRIDGE_INFO
 - 5G_RG_JOIN
 - 5G_RG_LEAVE
 - DDN_FAILURE
 - DDN_DELIVERY_STATUS
 - GROUP_ID_LIST_CHG
 - DDN_FAILURE_CANCELLATION
 - DDN_DELIVERY_STATUS_CANCELLATION
 - VPLMN_QOS_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
- PLMN_CH: PLMN Change
 - RES_MO_RE: A request for resource modification has been received by the SMF. The SMF always reports to the PCF.
 - AC_TY_CH: Access Type Change
 - UE_IP_CH: UE IP address change. The SMF always reports to the PCF.
 - UE_MAC_CH: A new UE MAC address is detected or a used UE MAC address is inactive for a specific period
 - AN_CH_COR: Access Network Charging Correlation Information
 - US_RE: The PDU Session or the Monitoring key specific resources consumed by a UE either reached the threshold or needs to be reported for other reasons.
 - APP_STA: The start of application traffic has been detected.
 - APP_STO: The stop of application traffic has been detected.
 - AN_INFO: Access Network Information report
 - CM_SES_FAIL: Credit management session failure
 - PS_DA_OFF: The SMF reports when the 3GPP PS Data Off status changes. The SMF always reports to the PCF.
 - DEF_QOS_CH: Default QoS Change. The SMF always reports to the PCF.
 - SE_AMBR_CH: Session AMBR Change. The SMF always reports to the PCF.
 - QOS_NOTIF: The SMF notify the PCF when receiving notification from RAN that QoS targets of the QoS Flow cannot be guaranteed or guranteed again.
 - NO_CREDIT: Out of credit
 - REALLO_OF_CREDIT: Reallocation of credit
 - PRA_CH: Change of UE presence in Presence Reporting Area
 - SAREA_CH: Location Change with respect to the Serving Area
 - SCNN_CH: Location Change with respect to the Serving CN node
 - RE_TIMEOUT: Indicates the SMF generated the request because there has been a PCC revalidation timeout
 - RES_RELEASE: Indicate that the SMF can inform the PCF of the outcome of the release of resources for those rules that require so.
 - SUCC_RES_ALLO: Indicates that the requested rule data is the successful resource allocation.
 - RAT_TY_CH: RAT Type Change.

- REF_QOS_IND_CH: Reflective QoS indication Change
- NUM_OF_PACKET_FILTER: Indicates that the SMF shall report the number of supported packet filter for signalled QoS rules
- UE_STATUS_RESUME: Indicates that the UE's status is resumed.
- UE_TZ_CH: UE Time Zone Change
- AUTH_PROF_CH: The DN-AAA authorization profile index has changed
- QOS_MONITORING: Indicate that the SMF notifies the PCF of the QoS Monitoring information.
- SCELL_CH: Location Change with respect to the Serving Cell.
- EPS_FALLBACK: EPS Fallback report is enabled in the SMF.
- MA_PDU: UE Indicates that the SMF notifies the PCF of the MA PDU session request
- TSN_BRIDGE_INFO: 5GS Bridge information available
- 5G_RG_JOIN: The 5G-RG has joined to an IP Multicast Group.
- 5G_RG_LEAVE: The 5G-RG has left an IP Multicast Group.
- DDN_FAILURE: Event subscription for DDN Failure event received.
- DDN_DELIVERY_STATUS: Event subscription for DDN Delivery Status received.
- GROUP_ID_LIST_CHG: UE Internal Group Identifier(s) has changed: the SMF reports that UDM provided list of group Ids has changed.
- DDN_FAILURE_CANCELLATION: The event subscription for DDN Failure event is cancelled.
- DDN_DELIVERY_STATUS_CANCELLATION: The event subscription for DDD STATUS is cancelled.
- VPLMN_QOS_CH: Change of the QoS supported in the VPLMN.

RequestedRuleDataType:**anyOf:**

- type: string

enum:

- CH_ID
- MS_TIME_ZONE
- USER_LOC_INFO
- RES_RELEASE
- SUCC_RES_ALLO
- EPS_FALLBACK

- 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

- CH_ID: Indicates that the requested rule data is the charging identifier.
- MS_TIME_ZONE: Indicates that the requested access network info type is the UE's timezone.
- USER_LOC_INFO: Indicates that the requested access network info type is the UE's location.
- RES_RELEASE: Indicates that the requested rule data is the result of the release of resource.
- SUCC_RES_ALLO: Indicates that the requested rule data is the successful resource allocation.
- EPS_FALLBACK: Indicates that the requested rule data is the report of QoS flow rejection due to EPS fallback.

RuleStatus:**anyOf:**

- type: string

enum:

- ACTIVE
- INACTIVE

- type: string

Description:

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

Description:

Possible values are

- ACTIVE: Indicates that the PCC rule(s) are successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF), or the session rule(s) are successfully installed
- INACTIVE: Indicates that the PCC rule(s) are removed (for those provisioned from PCF) or inactive (for those pre-defined in SMF) or the session rule(s) are removed.

FailureCode:**anyOf:**

- type: string

enum:

- UNK_RULE_ID
 - RA_GR_ERR
 - SER_ID_ERR
 - NF_MAL
 - RES_LIM
 - MAX_NR_QoS_FLOW
 - MISS_FLOW_INFO
 - RES_ALLO_FAIL
 - UNSUCC_QOS_VAL
 - INCOR_FLOW_INFO
 - PS_TO_CS_HAN
 - APP_ID_ERR
 - NO_QOS_FLOW_BOUND
 - FILTER_RES
 - MISS_REDI_SER_ADDR
 - CM_END_USER_SER_DENIED
 - CM_CREDIT_CON_NOT_APP
 - CM_AUTH_REJ
 - CM_USER_UNK
 - CM_RAT_FAILED
 - SESS_AMBR_FAILURE
 - DEF_QOS_FAILURL
- 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

- UNK_RULE_ID: Indicates that the pre-provisioned PCC rule could not be successfully activated because the PCC rule identifier is unknown to the SMF.
- RA_GR_ERR: Indicate that the PCC rule could not be successfully installed or enforced because the Rating Group specified within the Charging Data policy decision which the PCC rule refers to is unknown or, invalid.
- SER_ID_ERR: Indicate that the PCC rule could not be successfully installed or enforced because the Service Identifier specified within the Charging Data policy decision which the PCC rule refers to is invalid, unknown, or not applicable to the service being charged.
- NF_MAL: Indicate that the PCC rule could not be successfully installed (for those provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to SMF/UPF malfunction.
- RES_LIM: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to a limitation of resources at the SMF/UPF.
- MAX_NR_QoS_FLOW: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to the fact that the maximum number of QoS flows has been reached for the PDU session.
- MISS_FLOW_INFO: Indicate that the PCC rule could not be successfully installed or enforced because the Flow Information AVP is not specified within the "pccRule" attribute by the PCF during the first install request of the PCC rule.
- RES_ALLO_FAIL: Indicate that the PCC rule could not be successfully installed or

maintained since the QoS flow establishment/modification failed, or the QoS flow was released.

- UNSUCC_QOS_VAL: indicate that the QoS validation has failed or when Guaranteed Bandwidth > Max-Requested-Bandwidth.
- INCOR_FLOW_INFO: Indicate that the PCC rule could not be successfully installed or modified at the SMF because the provided flow information is not supported by the network (e.g. the provided IP address(es) or Ipv6 prefix(es) do not correspond to an IP version applicable for the PDU session).
- PS_TO_CS_HAN: Indicate that the PCC rule could not be maintained because of PS to CS handover.
- APP_ID_ERR: Indicate that the rule could not be successfully installed or enforced because the Application Identifier is invalid, unknown, or not applicable to the application required for detection.
- NO_QOS_FLOW_BOUND: Indicate that there is no QoS flow which the SMF can bind the PCC rule(s) to.
- FILTER_RES: Indicate that the Flow Information within the "flowInfos" attribute cannot be handled by the SMF because any of the restrictions defined in subclause 5.4.2 of 3GPP TS 29.212 was not met.
- MISS_REDI_SER_ADDR: Indicate that the PCC rule could not be successfully installed or enforced at the SMF because there is no valid Redirect Server Address within the Traffic Control Data policy decision which the PCC rule refers to provided by the PCF and no preconfigured redirection address for this PCC rule at the SMF.
- CM_END_USER_SER_DENIED: Indicate that the charging system denied the service request due to service restrictions (e.g. terminate rating group) or limitations related to the end-user, for example the end-user's account could not cover the requested service.
- CM_CREDIT_CON_NOT_APP: Indicate that the charging system determined that the service can be granted to the end user but no further credit control is needed for the service (e.g. service is free of charge or is treated for offline charging).
- CM_AUTH_REJ: Indicate that the charging system denied the service request in order to terminate the service for which credit is requested.
- CM_USER_UNK: Indicate that the specified end user could not be found in the charging system.
- CM_RAT_FAILED: Indicate that the charging system cannot rate the service request due to insufficient rating input, incorrect AVP combination or due to an attribute or an attribute value that is not recognized or supported in the rating.
- SESS_AMBR_FAILURE: Indicate that the session AMBR update is failure.
- DEF_QOS_FAILURL: Indicate that the default QoS update is failure.

AfSigProtocol:

anyOf:

- type: string
- enum:**
 - NO_INFORMATION
 - SIP
- \$ref: 'TS29571_CommonData.yaml#/components/schemas/NullValue'
- 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

- NO_INFORMATION: Indicate that no information about the AF signalling protocol is being provided.
- SIP: Indicate that the signalling protocol is Session Initiation Protocol.

RuleOperation:

anyOf:

- type: string
- enum:**
 - CREATE_PCC_RULE
 - DELETE_PCC_RULE
 - MODIFY_PCC_RULE_AND_ADD_PACKET_FILTERS
 - MODIFY_PCC_RULE_AND_REPLACE_PACKET_FILTERS

- MODIFY_PCC_RULE_AND_DELETE_PACKET_FILTERS
- MODIFY_PCC_RULE_WITHOUT_MODIFY_PACKET_FILTERS

- 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

- CREATE_PCC_RULE: Indicates to create a new PCC rule to reserve the resource requested by the UE.
- DELETE_PCC_RULE: Indicates to delete a PCC rule corresponding to reserve the resource requested by the UE.
- MODIFY_PCC_RULE_AND_ADD_PACKET_FILTERS: Indicates to modify the PCC rule by adding new packet filter(s).
- MODIFY_PCC_RULE_AND_REPLACE_PACKET_FILTERS: Indicates to modify the PCC rule by replacing the existing packet filter(s).
- MODIFY_PCC_RULE_AND_DELETE_PACKET_FILTERS: Indicates to modify the PCC rule by deleting the existing packet filter(s).
- MODIFY_PCC_RULE_WITHOUT_MODIFY_PACKET_FILTERS: Indicates to modify the PCC rule by modifying the QoS of the PCC rule.

RedirectAddressType:

anyOf:

- type: string
- enum:
 - IPV4_ADDR
 - IPV6_ADDR
 - URL
 - SIP_URI
- 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

- IPV4_ADDR: Indicates that the address type is in the form of "dotted-decimal" IPv4 address.
- IPV6_ADDR: Indicates that the address type is in the form of IPv6 address.
- URL: Indicates that the address type is in the form of Uniform Resource Locator.
- SIP_URI: Indicates that the address type is in the form of SIP Uniform Resource Identifier.

PacketFilterOperation:

anyOf:

- type: string
- enum:
 - DELETION
 - ADDITION
 - MODIFICATION
- 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

- DELETION: Indicates that the resources reserved for the provided packet filter identifiers are to be deleted and are no longer used by the UE.
- ADDITION: Indicates that the UE requests resources allocated for the provided packet filters.
- MODIFICATION: Indicates that the reserved QoS, the filter, the precedence, or any of the fields for the provided packet filter identifiers are being modified.

RedirectAddressType:**anyOf:**

- type: string

enum:

- IPV4_ADDR
- IPV6_ADDR
- URL
- SIP_URI

- 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

- IPV4_ADDR: Indicates that the address type is in the form of "dotted-decimal" IPv4 address.
- IPV6_ADDR: Indicates that the address type is in the form of IPv6 address.
- URL: Indicates that the address type is in the form of Uniform Resource Locator.
- SIP_URI: Indicates that the address type is in the form of SIP Uniform Resource Identifier.

QosFlowUsage:**anyOf:**

- type: string

enum:

- GENERAL
- IMS_SIG

- 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

- GENERAL: Indicate no specific QoS flow usage information is available.
- IMS_SIG: Indicate that the QoS flow is used for IMS signalling only.

FailureCause:**anyOf:**

- type: string

enum:

- PCC_RULE_EVENT
- PCC_QOS_FLOW_EVENT
- RULE_PERMANENT_ERROR
- RULE_TEMPORARY_ERROR
- POL_DEC_ERROR

- type: string

CreditManagementStatus:**anyOf:**

- type: string

enum:

- END_USER_SER_DENIED
- CREDIT_CTRL_NOT_APP
- AUTH_REJECTED
- USER_UNKNOWN
- RATING_FAILED

- type: string

SessionRuleFailureCode:**anyOf:**

- type: string

enum:

- NF_MAL
- RES_LIM
- UNSUCC_QOS_VAL
- UE_STA_SUSP
- 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

- NF_MAL: Indicate that the PCC rule could not be successfully installed (for those provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to SMF/UPF malfunction.
- RES_LIM: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to a limitation of resources at the SMF/UPF.
- UNSUCC_QOS_VAL: indicate that the QoS validation has failed.
- UE_STA_SUSP: Indicates that the UE is in suspend state.

SteeringFunctionality:**anyOf:**

- type: string

enum:

- MPTCP
- ATSSS_LL

- 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

- MPTCP: Indicates that PCF authorizes the MPTCP functionality to support traffic steering, switching and splitting.
- ATSSS_LL: Indicates that PCF authorizes the ATSSS-LL functionality to support traffic steering, switching and splitting.

SteerModeValue:**anyOf:**

- type: string

enum:

- ACTIVE_STANDBY
- LOAD_BALANCING
- SMALLEST_DELAY
- PRIORITY_BASED

- type: string

MulticastAccessControl:**anyOf:**

- type: string

enum:

- ALLOWED
- NOT_ALLOWED

- type: string

RequestedQosMonitoringParameter:**anyOf:**

- type: string

enum:

- DOWNLINK
- UPLINK
- ROUND_TRIP

- type: string

ReportingFrequency:

```

anyOf:
- type: string
  enum:
    - EVENT_TRIGGERED
    - PERIODIC
    - SESSION_RELEASE
- type: string

```

SmPolicyAssociationReleaseCause:

```

anyOf:
- type: string
  enum:
    - UNSPECIFIED
    - UE_SUBSCRIPTION
    - INSUFFICIENT_RES
    - VALIDATION_CONDITION_NOT_MET
- type: string

```

PduSessionRelCause:

```

anyOf:
- type: string
  enum:
    - PS_TO_CS_HO
- type: string

```

MaPduIndication:

```

anyOf:
- type: string
  enum:
    - MA_PDU_REQUEST
    - MA_PDU_NETWORK_UPGRADE_ALLOWED
- type: string

```

AtsssCapability:

```

anyOf:
- type: string
  enum:
    - MPTCP_ATSSS_LL_WITH_ASMODE_UL
    - MPTCP_ATSSS_LL_WITH_EXSDMODE_DL_ASMODE_UL
    - MPTCP_ATSSS_LL_WITH_ASMODE_DLUL
    - ATSSS_LL
    - MPTCP_ATSSS_LL
- type: string

```

#

NetLocAccessSupport:

```

anyOf:
- type: string
  enum:
    - ANR_NOT_SUPPORTED
    - TZR_NOT_SUPPORTED
    - LOC_NOT_SUPPORTED
- 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

- ANR_NOT_SUPPORTED: Indicates that the access network does not support the report of access network information.
- TZR_NOT_SUPPORTED: Indicates that the access network does not support the report of UE time zone.
- LOC_NOT_SUPPORTED: Indicates that the access network does not support the report

```
of UE Location (or PLMN Id).
  PolicyDecisionFailureCode:
    anyOf:
      - type: string
        enum:
          - TRA_CTRL_DECS_ERR
          - QOS_DECS_ERR
          - CHG_DECS_ERR
          - USA_MON_DECS_ERR
          - QOS_MON_DECS_ERR
          - CON_DATA_ERR
      - type: string
#
  NotificationControlIndication:
    anyOf:
      - type: string
        enum:
          - DDN_FAILURE
          - DDD_STATUS
      - type: string
#
```

External Docs

Description: 3GPP TS 29.512 V16.9.0; 5G System; Session Management Policy Control Service.
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.512/'



CHAPTER 5

Nchf_SpendingLimitControl

The Nchf_SpendingLimitControl service enables the NF service consumer to retrieve policy counter status information per UE from the CHF by subscribing to spending limit reporting (that is notifications of policy counter status changes).

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- [Info, on page 95](#)
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- [Paths, on page 96](#)
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OpenAPI

OpenAPI Version: 3.0.0

Info

Description: Spending Limit Control Service API

Version: "1.0.0"

Title: Nchf_SpendingLimitControl

Servers

URL: 'http://{apiRoot}/nchf-spendinglimitcontrol/v1'

Variables:

API Root:

Default: https://example.com

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

Security

```
- {}
- oAuth2ClientCredentials:
  - nchf-spendinglimitcontrol
```

Paths

/subscriptions

Method: Post

Request Body:

Required/Optional: true

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/SpendingLimitContext'

Responses:

'201':

Description: Success

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/SpendingLimitStatus'

Headers:

Location:

description: 'Contains the URI of the created individual spending limit resource, according to the structure:

{apiRoot}/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}'

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:
  statusNotification:
    '{$request.body#/notifUri}/notify':
      Method: Post
      Request Body:
        Required/Optional: true
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/SpendingLimitStatus'

  Responses:
    '204':
      Description: No Content, Notification was succesfull
    '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'
  subscriptionTermination:
    '{$request.body#/notifUri}/terminate':
      Method: Post
      Request Body:
        Required/Optional: true
        Content:
          Application/JSON:
            Schema:
```

Reference: '#/components/schemas/SubscriptionTerminationInfo'

Responses:

'204':

Description: No Content, Notification was succesfull

'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'

/subscriptions/{subscriptionId}

Parameters:

- in: path

name: subscriptionId

Description: Identifies an individual spending limit retrieval subscription.

Required/Optional: true

Schema:

Type: string

put:

Request Body:

Required/Optional: true

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/SpendingLimitContext'

Responses:

'200':

Description: OK. Resource was succesfully modified and representation is returned

Content:

```
Application/JSON:
  Schema:
    Reference: '#/components/schemas/SpendingLimitStatus'
  '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'
delete:

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:
          nchf-spendinglimitcontrol: Access to the Nchf_SpendingLimitControl API

schemas:
  SpendingLimitContext:
    Type: object
    Properties:
      supi:
        Description: The Subscription Permanent Identifier (Supi) shall be present within
        the initial spending limit retrieval procedure (creation of a new individual
        subscription).
        Reference: './TS29571_CommonData.yaml#/components/schemas/Supi'
      gpsi:
        Description: The Generic Public Subscription Identifier (Gpsi) may be present
        within the initial spending limit retrieval procedure (creation of a new individual
        subscription).
        Reference: './TS29571_CommonData.yaml#/components/schemas/Gpsi'
      policyCounterIds:
        Type: array
        Items:
          Reference: './#/components/schemas/PolicyCounterId'
        minItems: 1
        Description: This is a list of policy counter identifier(s), which identifies
        policy counters maintained per subscriber within the CHF.
      notifUri:
        Description: This attribute identifies the recipient of spending limit
        notifications sent to the NF service consumer by the CHF. The notifUri shall be present
        within the initial spending limit retrieval procedure (creation of a new individual
        subscription). It may be present within the intermediate spending limit retrieval procedure
        (modification of an existing subscription).
        Reference: './TS29571_CommonData.yaml#/components/schemas/Uri'
      supportedFeatures:
        Description: The list of supported features as described in subclause 5.8 shall
        be supplied by the NF service consumer in the POST request that request the creation of a
        spending limit report resource.
        Reference: './TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      SpendingLimitStatus:
        Type: object
        Properties:
          supi:
            Description: The Subscription Permanent Identifier (Supi) shall be present within
            the callback notify service operation (notification of the status of subscribed policy
            counters).
            Reference: './TS29571_CommonData.yaml#/components/schemas/Supi'

```

statusInfos:
Type: object
additionalProperties:
Reference: '#/components/schemas/PolicyCounterInfo'
minProperties: 1
Description: Status of the requested policy counters. The key of the map is the attribute "policyCounterId".
supportedFeatures:
Description: If the supportedFeatures is included in the request by the NF service consumer, it shall be supplied in the reply of the corresponding request by the CHF.
Reference: './TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
Required:
- statusInfos

PolicyCounterInfo:
Type: object
Properties:
policyCounterId:
Reference: '#/components/schemas/PolicyCounterId'
currentStatus:
Type: string
Description: Identifies the policy counter status applicable for a specific policy counter identified by the policyCounterId. The values (e.g. valid, invalid or any other status) are not specified. The interpretation and actions related to the defined values are out of scope of 3GPP.
penPolCounterStatuses:
Type: array
Items:
Reference: '#/components/schemas/PendingPolicyCounterStatus'
minItems: 1
Description: Provides the pending policy counter status.
Required:
- policyCounterId
- currentStatus

PendingPolicyCounterStatus:
Type: object
Properties:
policyCounterStatus:
Type: string
Description: Identifies the policy counter status applicable for a specific policy counter identified by the policyCounterId. The values (e.g. valid, invalid or any other status) are not specified. The interpretation and actions related to the defined values are out of scope of 3GPP.
activationTime:
Description: Indicates the activation times per required policy counter.
Reference: './TS29571_CommonData.yaml#/components/schemas/DateTime'
Required:
- policyCounterStatus
- activationTime

PolicyCounterId:
Type: string
Description: Identifies a policy counter.

SubscriptionTerminationInfo:
Type: object
Properties:

```
supi:
  Reference: './TS29571_CommonData.yaml#/components/schemas/Supi'
termCause:
  Reference: '#/components/schemas/TerminationCause'
Required:
- supi
TerminationCause:
  Type: string
enum:
- REMOVED_SUBSCRIBER
```

External Docs

Description: 3GPP TS 29.594 V15.2.0; 5G System; Spending Limit Control Service.

URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.594/'



CHAPTER 6

Nchf_SpendingLimitControl_Callbacks

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- [Info](#), on page 103
- [Servers](#), on page 103
- [Security](#), on page 103
- [Paths](#), on page 104
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OpenAPI

OpenAPI Version: 3.0.0

Info

Description: Spending Limit Control Service API Callbacks

Version: "1.0.0"

Title: Nchf_SpendingLimitControl Callbacks

Servers

URL: 'http://{apiRoot}/'

Variables:

API Root:

Default: https://example.com

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

Security

- {}

```
- oAuth2ClientCredentials:
  - nchf-spendinglimitcontrol
```

Paths

/npcf/callbacks/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}/notify

Method: Post

Parameters:

```
- in: path
  name: subscriptionId
  Description: Identifies an individual spending limit retrieval subscription.
  Required/Optional: true
  Schema:
    Type: string
```

Request Body:

```
Required/Optional: true
Content:
  Application/JSON:
    Schema:
```

Reference:

```
'./TS29594_Nchf_SpendingLimitControl.yaml#/components/schemas/SpendingLimitStatus'
```

Responses:

```
'204':
  Description: No Content, Notification was succesfull
'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'
```


/npcf/callbacks/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}/terminate

Method: Post

Parameters:

- in: path

name: subscriptionId

Description: Identifies an individual spending limit retrieval subscription.

Required/Optional: true

Schema:

Type: string

Request Body:

Required/Optional: true

Content:

Application/JSON:

Schema:

Reference:

'./TS29594_Nchf_SpendingLimitControl.yaml#/components/schemas/SubscriptionTerminationInfo'

Responses:

'204':

Description: No Content, Notification was succesfull

'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'

Components

securitySchemes:

oAuth2ClientCredentials:

Type: oauth2

Flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

nchf-spendinglimitcontrol: Access to the Nchf_SpendingLimitControl API