



## **Ultra Cloud Core 5G Policy Control Function, Release 2021.02 - API Reference**

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## About this Guide

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:  <code>Login:</code>
Text represented as <b>commands</b>	This typeface represents commands that you enter, for example:  <b>show ip access-list</b>  This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.

Typeface Conventions	Description
Text represented as a <b>command</b> <i>variable</i>	This typeface represents a variable that is part of a command, for example: <b>show card</b> <i>slot_number</i> <i>slot_number</i> is a variable representing the desired 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 <b>File</b> menu, then click <b>New</b>

## Contacting Customer Support

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





# CHAPTER 1

## Npcf\_AMPolicyControl

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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'
  policyAssocitionTerminationRequestNotification:
    '{$request.body#/notificationUri}/terminate':
      Method: Post
      Request Body:
        Required/Optional: true
        Content:

```

**Application/JSON:****Schema:****Reference:** '#/components/schemas/TerminationNotification'**Responses:****'204':****Description:** No Content, Notification was succesfull**'307':****Description:** temporary redirect**'400':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/400'**'401':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/401'**'403':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/403'**'404':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/404'**'411':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/411'**'413':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/413'**'415':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/415'**'429':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/429'**'500':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/500'**'503':****Reference:** 'TS29571\_CommonData.yaml#/components/responses/503'**Default:****Reference:** 'TS29571\_CommonData.yaml#/components/responses/default'

## /policies/{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/](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:
        - nnrnf-nfm
        - nnrnf-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-Za-f0-9]{4}|[A-Za-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/](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](#)
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## OpenAPI

OpenAPI Version: 3.0.0

## Info

**Description:** Session Management Policy Control Service

**Version:** "1.0.0"

**Title:** Npcf\_SMPolicyControl

## 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

**Method:** Post

**Request Body:**

**Required/Optional:** 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/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':

**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':
        Method: Post
        Request Body:
          Required/Optional: 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:
              Reference: '#/components/schemas/PartialSuccessReport'
            Min Items: 1
    '204':
      Description: No Content, Notification was successful
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/RuleReport'
    '400':
      Description: Bad Request.
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/ErrorResponse'
    '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':
    Method: Post
    Request Body:
      Required/Optional: true
      Content:
        Application/JSON:
          Schema:
            Reference: '#/components/schemas/TerminationNotification'

Responses:
  '204':
    Description: No Content, Notification was succesful
  '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:

**Parameters:**

- **Name:** smPolicyId  
**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/SmPolicyControl'

'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

**Method:** Post

**Request Body:**

**Required/Optional:** true  
**Content:**  
**Application/JSON:**  
**Schema:**  
**Reference:** '#/components/schemas/SmPolicyUpdateContextData'

**Parameters:**

- **Name:** smPolicyId  
**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/SmPolicyDecision'

**'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

**Method:** Post

**Request Body:**

**Required/Optional:** true  
**Content:**  
**Application/JSON:**  
**Schema:**  
**Reference:** '#/components/schemas/SmPolicyDeleteData'

**Parameters:**

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

**Responses:**

```

'204':
  Description: No content
'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'
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'
notificationUri:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
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'
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'
subsDefQos:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/SubscribedDefaultQos'
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'

**suppFeat:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

**Required:**

- supi
- 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.
reflectiveQoS_TIMER:
  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 or
PCC rule.
online:
  Type: boolean
  Description: Indicates the online charging is applicable to the PDU session or
PCC rule.

```

```

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_ApplicationData.yaml#/components/schemas/IpIndex'
  Description: Information that identifies which IP pool or external server is used
to allocate the IPv4 address.
ipv6Index:
  Reference: 'TS29519_ApplicationData.yaml#/components/schemas/IpIndex'
  Description: Information that identifies which IP pool or external server is used
to allocate the IPv6 address.
qosFlowUsage:
  Reference: '#/components/schemas/QosFlowUsage'
suppFeat:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
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.

**contVer:**

**Reference:**  
'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'

**pccRuleId:**

**Type:** string

**Description:** Univocally identifies the PCC rule within a PDU session.

**precedence:**

**Type:** integer

**Description:** Determines the order in which this PCC rule is applied relative to other PCC rules within the same PDU session.

**afSigProtocol:**

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

**nullable:** true

**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 type decision type. It is the qosId described in subclause 5.6.2.8. (NOTE)

**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. (NOTE)

**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. (NOTE)

**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. (NOTE)

**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:**  
 - 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  
**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 GFBR 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

**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'

**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'
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
upPathChgEvent:
  Reference: '#/components/schemas/UpPathChgEvent'
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'
      nullable: true
    offline:
      Type: boolean
      Description: Indicates the offline charging is applicable to the PDU session or
PCC rule.
    online:
      Type: boolean
      Description: Indicates the online charging is applicable to the PDU session or
PCC rule.
    ratingGroup:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/RatingGroup'
    reportingLevel:
      Reference: '#/components/schemas/ReportingLevel'
      nullable: true
    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'
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.
FlowInformation:
  Type: object
  Properties:
    flowDescription:
      Reference: '#/components/schemas/FlowDescription'
    ethFlowDescription:
      Reference:
'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'
      Description: Defines a packet filter for an Ethernet flow. "fDir" attribute is
not applicable.
    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/NetworkId'
    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
  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/PackageDelBudget'
      packetErrorRate:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PackageErrRate'
      averagingWindow:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AverWindow'
      maxDataBurstVol:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/MaxDataBurstVol'
    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'
    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'
  servingNetwork:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NetworkId'
  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'
  ipv6AddressPrefix:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
  relIpv6AddressPrefix:
    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'

**subsDefQos:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/SubscribedDefaultQos'

**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.

**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'  
**Description:** Indicates a UE requests specific QoS handling for selected SDF.

**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'

**traceReq:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/TraceData'

**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'

**Required:**

- notificationUri
- notifCorreId
- dnaiChgType

**nullable:** true

**TerminationNotification:**

**Type:** object

**Properties:****resourceUri:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Uri'

**cause:**

**Reference:**

'TS29507\_Npcf\_AMPolicyControl.yaml#/components/schemas/PolicyAssociationReleaseCause'

**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:** Th oolean 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'  
**Description:** The Access Type where the served UE is camping  
**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'

**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'  
**Description:** Indicates the status of the PCC rule(s).  
**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'  
**Description:** Indicates the reason tha the PCC Rule is being reported.  
**finUnitAct:**  
**Reference:** 'TS32291\_Nchf\_ConvergedCharging.yaml#/components/schemas/FinalUnitAction'

**Description:** Contains the related filter parameters and redirect address parameters (if available), when the user's account cannot cover the service cost.

**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'

**Description:** Indicate the cause value for NGAP protocol.

**5gMmCause:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/5GMmCause'

**Description:** Indicate the cause value for 5GMM protocol.

**5gSmCause:**

**Reference:** '#/components/schemas/5GSmCause'

**Description:** Indicate the cause value for 5GSM protocol.

**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'

**Description:** Contains the information from a single packet filter sent from the SMF to the PCF.

**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 from 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'  
**Description:** Identifier for the authorized QoS parameters for the service data flow.

**gbrUl:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/BitRate'  
**Description:** Indicates the guaranteed bandwidth in uplink requested by the UE.

**gbrDl:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/BitRate'  
**Description:** Indicates the guaranteed bandwidth in downlink requested by the UE.

**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'

**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'
    Description: Includes the current applicable values corresponding to the
provisioned policy control request triggers.
Required:
  - failureCause
  - ruleReports
AuthorizedDefaultQos:
Type: object
Properties:
  5qi:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/5Qi'
    Description: Identifier for the 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'
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.
5GSmCause:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/UInteger'
    Description: Indicating the cause value of 5GSM protocol.
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.

**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:**

**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.

**nullable:** true

**ReportingLevel:**

**anyOf:**

- type: string

**enum:**

- SER\_ID\_LEVEL
- RAT\_GR\_LEVEL

- SPON\_CON\_LEVEL
- 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
- 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
  - PRA\_CH
  - SAREA\_CH
  - SCNN\_CH
  - RE\_TIMEOUT
  - RES\_RELEASE
  - SUCC\_RES\_ALLO
  - RAT\_TY\_CH
  - REF\_QOS\_IND\_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 guaranteed again.
- NO\_CREDIT: Out 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

**RequestedRuleDataType:**

**anyOf:**

- type: string

**enum:**

- CH\_ID
- MS\_TIME\_ZONE
- USER\_LOC\_INFO
- RES\_RELEASE
- SUCC\_RES\_ALLO

- 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.

**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 cannot be handled by the SMF because any of the restrictions 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

- 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.

#### **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.



## External Docs

**Description:** 3GPP TS 29.512 V15.2.0; 5G System; Session Management Policy Control Service.

**URL:** '[http://www.3gpp.org/ftp/Specs/archive/29\\_series/29.512/](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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## 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/](http://www.3gpp.org/ftp/Specs/archive/29_series/29.594/)'



## CHAPTER 6

# Nchf\_SpendingLimitControl\_Callbacks

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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