



Ultra Cloud Core 5G Policy Control Function, Release 2022.01 - API Reference

First Published: 2022-01-31

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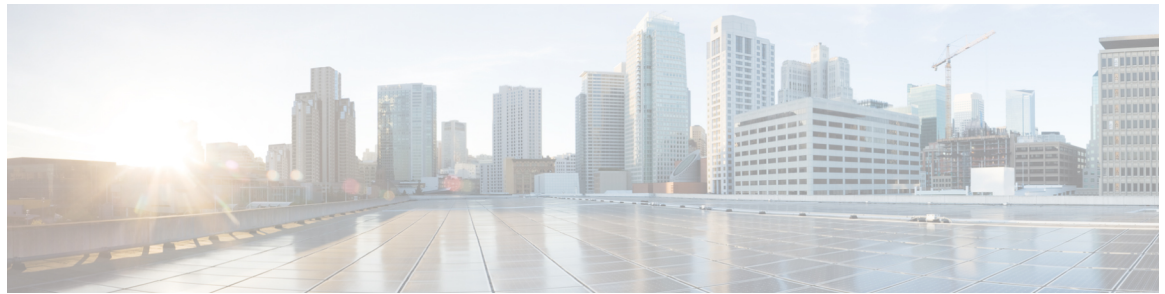
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About this Guide



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

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

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

Conventions Used

The following tables describe the conventions used throughout this documentation.

Notice Type	Description
Information Note	Provides information about important features or instructions.
Caution	Alerts you of potential damage to a program, device, or system.
Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.
Typeface Conventions	Description
Text represented as a screen display	This typeface represents displays that appear on your terminal screen, for example: Login:

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

Contacting Customer Support

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CHAPTER 1

Npcf_AMPolicyControl

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

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OpenAPI

OpenAPI Version: 3.0.0

Info

Description: Access and Mobility Policy Control Service API

Version: "1.0.0"

Title: Npcf_AMPolicyControl

Servers

URL: '{apiRoot}/npcf-am-policy-control/v1'

Variables:

API Root:

Default: https://example.com

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

Security

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

Paths

/policies

Method: Post

Request Body:

Required/Optional: true

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/PolicyAssociationRequest'

Responses:

'201':

Description: Created

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/PolicyAssociation'

Headers:

Location:

description: 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/npcf-am-policy-control/v1/policies/{polAssoId}'

Required/Optional: true

Schema:

Type: string

'400':

Reference: 'TS29571_CommonData.yaml#/components/responses/400'

'401':

Reference: 'TS29571_CommonData.yaml#/components/responses/401'

'403':

Reference: 'TS29571_CommonData.yaml#/components/responses/403'

'404':

Reference: 'TS29571_CommonData.yaml#/components/responses/404'

'411':

Reference: 'TS29571_CommonData.yaml#/components/responses/411'

'413':

Reference: 'TS29571_CommonData.yaml#/components/responses/413'

'415':

Reference: 'TS29571_CommonData.yaml#/components/responses/415'

```

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

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

```

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

/policies/{polAssold}

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

```

'400':
  Reference: 'TS29571_CommonData.yaml#/components/responses/400'
'401':
  Reference: 'TS29571_CommonData.yaml#/components/responses/401'
'403':
  Reference: 'TS29571_CommonData.yaml#/components/responses/403'
'404':
  Reference: 'TS29571_CommonData.yaml#/components/responses/404'
'406':
  Reference: 'TS29571_CommonData.yaml#/components/responses/406'
'429':
  Reference: 'TS29571_CommonData.yaml#/components/responses/429'
'500':
  Reference: 'TS29571_CommonData.yaml#/components/responses/500'
'503':
  Reference: 'TS29571_CommonData.yaml#/components/responses/503'
Default:
  Reference: 'TS29571_CommonData.yaml#/components/responses/default'
delete:

```

Parameters:

```

- Name: polAssId
  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:
  - nnrf-disc
```

Paths

/nf-instances

get:

Summary: Search a collection of NF Instances

Operation ID: SearchNFInstances

Tags:

- NF Instances (Store)

Parameters:

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

Description: Id of the PLMN where the target NF is located
Content:
 Application/JSON:
 Schema:
 Type: array
 Items:
 Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
 Min Items: 1

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

- **Name:** target-nf-instance-id
 In: query
 Description: Identity of the NF instance being discovered
 Schema:
 Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'

- **Name:** target-nf-fqdn
 In: query
 Description: FQDN of the NF instance being discovered
 Schema:
 Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'

- **Name:** hnrfr-uri
 In: query
 Description: Uri of the home NRF
 Schema:
 Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'

- **Name:** snssais
 In: query
 Description: Slice info of the target NF
 Content:
 Application/JSON:
 Schema:
 Type: array
 Items:
 Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
 Min Items: 1

- **Name:** dnn
 In: query
 Description: Dnn supported by the BSF, SMF or UPF
 Schema:
 Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'

- **Name:** nsi-list
 In: query
 Description: NSI IDs that are served by the services being discovered

```

Schema:
  Type: array
  Items:
    Type: string
    Min Items: 1
  Style: form
  Explode: false
- Name: smf-serving-area
  In: query
  Schema:
    Type: string
- Name: tai
  In: query
  Description: Tracking Area Identity
  Content:
    Application/JSON:
      Schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
- Name: amf-region-id
  In: query
  Description: AMF Region Identity
  Schema:
    Type: string
- Name: amf-set-id
  In: query
  Description: AMF Set Identity
  Schema:
    Type: string
- Name: guami
  In: query
  Description: Guami used to search for an appropriate AMF
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
- Name: supi
  In: query
  Description: SUPI of the user
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
- Name: ue-ipv4-address
  In: query
  Description: IPv4 address of the UE
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
- Name: ip-domain
  In: query
  Description: IP domain of the UE, which supported by BSF
  Schema:
    Type: string
- Name: ue-ipv6-prefix
  In: query
  Description: IPv6 prefix of the UE

```

```

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

```

```

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

Responses:
  '200':
    Description: Expected response to a valid request
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/SearchResult'
    Headers:
      Cache-Control:
        Description: Cache-Control containing max-age, described in IETF RFC 7234,
5.2
        Schema:
          Type: string
      ETag:
        Description: Entity Tag containing a strong validator, described in IETF RFC
7232, 2.3

```

```

    Schema:
      Type: string
    '307':
      Description: Temporary Redirect
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      Reference: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      Reference: 'TS29571_CommonData.yaml#/components/responses/415'
    '500':
      Reference: 'TS29571_CommonData.yaml#/components/responses/500'
    '501':
      Reference: 'TS29571_CommonData.yaml#/components/responses/501'
    '503':
      Reference: 'TS29571_CommonData.yaml#/components/responses/503'
    Default:
      Reference: 'TS29571_CommonData.yaml#/components/responses/default'

```

Components

```

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

schemas:
  SearchResult:
    Type: object
    Required:
      - nfInstances
    Properties:
      validityPeriod:
        Type: integer
      nfInstances:
        Type: array
        Items:
          Reference: '#/components/schemas/NFProfile'
  NFProfile:

```

```

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

```

```

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

```

```

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

```

External Docs

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

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



CHAPTER 3

Nnrf_NFManagement

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

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

OpenAPI

OpenAPI Version: 3.0.0

Info

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

Servers

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

Security

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

Paths

/nf-instances

get:

Summary: Retrieves a collection of NF Instances

Operation ID: GetNFInstances

Tags:

- NF Instances (Store)

Parameters:

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

Responses:

```
'200':
  Description: Expected response to a valid request
  Content:
    application/3gppHal+json:
      Schema:
        Type: object
        Properties:
          _links:
            Type: object
            Description: 'List of the URI of NF instances. It has two members whose
names are item and self. The item one contains an array of URIs.'
          additionalProperties:
            Reference:
'TS29571_CommonData.yaml#/components/schemas/LinksValueSchema'
        minProperties: 1
```

```

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

```

/nf-instances/{nfInstanceId}

get:

Summary: Read the profile of a given NF Instance

Operation ID: GetNFInstance

Tags:

- NF Instance ID (Document)

Parameters:

- **Name:** nfInstanceId

In: path

Description: Unique ID of the NF Instance

Required/Optional: true

Schema:

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

Responses:

'200':

Description: Expected response to a valid request

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/NFProfile'

'400':

Reference: 'TS29571_CommonData.yaml#/components/responses/400'

'403':

Reference: 'TS29571_CommonData.yaml#/components/responses/403'

'404':

Reference: 'TS29571_CommonData.yaml#/components/responses/404'

```

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

    Tags:
      - NF Instance ID (Document)

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

    Responses:
      '200':
        Description: OK (Profile Replacement)
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/NFProfile'
      '201':
        Description: Expected response to a valid request
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/NFProfile'
        Headers:
          Location:
            description: 'Contains the URI of the newly created resource,
according to the structure: {apiRoot}/nnrf-nfm/v1/nf-instances/{nfInstanceId}'

```

```

    Required/Optional: true
    Schema:
      Type: string
  '400':
    Reference: 'TS29571_CommonData.yaml#/components/responses/400'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Reference: 'TS29571_CommonData.yaml#/components/responses/404'
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '501':
    Reference: 'TS29571_CommonData.yaml#/components/responses/501'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
  Default:
    Reference: 'TS29571_CommonData.yaml#/components/responses/default'
patch:
  Summary: Update NF Instance profile
  Operation ID: UpdateNFInstance

  Tags:
    - NF Instance ID (Document)

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

  Responses:
    '200':
      Description: Expected response to a valid request
      Content:
        Application/JSON:

```

```

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

  Tags:
    - NF Instance ID (Document)

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

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

```

/subscriptions

```

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

Tags:
  - Subscriptions (Collection)

```

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

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

Callbacks:
onNFStatusEvent:
 '**{request.body#/nfStatusNotificationUri}**':
 Method: Post
 Request Body:
 Description: Notification Payload
 Content:
 Application/JSON:
 Schema:
 Reference: '#/components/schemas/NotificationData'

Responses:

'204':
Description: Expected response to a successful callback processing

'400':
Reference: 'TS29571_CommonData.yaml#/components/responses/400'

'403':
Reference: 'TS29571_CommonData.yaml#/components/responses/403'

'404':
Reference: 'TS29571_CommonData.yaml#/components/responses/404'

'411':
Reference: 'TS29571_CommonData.yaml#/components/responses/411'

'413':
Reference: 'TS29571_CommonData.yaml#/components/responses/413'

'415':
Reference: 'TS29571_CommonData.yaml#/components/responses/415'

'500':
Reference: 'TS29571_CommonData.yaml#/components/responses/500'

'501':
Reference: 'TS29571_CommonData.yaml#/components/responses/501'

'503':
Reference: 'TS29571_CommonData.yaml#/components/responses/503'

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

/subscriptions/{subscriptionID}

patch:

Summary: Updates a subscription
Operation ID: UpdateSubscription

Tags:

- Subscription ID (Document)

Parameters:

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

Request Body:

Content:
application/json-patch+json:
Schema:
Type: array
Items:
Reference: 'TS29571_CommonData.yaml#/components/schemas/PatchItem'
Required/Optional: true

Responses:

```

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

Tags:
  - Subscription ID (Document)

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

Responses:
'204':
  Description: Expected response to a successful subscription removal
'400':
  Reference: 'TS29571_CommonData.yaml#/components/responses/400'
'403':
  Reference: 'TS29571_CommonData.yaml#/components/responses/403'
'404':

```

```

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

```

Components

```

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

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

```

```

    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
  minItems: 1
  sNssais:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
  nsiList:
    Type: array
    Items:
      Type: string
      minItems: 1
  fqdn:
    Reference: '#/components/schemas/Fqdn'
  interPlmnFqdn:
    Reference: '#/components/schemas/Fqdn'
  ipv4Addresses:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
  ipv6Addresses:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
      minItems: 1
  allowedPlmns:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
      minItems: 1
  allowedNfTypes:
    Type: array
    Items:
      Reference: '#/components/schemas/NFType'
      minItems: 1
  allowedNfDomains:
    Type: array
    Items:
      Type: string
      minItems: 1
  allowedNssais:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
  priority:
    Type: integer
    Minimum: 0
    Maximum: 65535
  capacity:

```

```

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

```

```
serviceName:
  Reference: '#/components/schemas/ServiceName'
versions:
  Type: array
  Items:
    Reference: '#/components/schemas/NFServiceVersion'
  minItems: 1
scheme:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/UriScheme'
nfServiceStatus:
  Reference: '#/components/schemas/NFServiceStatus'
fqdn:
  Reference: '#/components/schemas/Fqdn'
interPlmnFqdn:
  Reference: '#/components/schemas/Fqdn'
ipEndPoints:
  Type: array
  Items:
    Reference: '#/components/schemas/IpEndPoint'
  minItems: 1
apiPrefix:
  Type: string
defaultNotificationSubscriptions:
  Type: array
  Items:
    Reference: '#/components/schemas/DefaultNotificationSubscription'
  minItems: 1
allowedPlmns:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
  minItems: 1
allowedNfTypes:
  Type: array
  Items:
    Reference: '#/components/schemas/NFType'
  minItems: 1
allowedNfDomains:
  Type: array
  Items:
    Type: string
  minItems: 1
allowedNssais:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
  minItems: 1
priority:
  Type: integer
  Minimum: 0
  Maximum: 65535
```

```

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

```

```

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

```

```

    serviceName:
      Reference: '#/components/schemas/ServiceName'
AmfCond:
  Type: object
  anyOf:
    - required: [ amfSetId ]
    - required: [ amfRegionId ]
  Properties:
    amfSetId:
      Type: string
    amfRegionId:
      Type: string
GuamiListCond:
  Type: object
  Required:
    - guamiList
  Properties:
    guamiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
NetworkSliceCond:
  Type: object
  Required:
    - snssaiList
  Properties:
    snssaiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    nsiList:
      Type: array
      Items:
        Type: string
NfGroupCond:
  Type: object
  Required:
    - nfType
    - nfGroupId
  Properties:
    nfType:
      Type: string
      enum:
        - UDM
        - AUSF
        - UDR
    nfGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
NotifCondition:
  Type: object
  not:
    Required: [ monitoredAttributes, unmonitoredAttributes ]
  Properties:

```

```

    monitoredAttributes:
      Type: array
      Items:
        Type: string
      minItems: 1
    unmonitoredAttributes:
      Type: array
      Items:
        Type: string
      minItems: 1
  UdrInfo:
    Type: object
    Properties:
      groupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
      supiRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/SupiRange'
        minItems: 1
      gpsiRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/IdentityRange'
        minItems: 1
      externalGroupIdentifiersRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/IdentityRange'
        minItems: 1
      supportedDataSets:
        Type: array
        Items:
          Reference: '#/components/schemas/DataSetId'
        minItems: 1
  SupiRange:
    Type: object
    Properties:
      start:
        Type: string
        Pattern: '^[0-9]+$'
      end:
        Type: string
        Pattern: '^[0-9]+$'
      Pattern:
        Type: string
  IdentityRange:
    Type: object
    Properties:
      start:
        Type: string

```

```

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

```

```

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

```

```

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

```

```

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

```

```

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

```

```

Properties:
  supiRangeList:
    Type: array
    Items:
      Reference: '#/components/schemas/SupiRange'
    minItems: 1
  gpsiRangeList:
    Type: array
    Items:
      Reference: '#/components/schemas/IdentityRange'
    minItems: 1
  plmnRangeList:
    Type: array
    Items:
      Reference: '#/components/schemas/PlmnRange'
    minItems: 1
Ipv4AddressRange:
  Type: object
  Properties:
    start:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    end:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
Ipv6PrefixRange:
  Type: object
  Properties:
    start:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
    end:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
DefaultNotificationSubscription:
  Type: object
  Required:
    - notificationType
    - callbackUri
  Properties:
    notificationType:
      Reference: '#/components/schemas/NotificationType'
    callbackUri:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    n1MessageClass:
      Reference: 'TS29518_Namf_Communication.yaml#/components/schemas/N1MessageClass'
    n2InformationClass:
      Reference: 'TS29518_Namf_Communication.yaml#/components/schemas/N2InformationClass'
NotificationType:
  anyOf:
    - type: string
    enum:
      - N1_MESSAGES
      - N2_INFORMATION
      - LOCATION_NOTIFICATION
      - DATA_REMOVAL_NOTIFICATION

```

```

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

```

```

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



CHAPTER 4

Npcf_SMPolicyControl

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

- [OpenAPI, on page 49](#)
- [Info, on page 49](#)
- [Servers, on page 49](#)
- [Security, on page 50](#)
- [Paths, on page 50](#)
- [Components, on page 55](#)
- [External Docs, on page 81](#)

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 succesfull
      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 UFF.

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/PacketDelBudget'
      packetErrorRate:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PacketErrRate'
      averagingWindow:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AverWindow'
      maxDataBurstVol:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/MaxDataBurstVol'
    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:
accNetChIdValue:
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:
- accNetChIdValue
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: The boolean indicates whether requested usage data applies to all usage monitoring data instances. When it's not included, it means requested usage data shall only apply to the usage monitoring data instances referenced by the refUmIds attribute.

UeCampingRep:
Type: object
Properties:
accessType:
Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
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 that the PCC Rule is being reported.
finalUnitAct:
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/'



CHAPTER 5

Nchf_SpendingLimitControl

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

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- [Info, on page 83](#)
- [Servers, on page 83](#)
- [Security, on page 84](#)
- [Paths, on page 84](#)
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OpenAPI

OpenAPI Version: 3.0.0

Info

Description: Spending Limit Control Service API

Version: "1.0.0"

Title: Nchf_SpendingLimitControl

Servers

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

Variables:

API Root:

Default: https://example.com

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

Security

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

Paths

/subscriptions

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

Responses:
  '201':
    Description: Success
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/SpendingLimitStatus'
    Headers:
      Location:
        description: 'Contains the URI of the created individual spending
limit resource, according to the structure:
{apiRoot}/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}'
      Required/Optional: true
      Schema:
        Type: string
  '400':
    Reference: './TS29571_CommonData.yaml#/components/responses/400'
  '401':
    Reference: './TS29571_CommonData.yaml#/components/responses/401'
  '403':
    Reference: './TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Reference: './TS29571_CommonData.yaml#/components/responses/404'
  '411':
    Reference: './TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: './TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: './TS29571_CommonData.yaml#/components/responses/415'
```

```

'429':
  Reference: './TS29571_CommonData.yaml#/components/responses/429'
'500':
  Reference: './TS29571_CommonData.yaml#/components/responses/500'
'503':
  Reference: './TS29571_CommonData.yaml#/components/responses/503'
Default:
  Reference: './TS29571_CommonData.yaml#/components/responses/default'
Callbacks:
  statusNotification:
    '{$request.body#/notifUri}/notify':
      Method: Post
      Request Body:
        Required/Optional: true
        Content:
          Application/JSON:
            Schema:
              Reference: '#/components/schemas/SpendingLimitStatus'

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

```

Reference: '#/components/schemas/SubscriptionTerminationInfo'

Responses:

'204':

Description: No Content, Notification was succesfull

'400':

Reference: './TS29571_CommonData.yaml#/components/responses/400'

'401':

Reference: './TS29571_CommonData.yaml#/components/responses/401'

'403':

Reference: './TS29571_CommonData.yaml#/components/responses/403'

'404':

Reference: './TS29571_CommonData.yaml#/components/responses/404'

'411':

Reference: './TS29571_CommonData.yaml#/components/responses/411'

'413':

Reference: './TS29571_CommonData.yaml#/components/responses/413'

'415':

Reference: './TS29571_CommonData.yaml#/components/responses/415'

'429':

Reference: './TS29571_CommonData.yaml#/components/responses/429'

'500':

Reference: './TS29571_CommonData.yaml#/components/responses/500'

'503':

Reference: './TS29571_CommonData.yaml#/components/responses/503'

Default:

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

/subscriptions/{subscriptionId}

Parameters:

- **in:** path

name: subscriptionId

Description: Identifies an individual spending limit retrieval subscription.

Required/Optional: true

Schema:

Type: string

put:

Request Body:

Required/Optional: true

Content:

Application/JSON:

Schema:

Reference: '#/components/schemas/SpendingLimitContext'

Responses:

'200':

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

Content:

Application/JSON:**Schema:****Reference:** '#/components/schemas/SpendingLimitStatus'**'400':****Reference:** './TS29571_CommonData.yaml#/components/responses/400'**'401':****Reference:** './TS29571_CommonData.yaml#/components/responses/401'**'403':****Reference:** './TS29571_CommonData.yaml#/components/responses/403'**'404':****Reference:** './TS29571_CommonData.yaml#/components/responses/404'**'411':****Reference:** './TS29571_CommonData.yaml#/components/responses/411'**'413':****Reference:** './TS29571_CommonData.yaml#/components/responses/413'**'415':****Reference:** './TS29571_CommonData.yaml#/components/responses/415'**'429':****Reference:** './TS29571_CommonData.yaml#/components/responses/429'**'500':****Reference:** './TS29571_CommonData.yaml#/components/responses/500'**'503':****Reference:** './TS29571_CommonData.yaml#/components/responses/503'**Default:****Reference:** './TS29571_CommonData.yaml#/components/responses/default'**delete:****Responses:****'204':****Description:** No Content. Resource was succesfully deleted**'400':****Reference:** './TS29571_CommonData.yaml#/components/responses/400'**'401':****Reference:** './TS29571_CommonData.yaml#/components/responses/401'**'403':****Reference:** './TS29571_CommonData.yaml#/components/responses/403'**'404':****Reference:** './TS29571_CommonData.yaml#/components/responses/404'**'429':****Reference:** './TS29571_CommonData.yaml#/components/responses/429'**'500':****Reference:** './TS29571_CommonData.yaml#/components/responses/500'**'503':****Reference:** './TS29571_CommonData.yaml#/components/responses/503'**Default:****Reference:** './TS29571_CommonData.yaml#/components/responses/default'

Components

```

securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          nchf-spendinglimitcontrol: Access to the Nchf_SpendingLimitControl API

schemas:
  SpendingLimitContext:
    Type: object
    Properties:
      supi:
        Description: The Subscription Permanent Identifier (Supi) shall be present within
the initial spending limit retrieval procedure (creation of a new individual subscription).

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

```

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

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

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

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

SubscriptionTerminationInfo:
Type: object
Properties:

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

External Docs

Description: 3GPP TS 29.594 V15.2.0; 5G System; Spending Limit Control Service.
URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.594/'



CHAPTER 6

Nchf_SpendingLimitControl_Callbacks

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- [Info, on page 91](#)
- [Servers, on page 91](#)
- [Security, on page 91](#)
- [Paths, on page 92](#)
- [Components, on page 93](#)

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