



UCC 5G PCF API Reference, Release 2026.01

First Published: 2026-01-31

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/c/en/us/about/legal/trademarks.html>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2026 Cisco Systems, Inc. All rights reserved.



CONTENTS

PREFACE

[About this Guide](#) **vii**
 [Conventions Used](#) **vii**
 [Contacting Customer Support](#) **viii**

CHAPTER 1

[Npcf_AMPolicyControl](#) **1**
 [OpenAPI](#) **1**
 [Info](#) **1**
 [Servers](#) **1**
 [Security](#) **2**
 [Paths](#) **2**
 [/policies](#) **2**
 [/policies/{polAssoId}](#) **4**
 [/policies/{polAssoId}/update](#) **6**
 [Components](#) **7**

CHAPTER 2

[Nnrf_NFDiscovery](#) **11**
 [OpenAPI](#) **11**
 [Info](#) **11**
 [Servers](#) **11**
 [Security](#) **12**
 [Paths](#) **12**
 [/nf-instances](#) **12**
 [/searches/{searchId}](#): **25**
 [/searches/{searchId}/complete](#): **26**
 [Components](#) **27**
 [External Docs](#) **35**

CHAPTER 3	Nnrf_NFManagement	37
	OpenAPI	37
	Info	37
	Servers	37
	Security	38
	Paths	38
	/nf-instances	38
	/nf-instances/{nfInstanceId}	41
	/subscriptions	48
	/subscriptions/{subscriptionID}	51
	Components	55
	External Docs	95

CHAPTER 4	Npcf_SMPolicyControl	97
	OpenAPI	97
	Info	97
	Servers	97
	Security	98
	Paths	98
	/sm-policies	98
	/sm-policies/{smPolicyId}	101
	/sm-policies/{smPolicyId}/update	102
	/sm-policies/{smPolicyId}/delete	103
	Components	104
	External Docs	142

CHAPTER 5	Nchf_SpendingLimitControl	143
	OpenAPI	143
	Info	143
	Servers	143
	Security	144
	Paths	144
	/subscriptions	144

[/subscriptions/{subscriptionId}](#) 146

[Components](#) 148

[External Docs](#) 150

CHAPTER 6

[Nchf_SpendingLimitControl_Callbacks](#) 151

[OpenAPI](#) 151

[Info](#) 151

[Servers](#) 151

[Security](#) 151

[Paths](#) 152

[/npcf/callbacks/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}/notify](#) 152

[/npcf/callbacks/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}/terminate](#) 153

[Components](#) 153

CHAPTER 7

[Requests, Responses and Schemas](#) 155

[ChangeCredentialUsernameRequest](#) 155

[CreateSubscriberRequest](#) 155

[DeleteSubscriberRequest](#) 156

[GetSubscriberRequest](#) 157



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

Use the information in this section to contact customer support.

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



CHAPTER 1

Npcf_AMPolicyControl

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

- [OpenAPI, on page 1](#)
- [Info, on page 1](#)
- [Servers, on page 1](#)
- [Security, on page 2](#)
- [Paths, on page 2](#)
- [Components, on page 7](#)

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.

- [OpenAPI, on page 11](#)
- [Info, on page 11](#)
- [Servers, on page 11](#)
- [Security, on page 12](#)
- [Paths, on page 12](#)
- [/searches/{searchId}:, on page 25](#)
- [/searches/{searchId}/complete:, on page 26](#)
- [Components, on page 27](#)
- [External Docs, on page 35](#)

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: '1.1.4'
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 clause 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: Accept-Encoding
# in: header
# description: Accept-Encoding, described in IETF RFC 7231
# schema:
#   type: string
- 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: requester-nf-instance-id
# in: query
# description: NfInstanceId of the requester NF
# schema:
#   $ref: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
- Name: service-names
  In: query
  Description: Name of the service offered by the NF
  Schema:
    Type: array
    Items:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/ServiceName'
```

Min Items: 1

Unique Items: False

Style: form

Explode: false

- **Name:** requester-nf-instance-fqdn

In: query

Description: FQDN of the requester NF

Schema:

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

- **Name:** target-plmn-list

In: query

Description: Id of the PLMN where the target NF is located

Content:

Application/JSON:

Schema:

Type: array

Items:

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

Min Items: 1

- **Name:** requester-plmn-list

In: query

Description: Id of the PLMN where the NF issuing the Discovery request is located

Content:

Application/JSON:

Schema:

Type: array

Items:

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

Min Items: 1

- **Name:** target-nf-instance-id

In: query

Description: Identity of the NF instance being discovered

Schema:

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

- **Name:** target-nf-fqdn

In: query

Description: FQDN of the NF instance being discovered

Schema:

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

- **Name:** hnrf-uri

In: query

Description: Uri of the home NRF

Schema:

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

- **Name:** snssais

In: query

Description: Slice info of the target NF

Content:

```

    Application/JSON:
      Schema:
        Type: array
        Items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
          Min Items: 1
- Name: plmn-specific-snssai-list
  In: query
  Description: PLMN specific Slice info of the target NF
  Content:
    Application/JSON:
      Schema:
        Type: array
        Items:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PlmnSnssai'
          Min Items: 1
#- Name: requester-plmn-specific-snssai-list
# In: query
# Description: PLMN-specific slice info of the NF issuing the Discovery request
# Content:
# Application/JSON:
# Schema:
# Type: array
# Items:
# Reference:
'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PlmnSnssai'
# 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
  Content:
    Application/JSON:
      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:
    # Reference: 'TS29503_Nudm_SDM.yaml#/components/schemas/ExtGroupId'
# - Name: internal-group-identity
#   In: query
#   Description: internal group identifier of the user
#   Schema:
#     Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
# - Name: pfd-data
#   In: query
#   Description: pfd-data
#   Content:
#     Application/JSON:
#   Schema:
#     Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PfdData'
- 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: pdu-session-types
    In: query
    Description: list of PDU Session Type required to be supported by the target NF
    Schema:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
      Min Items: 1
    Style: form
    Explode: false
  #- Name: event-id-list
    # In: query
    # Description: Analytics event(s) requested to be supported by the
Nnwdaf_AnalyticsInfo service
    # Schema:
      # Type: array
      # Items:
        # Reference: 'TS29520_Nnwdaf_AnalyticsInfo.yaml#/components/schemas/EventId'

      # Min Items: 1
      # Style: form
      # Explode: false
  #- Name: nwdafevent-list
    # In: query
    # Description: Analytics event(s) requested to be supported by the
Nnwdaf_EventsSubscription service.
    # Schema:
      # Type: array
      # Items:
        # Reference:
'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NwdafEvent'
      # 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: limit
  In: query
  Description: Maximum number of NFProfiles to return in the response
  required: false
  Schema:
    Type: integer
    minimum: 1
    Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
- Name: required-features
  In: query
  Description: Features required to be supported by the target NF
  Schema:
    Type: array
    Items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
    Min Items: 1
  Style: form
  Explode: false
- Name: complex-query
  In: query
  Description: the complex query condition expression
  Content:
    Application/JSON:
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/ComplexQuery'
- Name: max-payload-size
  In: query
  Description: Maximum payload size of the response expressed in kilo octets
  required: false
  Schema:
    Type: integer
    maximum: 2000
    default: 124
#- Name: max-payload-size-ext
# In: query
# Description: Extended query for maximum payload size of the response expressed
in kilo octets
# required: false
# Schema:
# Type: integer
# default: 124
#- Name: ATSSS Capability

```

```
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/AtsssCapability'
#- Name: upf-ue-ip-addr-ind
# In: query
# Description: UPF supporting allocating UE IP addresses/prefixes
# Schema:
# Type: boolean
#- Name: client-type
# In: query
# Description: Requested client type served by the NF
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/ExternalClientType'

#- Name: lmf-id
# In: query
# Description: LMF identification to be discovered
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LMFIdentification'

#- Name: an-node-type
# In: query
# Description: Requested AN node type served by the NF
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AnNodeType'
#- Name: rat-type
# In: query
# Description: Requested AN node type served by the NF
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
#- Name: preferred-tai
# In: query
# Description: preferred Tracking Area Identity
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
#- Name: preferred-nf-instances
# In: query
# Description: preferred NF Instances
# Schema:
# Type: array
# Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
```

```

    # Min Items: 1
    # Style: form
    # Explode: false
  - Name: If-None-Match
    In: header
    Description: Validator for conditional requests, as described in IETF RFC 7232,
3.2
    Schema:
      Type: string
  #- Name: target-snpn
    # In: query
    Description: Target SNPN Identity
    # Content:
    # Application/JSON:
    Schema:
      # Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
  #- Name: requester-snpn-list
    # In: query
    Description: SNPN ID(s) of the NF instance issuing the Discovery request
    # Content:
    # Application/JSON:
    # Schema:
    #   Type: array
    #   Items:
    #     Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
    #     Min Items: 1
  #- Name: af-ee-data
    # In: query
    # Description: NEF exposures by the AF
    # Content:
    # Application/JSON:
    # Schema:
    #   Reference:
    'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AfEventExposureData'
  #- Name: w-agf-info
    # In: query
    Description: UPF collocated with W-AGF
    # Content:
    # Application/JSON:
    # Schema:
    #   Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/WAgfInfo'
  #- Name: tngf-info
    # In: query
    # Description: UPF collocated with TNGF
    # Content:
    # Application/JSON:
    # Schema:
    #   Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/TngfInfo'
  #- Name: twif-info
    # In: query
    # Description: UPF collocated with TWIF
    # Content:

```

```

    # Application/JSON:
    Schema:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/TwifInfo'
  #- Name: target-nf-set-id
    # In: query
    Description: Target NF Set ID
    Schema:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/TwifInfo'
  #- Name: target-nf-service-set-id
    # In: query
    # Description: Target NF Service Set ID
    # Schema:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfServiceSetId'
  #- Name: nef-id
    # In: query
    # Description: NEF ID
    # Schema:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NefId'
  #- Name: notification-type
    # In: query
    # Description: Notification Type
    # Schema:
      Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NotificationType'

  #- Name: n1-msg-class
    # In: query
    # Description: N1 Message Class
    # Schema:
      Reference: 'TS29518_Namf_Communication.yaml#/components/schemas/N1MessageClass'

  #- Name: n2-info-class
    # In: query
    # Description: N2 Information Class
    # Schema:
      # Reference:
'TS29518_Namf_Communication.yaml#/components/schemas/N2InformationClass'
  #- Name: serving-scope
    # In: query
    # Description: areas that can be served by the target NF
    # Schema:
      # Type: array
      # Items:
      # Type: string
      # Min Items: 1
      # Style: form
      # Explode: false
  #- Name: imsi
    # In: query
    # Description: IMSI of the requester UE to search for an appropriate NF (e.g.
HSS)
    # Schema:
      # Type: string

```

```

#- Name: ims-private-identity
# In: query
# Description: IMPI of the requester UE to search for a target HSS
# Schema:
#   Type: string
#- Name: ims-public-identity
# In: query
# Description: IMS Public Identity of the requester UE to search for a target
HSS
# Schema:
#   Type: string
#- Name: msisdn
# In: query
# Description: MSISDN of the requester UE to search for a target HSS
# Schema:
#   Type: string
#- Name: preferred-api-versions
# In: query
# Description: Preferred API version of the services to be discovered
# Content:
#   Application/JSON:
# Schema:
#   Type: object
#   additionalProperties:
#     Type: string
#   minProperties: 1
#- Name: v2x-support-ind
# In: query
# Description: PCF supports V2X
# Schema:
#   Type: boolean
#- Name: redundant-gtpu
# In: query
# Description: UPF supports redundant gtp-u to be discovered
# Schema:
#   Type: boolean
#- Name: ipups
# In: query
# Description: UPF which is configured for IPUPS functionality to be discovered

# Schema:
#   Type: boolean
#- Name: scp-domain-list
# In: query
# Description: SCP domains the target SCP belongs to
# Schema:
#   Type: array
#   Items:
#     Type: string
#   Min Items: 1
# Style: form
# Explode: false

```

```

#- Name: scp-domain-list
# In: query
# Description: SCP domains the target SCP belongs to # Schema:
# Schema:
# Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/Fqdn'
#- Name: ipv4-addr
# In: query
# Description: IPv4 address reachable through the SCP
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
#- Name: ipv6-prefix
# In: query
# Description: IPv6 prefix reachable through the SCP
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
#- Name: served-nf-set-id
# In: query
# Description: NF Set ID served by the SCP
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
#- Name: remote-plmn-id
# In: query
# Description: Id of the PLMN reachable through the SCP
# Content:
# Application/JSON:
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
#- Name: data-forwarding
# In: query
# Description: UPF Instance(s) configured for data forwarding are requested
# Schema:
# Type: boolean
#- Name: preferred-full-plmn
# In: query
# Description: NF Instance(s) serving the full PLMN are preferred
# Schema:
# Type: boolean
#- Name: requester-features
# In: query
# Description: Features supported by the NF Service Consumer that is invoking
the Nnrf_NFDiscovery service
# Schema:
# Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'

#- Name: realm-id
# In: query
# Description: realm-id to search for an appropriate UDSF
# Schema:
# Type: string
#- Name: storage-id
# In: query
# Description: storage-id to search for an appropriate UDSF

```

```

# Schema:
#   Type: string
#- Name: vsmf-support-ind
# In: query
# Description: storage-id to search for an appropriate UDSF
# Schema:
#   Type: boolean

Responses:
  '200':
    Description: Expected response to a valid request
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/SearchResult'
    Links:
      search:
        operationId: RetrieveStoredSearch
        parameters:
          searchId: $response.body#/searchId
        Description:
          The 'searchId' parameter returned in the response can be used as
the 'searchId' parameter in the GET request to '/searches/{searchId}'
      completeSearch:
        operationId: RetrieveCompleteSearch
        parameters:
          searchId: $response.body#/searchId
        Description:
          The 'searchId' parameter returned in the response can be used as
the 'searchId' parameter in the GET request to '/searches/{searchId}/complete'
    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
      Content-Encoding:
        Description: Entity Tag containing a strong validator, described in IETF RFC
7232, 2.3
      Schema:
        Type: string
  '307':
    Description: Temporary Redirect
    Content:
      Application/JSON:
        Schema:
          Reference: '#/components/schemas/SearchResult'
    Headers:

```

```

      Location:
      Description: 'The URI pointing to the resource located on the redirect target
NRF'
      required: true
      schema:
      Type: string
'308':
  Description: Permanent Redirect
  Content:
  Application/JSON:
  Schema:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'
  Headers:
  Location:
  Description: 'The URI pointing to the resource located on the redirect target
NRF'
    required: 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'

```

/searches/{searchId}

```

get:
  operationId: RetrieveStoredSearch
  tags:
    - Stored Search (Document)
  parameters:
    - $ref: '#/components/parameters/searchId'
    - name: Accept-Encoding
      in: header

```

/searches/{searchId}/complete:

```

    description: Accept-Encoding, described in IETF RFC 7231
    schema:
      type: string
  responses:
    '200':
      $ref: '#/components/responses/200'
    '307':
      description: Temporary Redirect
      content:
        application/json:
          schema:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'
      headers:
        Location:
          description: 'The URI pointing to the resource located on the redirect
target NRF'
          required: true
          schema:
            type: string
    '308':
      description: Permanent Redirect
      content:
        application/json:
          schema:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'
      headers:
        Location:
          description: 'The URI pointing to the resource located on the redirect
target NRF'
          required: true
          schema:
            type: string

```

/searches/{searchId}/complete:

```

get:
  operationId: RetrieveCompleteSearch
  tags:
    - Complete Stored Search (Document)
  parameters:
    - $ref: '#/components/parameters/searchId'
    - name: Accept-Encoding
      in: header
      description: Accept-Encoding, described in IETF RFC 7231
      schema:
        type: string
  responses:
    '200':
      $ref: '#/components/responses/200'
    '307':

```

```

    description: Temporary Redirect
    content:
      application/json:
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'
    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
  '308':
    description: Permanent Redirect
    content:
      application/json:
        schema:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'
    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string

```

Components

```

securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '/oauth2/token'
        scopes:
          nnrf-disc: Access to the Nnrf_NFDDiscovery API
parameters:
  searchId:
    name: searchId
    in: path
    description: Id of a stored search
    required: true
    schema:
      type: string
responses:
  '200':
    description: Expected response to a valid request
    content:
      application/json:

```

```

      schema:
        $ref: '#/components/schemas/StoredSearchResult'
    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
      Content-Encoding:
        description: Content-Encoding, described in IETF RFC 7231
      schema:
        type: string

    schemas:
      SearchResult:
        description: Contains the list of NF Profiles returned in a Discovery response
        Type: object
        Required:
          - nfInstances
        Properties:
          validityPeriod:
            Type: integer
          nfInstances:
            Type: array
            Items:
              Reference: '#/components/schemas/NFProfile'
          searchId:
            type: string
          numNfInstComplete:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/Uint32'
          preferredSearch:
            Reference: '#/components/schemas/PreferredSearch'
          nrfSupportedFeatures:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      StoredSearchResult:
        description: Contains a complete search result (i.e. a number of discovered NF
Instances), stored by NRF as a consequence of a prior search result
        type: object
        required:
          - nfInstances
        properties:
          nfInstances:
            type: array
            items:
              Reference: '#/components/schemas/NFProfile'
          description: Information of an NF Instance discovered by the NRF
      NFProfile:
        Type: object

```

Required:

- nfInstanceId
- nfType
- nfStatus

Properties:**nfInstanceId:**

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

nfInstanceName:

type: string

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'

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

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'
    udrInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UdrInfo'
      minProperties: 1
  udmInfo:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UdmInfo'
    udmInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UdmInfo'
      minProperties: 1
  ausfInfo:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AusfInfo'
    ausfInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AusfInfo'
      minProperties: 1
  amfInfo:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AmfInfo'
    amfInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/AmfInfo'
      minProperties: 1
  smfInfo:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/SmfInfo'
    smfInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/smfInfo'
      minProperties: 1
  upfInfo:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/UpfInfo'
    upfInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/upfInfo'
      minProperties: 1
  pcfInfo:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PcfInfo'
    pcffInfoList:
      type: object
      additionalProperties:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/pcfInfo'
```

```

    minProperties: 1
bsfInfo:
  Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/bsfInfo'
bsfInfoList:
  type: object
  additionalProperties:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/bsfInfo'
    minProperties: 1
chfInfo:
  Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ChfInfo'
chfInfoList:
  type: object
  additionalProperties:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/chfInfo'
    minProperties: 1
udsInfo:
  Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/udsInfo'
udsInfoList:
  type: object
  additionalProperties:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/udsInfo'
    minProperties: 1
nwdafInfo:
  Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/nwdafInfo'
nefInfo:
  Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/nefInfo'
pcscfInfoList:
  type: object
  additionalProperties:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/pcscfInfo'
    minProperties: 1
hssInfoList:
  type: object
  additionalProperties:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/hssInfo'
    minProperties: 1
customInfo:
  Type: object
recoveryTime:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
nfServicePersistence:
  Type: boolean
  Default: false
nfServices:
  deprecated: true
  Type: array
  Items:
    Reference: '#/components/schemas/NFService'
  minItems: 1
  deprecated: true
nfServiceList:

```

```

    type: object
    additionalProperties:
      Reference: '#/components/schemas/NFService'
    minProperties: 1
    defaultNotificationSubscriptions:
      type: array
      items:
        Reference:
'TS29510_Nnrf_NFManagement.yaml#/components/schemas/DefaultNotificationSubscription'
      lmfInfo:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/lmfInfo'
      gmlcInfo:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/gmlcInfo'
      snpnList:
        type: array
        items:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PlmnIdNid'
        minItems: 1
      nfSetIdList:
        type: array
        items:
          Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/NfSetId'
        minItems: 1
      servingScope:
        type: array
        items:
          type: string
        minItems: 1
      lcHSupportInd:
        type: boolean
        default: false
      olcHSupportInd:
        type: boolean
        default: false
      nfSetRecoveryTimeList:
        type: object
        additionalProperties:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
        minProperties: 1
      serviceSetRecoveryTimeList:
        type: object
        additionalProperties:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
        minProperties: 1
      scpDomains:
        type: array
        items:
          type: string
        minItems: 1
      scpInfo:
        Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/ScpInfo'
  NFService:

```

description: Information of a given NF Service Instance; it is part of the NFProfile of an NF Instance discovered by the NRF

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

loadTimeStamp:

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

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'
nfServiceSetIdList:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfServiceSetId'
  minItems: 1
sNssais:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/ExtSnssai'
  minItems: 1
perPlmnSnssaiList:
  type: array
  items:
    Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/PlmnSnssai'
  minItems: 1
vendorId:
  Reference: 'TS29510_Nnrf_NFManagement.yaml#/components/schemas/VendorId'
supportedVendorSpecificFeatures:
  type: object
  additionalProperties:
    type: array
    items:
      Reference:
'TS29510_Nnrf_NFManagement.yaml#/components/schemas/VendorSpecificFeature'
    minItems: 1
    minProperties: 1
externalDocs:
  description: 3GPP TS 29.510 V15.3.0; 5G System; Network Function Repository Services;
Stage 3
  url: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.510/'
  oauth2Required:
    type: boolean
  allowedOperationsPerNfType:
    type: object
    additionalProperties:
      type: array
      items:
        type: string
      minItems: 1
      minProperties: 1
  allowedOperationsPerNfInstance:
    type: object
    additionalProperties:
      type: array
      items:
        type: string

```

```
      minItems: 1
      minProperties: 1
    PreferredSearch:
      description: Contains information on whether the returned NFProfiles match the
preferred query parameters
      type: object
      properties:
        preferredTaiMatchInd:
          type: boolean
          default: false
        preferredFullPlmnMatchInd:
          type: boolean
          default: false
        preferredApiVersionsMatchInd:
          type: boolean
        otherApiVersionsInd:
          type: boolean
        preferredLocalityMatchInd:
          type: boolean
          default: false
        otherLocalityInd:
          type: boolean
          default: false
```

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 37](#)
- [Info, on page 37](#)
- [Servers, on page 37](#)
- [Security, on page 38](#)
- [Paths, on page 38](#)
- [Components, on page 55](#)
- [External Docs, on page 95](#)

OpenAPI

OpenAPI Version: 3.0.0

Info

Version: '1.0.2'
Version: '1.1.4'
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
 Description: apiRoot as defined in subclause clause 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
```

```

    '307':
      description: Temporary Redirect
      content:
        application/json:
          schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

      headers:
        Location:
          description: 'The URI pointing to the resource located on the redirect
target NRF'
          required: true
          schema:
            type: string
    '308':
      description: Permanent Redirect
      content:
        application/json:
          schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

      headers:
        Location:
          description: 'The URI pointing to the resource located on the redirect
target NRF'
          required: 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'
options:
  summary: Discover communication options supported by NRF for NF Instances
  operationId: OptionsNFInstances
  tags:

```

```

- NF Instances (Store)
responses:
  '200':
    description: OK
    content:
      application/json:
        schema:
          Reference: '#/components/schemas/OptionsResponse'
    headers:
      Accept-Encoding:
        description: Accept-Encoding, described in IETF RFC 7694
        schema:
          type: string
  '204':
    headers:
    description: No Content
    Accept-Encoding:
      description: Accept-Encoding, described in IETF RFC 7694
      schema:
        type: string
  '307':
    description: Temporary Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
  '308':
    description: Permanent Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: 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'

```

/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'

- **name:** requester-features

in: query

description: Features supported by the NF Service Consumer

schema:

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

Responses:

'200':

Description: Expected response to a valid request

headers:

ETag:

description: Entity Tag containing a strong validator, described in IETF

RFC 7232, 2.3

schema:

type: string

Content:

Application/JSON:

Schema:

```

        Reference: '#/components/schemas/NFProfile'
    '307':
        description: Temporary Redirect
        content:
            application/json:
                schema:
                    Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

        headers:
            Location:
                description: 'The URI pointing to the resource located on the redirect
target NRF'
                required: true
                schema:
                    type: string
    '308':
        description: Permanent Redirect
        content:
            application/json:
                schema:
                    Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

        headers:
            Location:
                description: 'The URI pointing to the resource located on the redirect
target NRF'
                required: 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'
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'
- **Name:** Content-Encoding
In: header
Required/Optional: true
Description: Content-Encoding, described in IETF RFC 7231
Schema:
type: string
#- name: Accept-Encoding
in: header
description: Accept-Encoding, described in IETF RFC 7231
schema:
type: string

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'
- Content-Encoding:**
description: Content-Encoding, described in IETF RFC 7231
schema:
type: string
- ETag:**
description: Entity Tag containing a strong validator, described in IETF RFC 7232, 2.3
schema:
type: string
- '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
      Accept-Encoding:
        description: Accept-Encoding, described in IETF RFC 7694
      Schema:
        Type: string
      Content-Encoding:
        description: Content-Encoding, described in IETF RFC 7231
        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
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
  '308':
    description: Permanent Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: 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'
        #- name: Content-Encoding
        #   in: header
        #   description: Content-Encoding, described in IETF RFC 7231
        #   schema:
        #     type: string
        #- name: Accept-Encoding
        #   in: header
        #   description: Accept-Encoding, described in IETF RFC 7231
        #   schema:
        #     type: string
        #- name: If-Match
        #   in: header
        #   description: Validator for conditional requests, as described in IETF RFC
7232, 3.2
        #   schema:
        #     type: string
  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'
        headers:
          Accept-Encoding:
            description: Accept-Encoding, described in IETF RFC 7694
            Schema:
              type: string
          ETag:
            description: Entity Tag containing a strong validator, described in IETF
RFC 7232, 2.3
            schema:
              type: string
          Content-Encoding:
            description: Content-Encoding, described in IETF RFC 7231
            schema:
              type: string

  '204':
    Description: Expected response with empty body
    headers:
      Accept-Encoding:
        description: Accept-Encoding, described in IETF RFC 7694
        schema:
          type: string

  '307':
    description: Temporary Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string

  '308':
    description: Permanent Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

```

```

      headers:
        Location:
          description: 'The URI pointing to the resource located on the redirect
target NRF'
          required: 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'
    '409':
      Reference: 'TS29571_CommonData.yaml#/components/responses/409'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'
    '412':
      Reference: 'TS29571_CommonData.yaml#/components/responses/412'
    '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
    '307':
      description: Temporary Redirect
      content:

```

```

    application/json:
      schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
      '308':
        description: Permanent Redirect
        content:
          application/json:
            schema:
              Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        Reference: 'TS29571_CommonData.yaml#/components/responses/411'
      '429':
        Reference: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        Reference: 'TS29571_CommonData.yaml#/components/responses/500'
      '501':
        Reference: 'TS29571_CommonData.yaml#/components/responses/501'
      '503':
        Reference: 'TS29571_CommonData.yaml#/components/responses/503'

```

/subscriptions

Method: Post

Summary: Create a new subscription

Operation ID: CreateSubscription

Tags:

```

- Subscriptions (Collection)
parameters:
  - name: Content-Encoding
    in: header
    description: Content-Encoding, described in IETF RFC 7231
    schema:
      type: string
  - name: Accept-Encoding
    in: header
    description: Accept-Encoding, described in IETF RFC 7231
    schema:
      type: string
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}'
  '307':
    description: Temporary Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
  '308':
    description: Permanent Redirect
    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:

```

```

    description: 'The URI pointing to the resource located on the redirect
target NRF'
    required: 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}':
        Post:
          parameters:
            - name: Content-Encoding
              in: header
              description: Content-Encoding, described in IETF RFC 7231
              schema:
                type: string
          Request Body:
            Description: Notification Payload
            Content:
              Application/JSON:
                Schema:
                  Reference: '#/components/schemas/NotificationData'

  Responses:
    '204':
      Description: Expected response to a successful callback processing
      headers:
        Accept-Encoding:
          description: Accept-Encoding, described in IETF RFC 7694
          schema:
            type: string
    '307':
      description: Temporary Redirect

```

```

    content:
      application/json:
        schema:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

    headers:
      Location:
        description: 'The URI pointing to the resource located on the redirect
target NRF'
        required: true
        schema:
          type: string
    '308':
      description: Permanent Redirect
      content:
        application/json:
          schema:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

      headers:
        Location:
          description: 'The URI pointing to the resource located on the redirect
target NRF'
          required: 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'

```

/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}-)?[^-]+\$'
- **name:** Content-Encoding
in: header
description: Content-Encoding, described in IETF RFC 7231
schema:
type: string
- **name:** Accept-Encoding
in: header
description: Accept-Encoding, described in IETF RFC 7231
schema:
type: string

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'
headers:
Accept-Encoding:
description: Accept-Encoding, described in IETF RFC 7694
schema:
type: string
Content-Encoding:
description: Content-Encoding, described in IETF RFC 7231
schema:
type: string
- '204':**
Description: No Content
headers:
Accept-Encoding:

```

        description: Accept-Encoding, described in IETF RFC 7694
        schema:
          type: string
'307':
  description: Temporary Redirect
  content:
    application/json:
      schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

  headers:
    Location:
      description: 'The URI pointing to the resource located on the redirect
target NRF'
      required: true
      schema:
        type: string
'308':
  description: Permanent Redirect
  content:
    application/json:
      schema:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'

  headers:
    Location:
      description: 'The URI pointing to the resource located on the redirect
target NRF'
      required: 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'
delete:

```

/subscriptions/{subscriptionID}

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**'307':****description:** Temporary Redirect**content:****application/json:****schema:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'**headers:****Location:****description:** 'The URI pointing to the resource located on the redirect target NRF'**required:** true**schema:****type:** string**'308':****description:** Permanent Redirect**content:****application/json:****schema:****Reference:** 'TS29571_CommonData.yaml#/components/schemas/RedirectResponse'**headers:****Location:****description:** 'The URI pointing to the resource located on the redirect target NRF'**required:** 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'

```

Components

```

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

schemas:
  NFProfile:
    description: Information of an NF Instance registered in the NRF
    Type: object
    Required:
      - nfInstanceId
      - nfType
      - nfStatus
    anyOf:
      - required: [ fqdn ]
      - required: [ ipv4Addresses ]
      - required: [ ipv6Addresses ]
    Properties:
      nfInstanceId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
      nfInstanceName:
        type: string
      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
snpnList:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
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
allowedSnpons:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
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
  loadTimeStamp:
    # Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    format: date-time
    type: string
  locality:
    Type: string
  udrInfo:
    Reference: '#/components/schemas/UdrInfo'
  udrInfoList:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/UdrInfo'
    minProperties: 1
  udmInfo:
    Reference: '#/components/schemas/UdmInfo'
  udmInfoList:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/UdmInfo'
    minProperties: 1
  ausfInfo:
    Reference: '#/components/schemas/AusfInfo'
  ausfInfoList:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/AusfInfo'
    minProperties: 1
  amfInfo:
    Reference: '#/components/schemas/AmfInfo'
  amfInfoList:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/AmfInfo'
```

```
    minProperties: 1
  smfInfo:
    Reference: '#/components/schemas/SmfInfo'
    smfInfoList:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/SmfInfo'
      minProperties: 1
  upfInfo:
    Reference: '#/components/schemas/UpfInfo'
    upfInfoList:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/UpfInfo'
      minProperties: 1
  pcfInfo:
    Reference: '#/components/schemas/PcfInfo'
    pcfInfoList:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/PcfInfo'
      minProperties: 1
  bsfInfo:
    Reference: '#/components/schemas/BsfInfo'
    bsfInfoList:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/BsfInfo'
      minProperties: 1
  chfInfo:
    Reference: '#/components/schemas/ChfInfo'
    chfInfoList:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/SmfInfo'
      minProperties: 1
  nefInfo:
    Reference: '#/components/schemas/NefInfo'
  nrfInfo:
    Reference: '#/components/schemas/NrfInfo'
  udsInfo:
    Reference: '#/components/schemas/UdsInfo'
    udsInfoList:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/UdsInfo'
      minProperties: 1
  nwdafInfo:
    Reference: '#/components/schemas/NwdafInfo'
  pcscfInfoList:
    type: object
```

```
    additionalProperties:
      Reference: '#/components/schemas/PscsfInfo'
    minProperties: 1
  hssInfoList:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/HssInfo'
    minProperties: 1
  customInfo:
    Type: object
  recoveryTime:
    format: date-time
    type: string
    # Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  nfServicePersistence:
    Type: boolean
    nullable: true
    Default: false
  nfServices:
    deprecated: true
    Type: array
    Items:
      Reference: '#/components/schemas/NFService'
    minItems: 1
  nfServiceList:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/NFService'
    minProperties: 1
  nfProfileChangesSupportInd:
    type: boolean
    default: false
    writeOnly: true
  nfProfileChangesInd:
    type: boolean
    default: false
    readOnly: true
  defaultNotificationSubscriptions:
    type: array
    items:
      Reference: '#/components/schemas/DefaultNotificationSubscription'
  lmfInfo:
    Reference: '#/components/schemas/LmfInfo'
  gmlcInfo:
    Reference: '#/components/schemas/GmlcInfo'
  nfSetIdList:
    type: array
    items:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
    minItems: 1
  servingScope:
```

```

    type: array
    items:
      type: string
    minItems: 1
  lcHSupportInd:
    type: boolean
    default: false
  olcHSupportInd:
    type: boolean
    default: false
  nfSetRecoveryTimeList:
    type: object
    additionalProperties:
      format: date-time
      type: string
      # Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    minProperties: 1
  serviceSetRecoveryTimeList:
    type: object
    additionalProperties:
      format: date-time
      type: string
      # Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    minProperties: 1
  scpDomains:
    type: array
    items:
      type: string
    minItems: 1
  scpInfo:
    # Reference: '#/components/schemas/ScpInfo'
NfService:
  description: Information of a given NF Service Instance; it is part of the NFProfile
of an NF Instance
  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
allowedSnpsns:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
  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
allowedOperationsPerNFType:
  type: object
  additionalProperties:
  Type: array
  Items:
    type: string
    minItems: 1
    minProperties: 1

```

```

allowedOperationsPerNfInstance:
  type: object
  additionalProperties:
    Type: array
    Items:
      minItems: 1
      minProperties: 1
priority:
  Type: integer
  Minimum: 0
  Maximum: 65535
capacity:
  Type: integer
  Minimum: 0
  Maximum: 65535
load:
  Type: integer
  Minimum: 0
  Maximum: 100
  loadTimeStamp:
    format: date-time
    type: string
    # Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
recoveryTime:
  format: date-time
  type: string
  # Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
chfServiceInfo:
  Reference: '#/components/schemas/ChfServiceInfo'
supportedFeatures:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
nfServiceSetIdList:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfServiceSetId'
  minItems: 1
sNssais:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
  minItems: 1
perPlmnSnssaiList:
  type: array
  items:
    Reference: '#/components/schemas/PlmnSnssai'
  minItems: 1
vendorId:
  Reference: '#/components/schemas/VendorId'
supportedVendorSpecificFeatures:
  type: object
  additionalProperties:

```

```

    type: array
    items:
      Reference: '#/components/schemas/VendorSpecificFeature'
      minItems: 1
      minProperties: 1
    oauth2Required:
      type: boolean
  NFType:
    description: NF types known to NRF
    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
          - PCSCF
          - CBCF
          - HSS
          - UCMF
          - SOR_AF
          - SPAF
          - MME
          - SCSAS
          - SCEF
          - SCP
          - NSSAAF
          - ICSCF
          - SCSCF
          - DRA
      - type: string
  Fqdn:
    description: Fully Qualified Domain Name
    Type: string
  NefId:
    description: Identity of the NEF
    type: string
  IpEndPoint:
    description: IP addressing information of a given NFService; it consists on, e.g. IP
    address, TCP port, transport protocol...
    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:
  description: Information of a subscription to notifications to NRF events, included
in subscription requests and responses
  Type: object
  Required:
    - nfStatusNotificationUri
    - subscriptionId
  Properties:
    nfStatusNotificationUri:
      Type: string
    reqNfInstanceId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
    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'
      format: date-time
      type: string
    reqNotifEvents:
      Type: array
      Items:
        Reference: '#/components/schemas/NotificationEventType'
      minItems: 1
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    nid:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Nid'
    notifCondition:
      Reference: '#/components/schemas/NotifCondition'
    reqNfType:
      Reference: '#/components/schemas/NFType'
    reqNfFqdn:

```

```

Reference: '#/components/schemas/Fqdn'

reqPerPlmnSnssais:
  type: array
  items:
    Reference: '#/components/schemas/PlmnSnssai'
  minItems: 1
reqPlmnList:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
  minItems: 1
reqSnpnList:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
  minItems: 1
servingScope:
  type: array
  items:
    type: string
  minItems: 1
requesterFeatures:
  writeOnly: true
  allOf:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
nrfSupportedFeatures:
  readOnly: true
  allOf:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'

NfInstanceIdCond:
  description: Subscription to a given NF Instance Id
  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:
  description: Subscription to a set of NFs based on their support for a given Service
  Name
  Type: object
  Required:
    - serviceName
  Properties:

```

```

    serviceName:
      Reference: '#/components/schemas/ServiceName'
AmfCond:
  description: Subscription to a set of AMFs, based on AMF Set Id and/or AMF Region
  Id
  Type: object
  anyOf:
    - required: [ amfSetId ]
    - required: [ amfRegionId ]
  Properties:
    amfSetId:
      Type: string
    amfRegionId:
      Type: string
GuamiListCond:
  description: Subscription to a set of AMFs, based on their GUAMIs
  Type: object
  Required:
    - guamiList
  Properties:
    guamiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Guami'
NetworkSliceCond:
  description: Subscription to a set of NFs, based on the slices (S-NSSAI and NSI)
  they support
  Type: object
  Required:
    - snssaiList
  Properties:
    snssaiList:
      Type: array
      Items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    nsiList:
      Type: array
      Items:
        Type: string
NfGroupCond:
  description: Subscription to a set of NFs based on their Group Id
  Type: object
  Required:
    - nfType
    - nfGroupId
  Properties:
    nfType:
      Type: string
      enum:
        - UDM
        - AUSF
        - UDR
        - PCF
        - CHF

```

```

    nfGroupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
  NotifCondition:
    description: Condition (list of attributes in the NF Profile) to determine whether
a notification must be sent by NRF
    Type: object
  not:
    Required: [ monitoredAttributes, unmonitoredAttributes ]
  Properties:
    monitoredAttributes:
      Type: array
      Items:
        Type: string
      minItems: 1
    unmonitoredAttributes:
      Type: array
      Items:
        Type: string
      minItems: 1
  UdrInfo:
    description: Information of an UDR NF Instance
    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:
    description: A range of SUPIs (subscriber identities), either based on a numeric
range, or based on regular-expression matching
    Type: object
  Properties:
    start:
      Type: string

```

```

        Pattern: '[0-9]+$'
    end:
        Type: string
        Pattern: '[0-9]+$'
    Pattern:
        Type: string
    IdentityRange:
        description: A range of GPSIs (subscriber identities), either based on a numeric
range, or based on regular-expression matching
        Type: object
    Properties:
        start:
            Type: string
            Pattern: '[0-9]+$'
        end:
            Type: string
            Pattern: '[0-9]+$'
        Pattern:
            Type: string
    InternalGroupIdRange:
        description: A range of Group IDs (internal group identities), either based on a
numeric range, or based on regular-expression matching
        type: object
    properties:
        start:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
        end:
            Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
        pattern:
            type: string
DataSetId:
    description: Types of data sets stored in UDR
    anyOf:
        - type: string
        enum:
            - SUBSCRIPTION
            - POLICY
            - EXPOSURE
            - APPLICATION
        - type: string
UdmInfo:
    description: Information of an UDM NF Instance
    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}$'
    minItems: 1
  internalGroupIdentifiersRanges:
    Type: array
    Items:
      Reference: '#/components/schemas/InternalGroupIdRange'
    minItems: 1
  AusfInfo:
    description: Information of an AUSF NF Instance
    Type: object
    Properties:
      groupId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
      supiRanges:
        Type: array
        Items:
          Reference: '#/components/schemas/SupiRange'
        minItems: 1
      routingIndicators:
        Type: array
        Items:
          Type: string
          Pattern: '^[0-9]{1,4}$'
        minItems: 1
  AmfInfo:
    description: Information of an AMF NF Instance
    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:
  description: Information of an SMF NF Instance
  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
    priority:

```

```

        type: integer
        minimum: 0
        maximum: 65535
    vsmfSupportInd:
        type: boolean
        default: false
    SnssaiSmfInfoItem:
        description: Set of parameters supported by SMF for a given S-NSSAI
        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:
        description: Set of parameters supported by SMF for a given DNN
        Type: object
        Required:
            - dnn
        Properties:
            dnn:
                Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
    UpfInfo:
        description: Information of an UPF NF Instance
        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

```

```

pduSessionTypes:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
  minItems: 1
atsssCapability:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/AtsssCapability'
ueIpAddrInd:
  type: boolean
  default: false
taiList:
  type: array
  items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
  minItems: 1
wAgfInfo:
  Reference: '#/components/schemas/WAgfInfo'
tngfInfo:
  Reference: '#/components/schemas/TngfInfo'
twifInfo:
  Reference: '#/components/schemas/TwifInfo'
priority:
  type: integer
  minimum: 0
  maximum: 65535
redundantGtpu:
  type: boolean
  default: false
ipups:
  type: boolean
  default: false
dataForwarding:
  type: boolean
  default: false
SnssaiUpfInfoItem:
  description: Set of parameters supported by UPF for a given S-NSSAI
  Type: object
  Required:
    - sNssai
    - dnnUpfInfoList
  Properties:
    sNssai:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    dnnUpfInfoList:
      Type: array
      Items:
        Reference: '#/components/schemas/DnnUpfInfoItem'
      minItems: 1
    redundantTransport:
      type: boolean
      default: false
DnnUpfInfoItem:

```

```

description: Set of parameters supported by UPF for a given DNN
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
  pduSessionTypes:
    type: array
    items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
    minItems: 1
  ipv4AddressRanges:
    type: array
    items:
      Reference: '#/components/schemas/Ipv4AddressRange'
    minItems: 1
  ipv6PrefixRanges:
    type: array
    items:
      Reference: '#/components/schemas/Ipv6PrefixRange'
    minItems: 1
  dnaiNwInstanceList:
    description: Map of network instance per DNAI for the DNN, where the key of
the map is the DNAI. When present, the value of each entry of the map shall contain a N6
network instance that is configured for the DNAI indicated by the key.
    type: object
    additionalProperties:
      type: string
    minProperties: 1
InterfaceUpfInfoItem:
description: Information of a given IP interface of an UPF
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:
  description: Types of User-Plane interfaces of the UPF
  anyOf:
    - type: string
      enum:
        - N3
        - N6
        - N9
        - DATA_FORWARDING
    - type: string
WAgfInfo:
  description: Information of the W-AGF end-points
  type: object
  properties:
    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'
TngfInfo:
  description: Information of the TNGF endpoints
  type: object
  properties:
    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'
PcfInfo:
  description: Information of a PCF NF Instance
  Type: object
  Properties:
    groupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'

```

```
dnnList:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
  minItems: 1
supiRanges:
  Type: array
  Items:
    Reference: '#/components/schemas/SupiRange'
  minItems: 1
gpsiRanges:
  type: array
  items:
    Reference: '#/components/schemas/IdentityRange'
  minItems: 1
rxDiamHost:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/DiameterIdentity'
rxDiamRealm:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/DiameterIdentity'
v2xSupportInd:
  type: boolean
  default: false
BsInfo:
  description: Information of a BSF NF Instance
  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:
  description: Information of a CHF NF Instance
  Type: object
  not:
    required: [ primaryChfInstance, secondaryChfInstance ]
```

```

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
  groupId:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
  primaryChfInstance:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
  secondaryChfInstance:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
Ipv4AddressRange:
  description: Range of IPv4 addresses
  Type: object
  Properties:
    start:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
    end:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
Ipv6PrefixRange:
  description: Range of IPv6 prefixes
  Type: object
  Properties:
    start:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
    end:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
DefaultNotificationSubscription:
  description: Data structure for specifying the notifications the NF service subscribes
  by default along with callback URI
  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'

  versions:
    type: array
    items:
      type: string
    minItems: 1
    binding:
      type: string
NfSetCond:
  description: Subscription to a set of NFs based on their Set Id
  type: object
  required:
    - nfSetId
  properties:
    nfSetId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
NfServiceSetCond:
  description: Subscription to a set of NFs based on their Service Set Id
  type: object
  required:
    - nfServiceSetId
  properties:
    nfServiceSetId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfServiceSetId'
UpfCond:
  description: Subscription to a set of NF Instances (UPFs), able to serve a certain
  service area (i.e. SMF serving area or TAI list)
  type: object
  required:
    - conditionType
  properties:
    conditionType:
      type: string
      enum: [ UPF_COND ]
    smfServingArea:
      type: array
      items:
        type: string
      minItems: 1
    tailList:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Tai'
      minItems: 1
NwdafCond:
  description: Subscription to a set of NF Instances (NWDAFs), identified by Analytics
  ID(s), S-NSSAI(s) or NWDAF Serving Area information, i.e. list of TAIs for which the NWDAF
  can provide analytics.
  type: object
  required:

```

```

- conditionType
properties:
  conditionType:
    type: string
    enum: [ NWDAF_COND ]
  analyticsIds:
    type: array
    items:
      type: string
    minItems: 1
  snssaiList:
    type: array
    items:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
    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
NefCond:
  description: Subscription to a set of NF Instances (NEFs), identified by Event ID(s)
    provided by AF, S-NSSAI(s), AF Instance ID, Application Identifier, External Identifier,
    External Group Identifier, or domain name.
  type: object
  required:
    - conditionType
  properties:
    conditionType:
      type: string
      enum: [ NEF_COND ]
    afEvents:
      type: array
      items:
        Reference: 'TS29517_Naf_EventExposure.yaml#/components/schemas/AfEvent'
      minItems: 1
    snssaiList:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
      minItems: 1
    pfdData:
      Reference: '#/components/schemas/PfdData'
    gpsiRanges:
      type: array
      items:
        Reference: '#/components/schemas/IdentityRange'

```

```

        minItems: 1
    externalGroupIdentifiersRanges:
        type: array
        items:
            Reference: '#/components/schemas/IdentityRange'
        minItems: 1
    servedFqdnList:
        type: array
        items:
            type: string
        minItems: 1
    NotificationType:
        description: Types of notifications used in Default Notification URIs in the NF
        Profile of an NF Instance
        anyOf:
            - type: string
            enum:
                - N1_MESSAGES
                - N2_INFORMATION
                - LOCATION_NOTIFICATION
                - DATA_REMOVAL_NOTIFICATION
                - DATA_CHANGE_NOTIFICATION
                - LOCATION_UPDATE_NOTIFICATION
                - NSSAA_REAUTH_NOTIFICATION
                - NSSAA_REVOC_NOTIFICATION
            - type: string
    TransportProtocol:
        description: Types of transport protocol used in a given IP endpoint of an NF Service
        Instance
        anyOf:
            - type: string
            enum:
                - TCP
            - type: string
    NotificationEventType:
        description: Types of events sent in notifications from NRF to subscribed NF Instances

        anyOf:
            - type: string
            enum:
                - NF_REGISTERED
                - NF_DEREGISTERED
                - NF_PROFILE_CHANGED
            - type: string
    NotificationData:
        description: Data sent in notifications from NRF to subscribed NF Instances
        Type: object
        Required:
            - event
            - nfInstanceUri
        allof:
            #
            # Condition: If 'event' takes value 'NF_PROFILE_CHANGED',
            # then either 'nfProfile' or 'profileChanges' (but not both) must be present
            #
            - anyOf:
            - not:

```

```

    Properties:
      event:
        Type: string
        enum:
          - NF_PROFILE_CHANGED
      - oneOf:
          - required: [ nfProfile ]
          - required: [ profileChanges ]
      #
      # Condition: If 'event' takes value 'NF_REGISTERED',
      # then 'nfProfile' must be present
      #
      - 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 ]
        - not:
            Required: [ allowedPlmns ]
        - not:
            Required: [ allowedSnpsns ]
        - not:
            Required: [ allowedNfTypes ]
        - not:
            Required: [ allowedNfDomains ]
        - not:
            Required: [ allowedNssais ]
        - 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
      conditionEvent:
        Reference: '#/components/schemas/ConditionEventType'
  NFStatus:
    description: Status of a given NF Instance stored in NRF
    anyOf:
      - type: string
      enum:
        - REGISTERED
        - SUSPENDED
        - UNDISCOVERABLE
      - type: string
  NFServiceVersion:
    description: Contains the version details of an NF service
    Type: object
    Required:
      - apiVersionInUri
      - apiFullVersion
    Properties:
      apiVersionInUri:
        Type: string
      apiFullVersion:
        Type: string
      expiry:
        format: date-time
        type: string
        Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  ServiceName:
    description: Service names known to NRF
    anyOf:
      - type: string
      enum:
        - nnrf-nfm
        - nnrf-disc
        - nnrf-oauth2
        - nudm-sdm
        - nudm-uecm
        - nudm-ueau
        - nudm-ee
        - nudm-pp
        - nudm-niddau
        - nudm-mt
        - namf-comm
        - namf-evts
        - namf-mt
        - namf-loc
        - nsmf-pdusession
        - nsmf-event-exposure
        - nsmf-nidd
        - nausf-auth
        - nausf-sorprotection
        - nnef-pfdmanagement
        - nnef-smcontext

```

- nnef-eventexposure
- npcfc-am-policy-control
- npcfc-smpolicycontrol
- npcfc-policyauthorization
- npcfc-bdtpolicycontrol
- npcfc-eventexposure
- npcfc-ue-policy-control
- nsmsf-sms
- nnssf-nssselection
- nnssf-nssaiavailability
- nudr-dr
- nudr-group-id-map
- nlmf-loc
- n5g-eir-eic
- nbsf-management
- nchf-spendinglimitcontrol
- nchf-convergedcharging
- nchf-offlineonlycharging
- nnwdaf-eventssubscription
- nnwdaf-analyticsinfo
- nucmf-provisioning
- nucmf-uecapabilitymanagement
- nhss-sdm
- nhss-uecm
- nhss-ueau
- nhss-ee
- nhss-ims-sdm
- nhss-ims-uecm
- nhss-ims-ueau
- nsepp-telescopic
- nsoraf-sor
- nspaf-secured-packet
- nudsf-dr
- nnssaaf-nssaa
- type: string

N2InterfaceAmfInfo:**description:** AMF N2 interface information**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:****description:** Status of a given NF Service Instance of an NF Instance stored in NRF**anyOf:**

- type: string
- enum:**
 - REGISTERED
 - SUSPENDED

```

    - type: string
TaiRange:
  description: Range of TAIs (Tracking Area Identities)
  Type: object
  Required:
    - plmnId
    - tacRangeList
  Properties:
    plmnId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
    tacRangeList:
      Type: array
      Items:
        Reference: '#/components/schemas/TacRange'
      minItems: 1
      nid:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Nid'
TacRange:
  description: Range of TACs (Tracking Area Codes)
  Type: object
  Properties:
    start:
      Type: string
      Pattern: '^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})$'
    end:
      Type: string
      Pattern: '^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})$'
    Pattern:
      Type: string
ChfServiceInfo:
  Type: object
  not:
    Required: [ primaryChfServiceInstance, secondaryChfServiceInstance ]
  Properties:
    primaryChfServiceInstance:
      Type: string
    secondaryChfServiceInstance:
      Type: string
PlmnRange:
  description: Range of PLMN IDs
  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:
  description: Information of an NRF NF Instance, used in hierarchical NRF deployments

```

```
Type: object
Properties:
  servedUdrInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/UdrInfo'
    minProperties: 1
    servedUdrInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/UdrInfo'
      minProperties: 1
      minProperties: 1
  servedUdmInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/UdmInfo'
    minProperties: 1
    servedUdmInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/UdmInfo'
      minProperties: 1
      minProperties: 1
  servedAusfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/AusfInfo'
    minProperties: 1
    servedAusfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/AusfInfo'
      minProperties: 1
      minProperties: 1
  servedAmfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/AmfInfo'
    minProperties: 1
    servedAmfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
```

```
      Reference: '#/components/schemas/AmfInfo'
    minProperties: 1
    minProperties: 1
  servedSmfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/SmfInfo'
    minProperties: 1
    servedSmfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/SmfInfo'
      minProperties: 1
      minProperties: 1
  servedUpfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/UpfInfo'
    minProperties: 1
    servedUpfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/UpfInfo'
      minProperties: 1
      minProperties: 1
  servedPcfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/PcfInfo'
    minProperties: 1
    servedPcfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/PcfInfo'
      minProperties: 1
      minProperties: 1
  servedBsfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/BsfInfo'
    minProperties: 1
    servedBsfInfoList:
      Type: object
      additionalProperties:
        Type: object
```

```
    additionalProperties:
      Reference: '#/components/schemas/BsfInfo'
    minProperties: 1
    minProperties: 1
  servedChfInfo:
    Type: object
    additionalProperties:
      Reference: '#/components/schemas/ChfInfo'
    minProperties: 1
    servedChfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/ChfInfo'
    minProperties: 1
    minProperties: 1
  servedNefInfo:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/NefInfo'
    minProperties: 1
  servedNwdafInfo:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/NwdafInfo'
    minProperties: 1
  servedPcscfInfoList:
    Type: object
    additionalProperties:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/PcscfInfo'
    minProperties: 1
    minProperties: 1
  servedGmlcInfo:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/GmlcInfo'
    minProperties: 1
  servedLmfcInfo:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/LmfcInfo'
    minProperties: 1
  servedNfInfo:
    type: object
    additionalProperties:
      Reference: '#/components/schemas/NfInfo'
    minProperties: 1
  servedHssInfoList:
```

```

    Type: object
    additionalProperties:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/HssInfo'
    minProperties: 1
    minProperties: 1
    servedUdsfInfo:
      type: object
      additionalProperties:
        Reference: '#/components/schemas/UdsfInfo'
    minProperties: 1
    servedUdsfInfoList:
      Type: object
      additionalProperties:
        Type: object
        additionalProperties:
          Reference: '#/components/schemas/UdsfInfo'
    minProperties: 1
    minProperties: 1
    servedScpInfoList:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/ScpInfo'
    minProperties: 1
  PlmnSnssai:
    description: List of network slices (S-NSSAIs) for a given PLMN ID
    Type: object
    required:
      - plmnId
      - sNssaiList
    properties:
      plmnId:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
      sNssaiList:
        Type: array
        items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
        minItems: 1
      nid:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Nid'
  NefInfo:
    description: Information of an NEF NF Instance
    Type: object
    properties:
      nefId:
        Reference: '#/components/schemas/NefId'
      pfdData:
        Reference: '#/components/schemas/PfdData'
      afEeData:
        Reference: '#/components/schemas/AfEventExposureData'
      gpsiRanges:

```

```

    type: array
    items:
      Reference: '#/components/schemas/IdentityRange'
    minItems: 1
  externalGroupIdentifiersRanges:
    type: array
    items:
      Reference: '#/components/schemas/IdentityRange'
    minItems: 1
  servedFqdnList:
    type: array
    items:
      type: string
    minItems: 1
PfdData:
  description: List of Application IDs and/or AF IDs managed by a given NEF Instance
  Type: object
  properties:
    appIds:
      type: array
      items:
        type: string
      minItems: 1
    afIds:
      type: array
      items:
        type: string
      minItems: 1
NwdafInfo:
  description: Information of a NWDAF NF Instance
  Type: object
  properties:
    eventIds:
      type: array
      items:
        Reference: 'TS29520_Nnwdaf_AnalyticsInfo.yaml#/components/schemas/EventId'
      minItems: 1
    nwdafEvents:
      type: array
      items:
        Reference:
'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NwdafEvent'
      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
LmfInfo:
  description: Information of an LMF NF Instance
  Type: object
  properties:
    servingClientTypes:
      type: array
      items:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/ExternalClientType'

        minItems: 1
    lmfId:
      Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/LMFIdentification'
    servingAccessTypes:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
        minItems: 1
    servingAnNodeType:
      type: array
      items:
        Reference: '#/components/schemas/AnNodeType'
        minItems: 1
    servingRatTypes:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
        minItems: 1
GmlcInfo:
  description: Information of a GMLC NF Instance
  Type: object
  properties:
    servingClientTypes:
      type: array
      items:
        Reference: 'TS29572_Nlmf_Location.yaml#/components/schemas/ExternalClientType'

        minItems: 1
externalDocs:
  AfEventExposureData:
    description: AF Event Exposure data managed by a given NEF Instance
    Type: object
    required:
      - afEvents
    properties:
      afEvents:
        type: array
        items:
          Reference: 'TS29517_Naf_EventExposure.yaml#/components/schemas/AfEvent'
          minItems: 1
      afIds:

```

```

    type: array
    items:
      type: string
      minItems: 1
  appId:
    type: array
    items:
      type: string
      minItems: 1
PcscfInfo:
  description: Information of a P-CSCF NF Instance
  Type: object
  properties:
    accessType:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
      minItems: 1
    dnnList:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
      minItems: 1
    gmFqdn:
      Reference: '#/components/schemas/Fqdn'
    gmIpv4Addresses:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
    gmIpv6Addresses:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
      minItems: 1
    servedIpv4AddressRanges:
      type: array
      items:
        Reference: '#/components/schemas/Ipv4AddressRange'
      minItems: 1
    servedIpv6PrefixRanges:
      type: array
      items:
        Reference: '#/components/schemas/Ipv6PrefixRange'
      minItems: 1
NfInfo:
  description: Information of a generic NF Instance
  Type: object
  properties:
    nfType:
      Reference: '#/components/schemas/NFType'

```

```
HssInfo:
  description: Information of an HSS NF Instance
  Type: object
  properties:
    groupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    imsiRanges:
      type: array
      items:
        Reference: '#/components/schemas/ImsiRange'
      minItems: 1
    imsPrivateIdentityRanges:
      type: array
      items:
        Reference: '#/components/schemas/IdentityRange'
      minItems: 1
    imsPublicIdentityRanges:
      type: array
      items:
        Reference: '#/components/schemas/IdentityRange'
      minItems: 1
    msisdnsRanges:
      type: array
      items:
        Reference: '#/components/schemas/IdentityRange'
      minItems: 1
ImsiRange:
  description: A range of IMSIs (subscriber identities), either based on a numeric
range, or based on regular-expression matching
  Type: object
  properties:
    start:
      type: string
      pattern: '^([0-9])+$'
    end:
      type: string
      pattern: '^([0-9])+$'
      pattern:
        type: string
TwifInfo:
  description: Addressing information (IP addresses, FQDN) of the TWIF
  Type: object
  properties:
    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'
VendorId:
  description: Vendor ID of the NF Service instance (Private Enterprise Number assigned
by IANA)
  type: string
  pattern: '^[0-9]{6}$'
VendorSpecificFeature:
  description: Information about a vendor-specific feature
  Type: object
  required:
    - featureName
    - featureVersion
  properties:
    featureName:
      type: string
    featureVersion:
      type: string
AnNodeType:
  description: Access Network Node Type (gNB, ng-eNB...)
  anyOf:
    - type: string
      enum:
        - GNB
        - NG_ENB
    - type: string
UdsfInfo:
  description: Information related to UDSF
  Type: object
  properties:
    groupId:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/NfGroupId'
    supiRanges:
      type: array
      items:
        Reference: '#/components/schemas/SupiRange'
      minItems: 1
    storageIdRanges:
      description: A map (list of key-value pairs) where realmId serves as key and
each value in the map is an array of IdentityRanges. Each IdentityRange is a range of
storageIds.
      Type: object
      additionalproperties:
        type: array
        items:
          Reference: '#/components/schemas/IdentityRange'
        minItems: 1
        minProperties: 1
ScpInfo:
  description: Information of an SCP Instance
  Type: object
  properties:

```

```

    scpDomainInfoList:
      Type: object
    additionalproperties:
      items:
        Reference: '#/components/schemas/ScpDomainInfo'
      minProperties: 1
    scpPrefix:
      type: string
    scpPorts:
      Type: object
    additionalproperties:
      type: integer
      minimum: 0
      maximum: 65535
      minProperties: 1
    addressDomains:
      type: array
      items:
        type: string
      minItems: 1
    ipv4Addresses:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      minItems: 1
    ipv6Prefixes:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
      minItems: 1
    ipv4AddrRanges:
      type: array
      items:
        Reference: '#/components/schemas/Ipv4AddressRange'
      minItems: 1
    ipv6PrefixRanges:
      type: array
      items:
        Reference: '#/components/schemas/Ipv6PrefixRange'
      minItems: 1
    servedNfSetIdList:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
      minItems: 1
    remotePlmnList:
      type: array
      items:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnId'
      minItems: 1
    ipReachability:

```

```

      Reference: '#/components/schemas/IpReachability'

ScpDomainInfo:
  description: SCP Domain specific information
  Type: object
  properties:
    scpFqdn:
      Reference: '#/components/schemas/Fqdn'
    scpIpEndPoints:
      type: array
      items:
        Reference: '#/components/schemas/IpEndPoint'
      minItems: 1
    scpPrefix:
      type: string
    scpPorts:
      type: object
  additionalproperties:
    type: integer
    minimum: 0
    maximum: 65535
    minProperties: 1

description: 3GPP TS 29.510 V15.3.0; 5G System; Network Function Repository Services;
Stage 3
url: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.510/'
ScpDomainCond:
  description: Subscription to a set of NF or SCP instances belonging to certain SCP
domains
  type: object
  additionalproperties:
ScpDomains:
  type: array
  items:
    type: string
  minItems: 1

OptionsResponse:
  description: Communication options of the NRF sent in response payload of OPTIONS
method
  type: object
  additionalproperties:
supportedFeatures:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'

ConditionEventType:
  description: Indicates whether a notification is due to the NF Instance to start
or stop being part of a condition for a subscription to a set of NFs
  anyOf:
    - type: string
    enum:
      - NF_ADDED
      - NF_REMOVED
    - type: string

```

IpReachability:

description: Indicates the type(s) of IP addresses reachable via an SCP

anyOf:

- type: string
 - enum:**
 - IPV4
 - IPV6
 - IPV4V6
- type: string

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 97](#)
- [Info, on page 97](#)
- [Servers, on page 97](#)
- [Security, on page 98](#)
- [Paths, on page 98](#)
- [Components, on page 104](#)
- [External Docs, on page 142](#)

OpenAPI

OpenAPI Version: 3.0.0

Info

Description: Session Management Policy Control Service
Version: "1.1.5"
Title: Npcf_SMPolicyControl API

Servers

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

Security

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

Paths

/sm-policies

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

  responses:
    '201':
      description: Created
      content:
        application/json:
          schema:
            Reference: '#/components/schemas/SmPolicyDecision'
      headers:
        location:
          description: 'Contains the URI of the newly created resource'
          required: true
          schema:
            type: string
    '308':
      description: Permanent Redirect
      headers:
        location:
          description: 'Contains the URI of the PCF within the existing PCF binding
information stored in the BSF for the same UE ID, S-NSSAI and DNN combination '
          required: true
          schema:
            type: string
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
```

```

    Reference: 'TS29571_CommonData.yaml#/components/responses/401'
  '403':
    Reference: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    Description: Not Found
  '411':
    Reference: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    Reference: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    Reference: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
    Reference: 'TS29571_CommonData.yaml#/components/responses/429'
  '500':
    Reference: 'TS29571_CommonData.yaml#/components/responses/500'
  '503':
    Reference: 'TS29571_CommonData.yaml#/components/responses/503'
  Default:
    Reference: 'TS29571_CommonData.yaml#/components/responses/default'
callbacks:
  SmPolicyUpdateNotification:
    '{$request.body#/notificationUri}/update':
      post:
        request Body:
          required: true
          content:
            application/json:
              schema:
                Reference: '#/components/schemas/SmPolicyNotification'

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

```

```

    Reference: 'TS29571_CommonData.yaml#/components/responses/308'
  '400':
    description: Bad Request.
    content:
      application/json:
        schema:
          Reference: '#/components/schemas/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':
    post:
      request Body:
        required: true
        content:
          application/json:
            Schema:
              Reference: '#/components/schemas/TerminationNotification'

    responses:
      '204':
        description: No Content, Notification was succesful
      '307':
        Reference: 'TS29571_CommonData.yaml#/components/responses/307'
      '308':
        Reference: 'TS29571_CommonData.yaml#/components/responses/308'
      '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'

```

```

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

```

/sm-policies/{smPolicyId}

```

get:
  summary: Read an Individual SM Policy
  operationId: GetSMPolicy
  tags:
    - GetSMPolicy
    - Individual SM Policy (Document)
  parameters:
    - name: smPolicyId
      in: path
      description: Identifier of a policy association
      required: true
      schema:
        type: string
  responses:
    - GetSMPolicy
    - '200':
        description: OK. Resource representation is returned
        content:
          application/json:
            schema:
              Reference: '#/components/schemas/SmPolicyControl'
    - '307':
        Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    - '308':
        Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    - '400':
        Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    - '401':
        Reference: 'TS29571_CommonData.yaml#/components/responses/401'
    - '403':
        Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    - '404':
        Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    - '406':
        Reference: 'TS29571_CommonData.yaml#/components/responses/406'

```

```

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

```

/sm-policies/{smPolicyId}/update

```

post:
  summary: Update an existing Individual SM Policy
  operationId: UpdateSMPolicy
  tags:
    - Individual SM Policy (Document)
  requestBody:
    required: true
    content:
      application/json:
        schema:
          reference: '#/components/schemas/SmPolicyUpdateContextData'
  parameters:
    - name: smPolicyId
      in: path
      description: Identifier of a policy association
      required: true
      schema:
        type: string
  responses:
    '200':
      description: OK. Updated policies are returned
      content:
        application/json:
          schema:
            Reference: '#/components/schemas/SmPolicyDecision'
    '307':
      Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      Reference: 'TS29571_CommonData.yaml#/components/responses/401'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'

```

```

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

```

/sm-policies/{smPolicyId}/delete

```

post:
  summary: Delete an existing Individual SM Policy
  operationId: DeleteSMPolicy
  tags:
    - Individual SM Policy (Document)
  requestBody:
    required: true
  content:
    application/json:
      schema:
        Reference: '#/components/schemas/SmPolicyDeleteData'
  parameters:
    - name: smPolicyId
      in: path
      description: Identifier of a policy association
      required: true
      schema:
        type: string
  responses:
    '204':
      description: No content
    '307':
      Reference: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      Reference: 'TS29571_CommonData.yaml#/components/responses/308'
    '400':
      Reference: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      Reference: 'TS29571_CommonData.yaml#/components/responses/401'
    '403':
      Reference: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      Reference: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      Reference: 'TS29571_CommonData.yaml#/components/responses/411'

```

```

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

```

Components

```

securitySchemes:
  oAuth2ClientCredentials:
    Type: oauth2
    Flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          npcf-smpolicycontrol: Access to the Npcf_SMPolicyControl API

schemas:
  SmPolicyControl :
    Type: object
    Properties:
      context:
        Reference: '#/components/schemas/SmPolicyContextData'
      policy:
        Reference: '#/components/schemas/SmPolicyDecision'
    Required:
      - context
      - policy
  SmPolicyContextData:
    Type: object
    Properties:
      accNetChId:
        Reference: '#/components/schemas/AccNetChId'
      chargEntityAddr:
        Reference: '#/components/schemas/AccNetChargingAddress'
      gpsi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Gpsi'
      supi:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Supi'
      invalidSupi:
        Type: boolean
        Description: When this attribute is included and set to true, it indicates that
          the supi attribute contains an invalid value.This attribute shall be present if the SUPI

```

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

```

interGrpIds:
  Type: array
  Items:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/GroupId'
  minItems: 1
pduSessionId:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionId'
pduSessionType:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/PduSessionType'
chargingcharacteristics:
  Type: string
dnn:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
dnnSelectionMode:
  Reference: 'TS29502_Nsmf_PDUSession.yaml#/components/schemas/DnnSelectionMode'
notificationUri:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Uri'
accessType:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/AccessType'
ratType:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/RatType'
addAccessInfo:
  Reference: '#/components/schemas/AdditionalAccessInfo'
servingNetwork:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/PlmnIdNid'
userLocationInfo:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/UserLocation'
ueTimeZone:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/TimeZone'
pei:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Pei'
ipv4Address:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
ipv6AddressPrefix:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Prefix'
ipDomain:
  Type: string
  Description: Indicates the IPv4 address domain
subsSessAmbr:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/Ambr'
authProfIndex:
  Type: string
  Description: Indicates the DN-AAA authorization profile index
subsDefQos:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/SubscribedDefaultQos'
vplmnQos:
  Reference: 'TS29502_Nsmf_PDUSession.yaml#/components/schemas/VplmnQos'
numOfPackFilter:
  Type: integer
  Description: Contains the number of supported packet filter for signalled QoS

```

```

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

```

```

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

```

```

    minProperties: 1
    Description: Map of QoS characteristics for non standard 5QIs. This map uses the
5QI values as keys.
    qosMonDecs:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/QosMonitoringData'
      minProperties: 1
      Description: Map of QoS Monitoring data policy decisions.
      nullable: true
    reflectiveQoSTimer:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
    conds:
      Type: object
      additionalProperties:
        Reference: '#/components/schemas/ConditionData'
      minProperties: 1
      Description: A map of condition data with the content being as described in
subclause 5.6.2.9.
      nullable: true
    revalidationTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
    offline:
      Type: boolean
      Description: Indicates the offline charging is applicable to the PDU session when
it is included and set to true.
    online:
      Type: boolean
      Description: Indicates the online charging is applicable to the PDU session when
it is included and set to true.
    policyCtrlReqTriggers:
      Type: array
      Items:
        Reference: '#/components/schemas/PolicyControlRequestTrigger'
      minItems: 1
      Description: Defines the policy control request triggers subscribed by the PCF.
      nullable: true
    lastReqRuleData:
      Type: array
      Items:
        Reference: '#/components/schemas/RequestedRuleData'
      minItems: 1
      Description: Defines the last list of rule control data requested by the PCF.
    lastReqUsageData:
      Reference: '#/components/schemas/RequestedUsageData'
    praInfos:
      Type: object
      additionalProperties:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfoRm'
      minProperties: 1
      Description: Map of PRA information.
      nullable: true

```

```

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

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

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

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

```

```

afSigProtocol:
  Reference: '#/components/schemas/AfSigProtocol'
appReloc:
  Type: boolean
  Description: Indication of application relocation possibility.
refQosData:
  Type: array
  Items:
    Type: string
  minItems: 1
  maxItems: 1
  Description: A reference to the QoSData policy decision type. It is the qosId
described in subclause 5.6.2.8. (NOTE)
refAltQosParams:
  Type: array
  Items:
    Type: string
  minItems: 1
  Description: A Reference to the QoSData policy decision type for the Alternative
QoS parameter sets of the service data flow.
refTcData:
  Type: array
  Items:
    Type: string
  minItems: 1
  maxItems: 1
  Description: A reference to the TrafficControlData policy decision type. It is
the tcId described in subclause 5.6.2.10.
refChgData:
  Type: array
  Items:
    Type: string
  minItems: 1
  maxItems: 1
  Description: A reference to the ChargingData policy decision type. It is the
chgId described in subclause 5.6.2.11.
  nullable: true
refChgN3gData:
  Type: array
  Items:
    Type: string
  minItems: 1
  maxItems: 1
  Description: A reference to the ChargingData policy decision type only applicable
to Non-3GPP access if "ATSSS" feature is supported. It is the chgId described in subclause
5.6.2.11.
  nullable: true
refUmData:
  Type: array
  Items:
    Type: string
  minItems: 1
  maxItems: 1

```

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

nullable: true

refUmN3gData:

Type: array

Items:

Type: string

minItems: 1

maxItems: 1

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

nullable: true

refCondData:

Type: string

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

nullable: true

refQosMon:

Type: array

Items:

Type: string

minItems: 1

maxItems: 1

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

nullable: true

addrPreserInd:

Type: boolean

nullable: true

tscaiInputDl:

Reference:

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

tscaiInputUl:

Reference:

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

ddNotifCtrl:

Reference: '#/components/schemas/DownlinkDataNotificationControl'

ddNotifCtrl2:

Reference: '#/components/schemas/DownlinkDataNotificationControlRm'

disUeNotif:

Type: boolean

nullable: true

Required:

- pccRuleId

nullable: true

SessionRule:

Type: object

Properties:

authSessAmbr:

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

authDefQos:

Reference: '#/components/schemas/AuthorizedDefaultQos'

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

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

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

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

Required:
 - sessRuleId
nullable: true

QosData:
Type: object
Properties:

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

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

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

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

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

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

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

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

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

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

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

reflectiveQos:
Type: boolean

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

sharingKeyDl:

Type: string

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

sharingKeyUl:

Type: string

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

maxPacketLossRateDl:

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

maxPacketLossRateUl:

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

defQosFlowIndication:

Type: boolean

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

extMaxDataBurstVol:

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

packetDelayBudget:

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

packetErrorRate:

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

Required:

- qosId

nullable: true

ConditionData:

Type: object

Properties:

condId:

Type: string

Description: Uniquely identifies the condition data within a PDU session.

activationTime:

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

deactivationTime:

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

accessType:

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

ratType:

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

Required:

- condId

nullable: true

TrafficControlData:

Type: object

Properties:

tcId:

Type: string

Description: Univocally identifies the traffic control policy data within a PDU session.

flowStatus:

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

```

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

```

```

offline:
  Type: boolean
  Description: Indicates the offline charging is applicable to the PDU session when
it is included and set to true..
online:
  Type: boolean
  Description: Indicates the online charging is applicable to the PDU session when
it is included and set to true..
ratingGroup:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/RatingGroup'
reportingLevel:
  Reference: '#/components/schemas/ReportingLevel'
serviceId:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/ServiceId'
sponsorId:
  Type: string
  Description: Indicates the sponsor identity.
appSvcProvId:
  Type: string
  Description: Indicates the application service provider identity.
afChargingIdentifier:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/ChargingId'
afChargId:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/ApplicationChargingId'
Required:
  - chgId
nullable: true
UsageMonitoringData:
  Type: object
  Properties:
    umId:
      Type: string
      Description: Univocally identifies the usage monitoring policy data within a PDU
session.
    volumeThreshold:
      Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'
    volumeThresholdUplink:
      Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'
    volumeThresholdDownlink:
      Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'
    timeThreshold:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'
    monitoringTime:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTimeRm'
    nextVolThreshold:
      Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'
    nextVolThresholdUplink:
      Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'
    nextVolThresholdDownlink:
      Reference: 'TS29122_CommonData.yaml#/components/schemas/VolumeRm'
    nextTimeThreshold:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'

```

```

inactivityTime:
  Reference: 'TS29571_CommonData.yaml#/components/schemas/DurationSecRm'
exUsagePccRuleIds:
  Type: array
  Items:
    Type: string
  minItems: 1
  Description: Contains the PCC rule identifier(s) which corresponding service data
  flow(s) shall be excluded from PDU Session usage monitoring. It is only included in the
  UsageMonitoringData instance for session level usage monitoring.
  nullable: true
Required:
  - umId
nullable: true
RedirectInformation:
Type: object
Properties:
  redirectEnabled:
    Type: boolean
    Description: Indicates the redirect is enable.
  redirectAddressType:
    Reference: '#/components/schemas/RedirectAddressType'
  redirectServerAddress:
    Type: string
    Description: Indicates the address of the redirect server. If "redirectAddressType"
    attribute indicates the IPV4_ADDR, the encoding is the same as the Ipv4Addr data type
    defined in 3GPP TS 29.571.If "redirectAddressType" attribute indicates the IPV6_ADDR, the
    encoding is the same as the Ipv6Addr data type defined in 3GPP TS 29.571.If
    "redirectAddressType" attribute indicates the URL or SIP_URI, the encoding is the same as
    the Uri data type defined in 3GPP TS 29.571.
FlowInformation:
Type: object
Properties:
  flowDescription:
    Reference: '#/components/schemas/FlowDescription'
  ethFlowDescription:
    Reference:
    'TS29514_Npcf_PolicyAuthorization.yaml#/components/schemas/EthFlowDescription'
  packFiltId:
    Type: string
    Description: An identifier of packet filter.
  packetFilterUsage:
    Type: boolean
    Description: The packet shall be sent to the UE.
  tosTrafficClass:
    Type: string
    Description: Contains the Ipv4 Type-of-Service and mask field or the Ipv6
    Traffic-Class field and mask field.
    nullable: true
  spi:
    Type: string
    Description: the security parameter index of the IPSec packet.
    nullable: true

```

```

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

```

```

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

```

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

```

    Type: string
    Description: Indicates the DN-AAA authorization profile index
  subsDefQos:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/SubscribedDefaultQos'
  vplmnQos:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/VplmnQos'
  numOfPackFilter:
    Type: integer
    Description: Contains the number of supported packet filter for signalled QoS
rules.
  accuUsageReports:
    Type: array
    Items:
      Reference: '#/components/schemas/AccuUsageReport'
    minItems: 1
    Description: Contains the usage report
  3gppPsDataOffStatus:
    Type: boolean
    Description: If it is included and set to true, the 3GPP PS Data Off is activated
by the UE.
  appDetectionInfos:
    Type: array
    Items:
      Reference: '#/components/schemas/AppDetectionInfo'
    minItems: 1
    Description: Report the start/stop of the application traffic and detected SDF
descriptions if applicable.
  ruleReports:
    Type: array
    Items:
      Reference: '#/components/schemas/RuleReport'
    minItems: 1
    Description: Used to report the PCC rule failure.
  qncReports:
    Type: array
    Items:
      Reference: '#/components/schemas/QosNotificationControlInfo'
    minItems: 1
    Description: QoS Notification Control information.
  qosMonReports:
    Type: array
    Items:
      Reference: '#/components/schemas/QosMonitoringReport'
    minItems: 1
  userLocationInfoTime:
    Reference: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
  repPraInfos:
    Type: object
    additionalProperties:
      Reference: 'TS29571_CommonData.yaml#/components/schemas/PresenceInfo'
    minProperties: 1
    Description: Reports the changes of presence reporting area.

```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```

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

```

Type: object

Properties:

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: This boolean indicates whether requested usage data applies to all usage monitoring data instances. When it's not included, it means requested usage data shall only apply to the usage monitoring data instances referenced by the refUmIds attribute.

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

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

```

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

gbrUl:

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

gbrDl:

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

Required:

- 5qi

QosNotificationControlInfo:

Type: object

Properties:

refPccRuleIds:

Type: array

Items:

Type: string

minItems: 1

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

notifType:

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

contVer:

Reference:

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

altQosParamId:

Type: string

Required:

- refPccRuleIds
- notifType

PartialSuccessReport:

Type: object

Properties:

failureCause:

Type: string

Description: Application error cause specific to this report.

ruleReports:

Type: array

Items:

Reference: '#/components/schemas/RuleReport'

```

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

```

```

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

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

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

```

```

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

```

```

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

```

```

    properties:
      portManCont:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
      portNum:
        Reference: '#/components/schemas/TsnPortNumber'
    required:
      - portManCont
      - portNum
  BridgeManagementContainer:
    type: object
    properties:
      bridgeManCont:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Bytes'
    required:
      - bridgeManCont
  IpMulticastAddressInfo:
    type: object
    properties:
      srcIpv4Addr:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      ipv4MulAddr:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv4Addr'
      srcIpv6Addr:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
      ipv6MulAddr:
        Reference: 'TS29571_CommonData.yaml#/components/schemas/Ipv6Addr'
  DownlinkDataNotificationControl:
    description: Contains the downlink data notification control information.
    type: object
    properties:
      notifCtrlInds:
        type: array
        items:
          Reference: '#/components/schemas/NotificationControlIndication'
        minItems: 1
      typesOfNotif:
        type: array
        items:
          Reference: 'TS29571_CommonData.yaml#/components/schemas/DlDataDeliveryStatus'
        minItems: 1
  DownlinkDataNotificationControlRm:
    description: this data type is defined in the same way as the
    DownlinkDataNotificationControl data type, but with the OpenAPI nullable property set to
    true.
    type: object
    properties:
      notifCtrlInds:
        type: array
        items:
          Reference: '#/components/schemas/NotificationControlIndication'
        minItems: 1
      nullable: true

```

```

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

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

```

- NULL

ReportingLevel:**anyOf:**

- type: string

enum:

- SER_ID_LEVEL
- RAT_GR_LEVEL
- SPON_CON_LEVEL
- \$ref: 'TS29571_CommonData.yaml#/components/schemas/NullValue'
- type: string

Description:

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

Description:

Possible values are

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

MeteringMethod:**anyOf:**

- type: string

enum:

- DURATION
- VOLUME
- DURATION_VOLUME
- EVENT
- \$ref: 'TS29571_CommonData.yaml#/components/schemas/NullValue'
- type: string

Description:

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

Description:

Possible values are

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

PolicyControlRequestTrigger:**anyOf:**

- type: string

enum:

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

- QOS_NOTIF
 - NO_CREDIT
 - REALLO_OF_CREDIT
 - PRA_CH
 - SAREA_CH
 - SCNN_CH
 - RE_TIMEOUT
 - RES_RELEASE
 - SUCC_RES_ALLO
 - RAT_TY_CH
 - REF_QOS_IND_CH
 - AUTH_PROF_CH
 - QOS_MONITORING
 - SCELL_CH
 - EPS_FALLBACK
 - MA_PDU
 - TSN_BRIDGE_INFO
 - 5G_RG_JOIN
 - 5G_RG_LEAVE
 - DDN_FAILURE
 - DDN_DELIVERY_STATUS
 - GROUP_ID_LIST_CHG
 - DDN_FAILURE_CANCELLATION
 - DDN_DELIVERY_STATUS_CANCELLATION
 - VPLMN_QOS_CH
- type: string

Description:

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

Description:

Possible values are

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

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

RequestedRuleDataType:

anyOf:

- type: string

enum:

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

- type: string

Description:

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

Description:

Possible values are

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

RuleStatus:

anyOf:

- type: string

enum:

- ACTIVE
- INACTIVE

- type: string

Description:

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

Description:

Possible values are

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

FailureCode:**anyOf:**

- type: string

enum:

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

Description:

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

Description:

Possible values are

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

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

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

AfSigProtocol:

anyOf:

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

Description:

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

Description:

Possible values are

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

RuleOperation:

anyOf:

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

- MODIFY_PCC_RULE_AND_DELETE_PACKET_FILTERS
- MODIFY_PCC_RULE_WITHOUT_MODIFY_PACKET_FILTERS

- type: string

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

description:
Possible values are

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

RedirectAddressType:

anyOf:

- type: string

enum:

- IPV4_ADDR
- IPV6_ADDR
- URL
- SIP_URI

- type: string

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

description:
Possible values are

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

PacketFilterOperation:

anyOf:

- type: string

enum:

- DELETION
- ADDITION
- MODIFICATION

- type: string

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

Description:
Possible values are

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

RedirectAddressType:**anyOf:**

- type: string

enum:

- IPV4_ADDR
- IPV6_ADDR
- URL
- SIP_URI

- type: string

Description:

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

Description:

Possible values are

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

QosFlowUsage:**anyOf:**

- type: string

enum:

- GENERAL
- IMS_SIG

- type: string

Description:

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

Description:

Possible values are

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

FailureCause:**anyOf:**

- type: string

enum:

- PCC_RULE_EVENT
- PCC_QOS_FLOW_EVENT
- RULE_PERMANENT_ERROR
- RULE_TEMPORARY_ERROR
- POL_DEC_ERROR

- type: string

CreditManagementStatus:**anyOf:**

- type: string

enum:

- END_USER_SER_DENIED
- CREDIT_CTRL_NOT_APP
- AUTH_REJECTED
- USER_UNKNOWN
- RATING_FAILED

- type: string

SessionRuleFailureCode:**anyOf:**

- type: string

enum:

```

- NF_MAL
- RES_LIM
- UNSUCC_QOS_VAL
- UE_STA_SUSP
- type: string
description:
  This string provides forward-compatibility with future
  extensions to the enumeration but is not used to encode
  content defined in the present version of this API.
description:
  Possible values are
  - NF_MAL: Indicate that the PCC rule could not be successfully installed (for
  those provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced
  (for those already successfully installed) due to SMF/UPF malfunction.
  - RES_LIM: Indicate that the PCC rule could not be successfully installed (for
  those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for
  those already successfully installed) due to a limitation of resources at the SMF/UPF.
  - UNSUCC_QOS_VAL: indicate that the QoS validation has failed.
  - UE_STA_SUSP: Indicates that the UE is in suspend state.
SteeringFunctionality:
anyOf:
- type: string
enum:
- MPTCP
- ATSSS_LL
- type: string
description:
  This string provides forward-compatibility with future
  extensions to the enumeration but is not used to encode
  content defined in the present version of this API.
description:
  Possible values are
  - MPTCP: Indicates that PCF authorizes the MPTCP functionality to support traffic
  steering, switching and splitting.
  - ATSSS_LL: Indicates that PCF authorizes the ATSSS-LL functionality to support
  traffic steering, switching and splitting.
SteerModeValue:
anyOf:
- type: string
enum:
- ACTIVE_STANDBY
- LOAD_BALANCING
- SMALLEST_DELAY
- PRIORITY_BASED
- type: string
MulticastAccessControl:
anyOf:
- type: string
enum:
- ALLOWED
- NOT_ALLOWED
- type: string
RequestedQosMonitoringParameter:
anyOf:
- type: string
enum:
- DOWNLINK
- UPLINK
- ROUND_TRIP
- type: string

```

```

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

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

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

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

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

NetLocAccessSupport:
  anyOf:
  - type: string
    enum:
      - ANR_NOT_SUPPORTED
      - TZR_NOT_SUPPORTED
      - LOC_NOT_SUPPORTED
  - type: string
  description:
    This string provides forward-compatibility with future
    extensions to the enumeration but is not used to encode
    content defined in the present version of this API.
  description:
    Possible values are
    - ANR_NOT_SUPPORTED: Indicates that the access network does not support the report
    of access network information.
    - TZR_NOT_SUPPORTED: Indicates that the access network does not support the report
    of UE time zone.
    - LOC_NOT_SUPPORTED: Indicates that the access network does not support the report

```

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

External Docs

Description: 3GPP TS 29.512 V16.9.0; 5G System; Session Management Policy Control Service.

URL: 'http://www.3gpp.org/ftp/Specs/archive/29_series/29.512/'



CHAPTER 5

Nchf_SpendingLimitControl

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

- [OpenAPI, on page 143](#)
- [Info, on page 143](#)
- [Servers, on page 143](#)
- [Security, on page 144](#)
- [Paths, on page 144](#)
- [Components, on page 148](#)
- [External Docs, on page 150](#)

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

- [OpenAPI, on page 151](#)
- [Info, on page 151](#)
- [Servers, on page 151](#)
- [Security, on page 151](#)
- [Paths, on page 152](#)
- [Components, on page 153](#)

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



CHAPTER 7

Requests, Responses and Schemas

- [ChangeCredentialUsernameRequest](#), on page 155
- [CreateSubscriberRequest](#), on page 155
- [DeleteSubscriberRequest](#), on page 156
- [GetSubscriberRequest](#), on page 157

ChangeCredentialUsernameRequest

This API changes the networkId (username) for a subscriber's credential..

Schema

```
<ChangeCredentialUsernameRequest>
  <audit> AuditType </audit> [0..1] ?
  <networkId> xsd:string </networkId> [1] ?
  <oldNetworkId> xsd:string </oldNetworkId> [1]
</ChangeCredentialUsernameRequest>
```

Example

```
<se:Envelope xmlns:se="http://schemas.xmlsoap.org/soap/envelope/">
  <se:Body>
    <ChangeCredentialUsernameRequest xmlns="http://broadhop.com/unifiedapi/soap/types">
      <audit>
        <id>username</id>
        <comment>comment</comment>
      </audit>
      <networkId>newUniqueIdentifier</networkId>
      <oldNetworkId>uniqueIdentifier</oldNetworkId>
    </ChangeCredentialUsernameRequest>
  </se:Body>
</se:Envelope>
```

CreateSubscriberRequest

This API creates a subscriber in the USuM database. It also allows provisioning initial quota/balance using the CreateBalance element.

Schema

```
<CreateSubscriberRequest>
  <audit> AuditType </audit> [0..1] ?
  <subscriber> SubscriberType </subscriber> [1]
</CreateSubscriberRequest>
```

Example**Minimun Required Fields**

```
<se:Envelope xmlns:se="http://schemas.xmlsoap.org/soap/envelope/">
  <se:Body>
    <CreateSubscriberRequest xmlns="http://broadhop.com/unifiedapi/soap/types">
      <audit>
        <id>username</id>
        <comment>comment</comment>
      </audit>
      <subscriber>
        <credential>
          <networkId>uniqueIdentifier</networkId>
          <password>password</password>
        </credential>
        <status>ACTIVE</status>
      </subscriber>
    </CreateSubscriberRequest>
  </se:Body>
</se:Envelope>
```

DeleteSubscriberRequest

This API deletes a subscriber from the USuM database.

Schema

```
<DeleteSubscriberRequest>
  <audit> AuditType </audit> [0..1] ?
  <networkId> xsd:string </networkId> [1] ?
  <hardDelete> xsd:boolean </hardDelete> [0..1] ?
</DeleteSubscriberRequest>
```

Example

```
<se:Envelope xmlns:se="http://schemas.xmlsoap.org/soap/envelope/">
  <se:Body>
    <DeleteSubscriberRequest xmlns="http://broadhop.com/unifiedapi/soap/types">
      <audit>
        <id>username</id>
        <comment>comment</comment>
      </audit>
      <networkId>uniqueIdentifier</networkId>
      <hardDelete>>false</hardDelete>
    </DeleteSubscriberRequest>
  </se:Body>
</se:Envelope>
```

GetSubscriberRequest

This API retrieves a subscriber from the USuM database.



Note

Success Response

The GetSubscriber API returns error code 0 (success) even if no subscriber is found.

Schema

```
<GetSubscriberRequest>
  <audit> AuditType </audit> [0..1] ?
  <networkId> xsd:string </networkId> [1] ?
  <returnSessions> xsd:boolean </returnSessions> [0..1] ?
  <returnBalances> xsd:boolean </returnBalances> [0..1] ?
  <includeExpiredData> xsd:boolean </includeExpiredData> [0..1] ?
  <excludeReservationsFromCreditTotal> xsd:boolean </excludeReservationsFromCreditTotal>
[0..1] ?
</GetSubscriberRequest>
```

Example

```
<se:Envelope xmlns:se="http://schemas.xmlsoap.org/soap/envelope/">
  <se:Body>
    <GetSubscriberRequest xmlns="http://broadhop.com/unifiedapi/soap/types">
      <audit>
        <id>username</id>
        <comment>comment</comment>
      </audit>
      <networkId>uniqueIdentifier</networkId>
      <returnSessions>false</returnSessions>
      <returnBalances>true</returnBalances>
      <includeExpiredData>false</includeExpiredData>
      <excludeReservationsFromCreditTotal>true</excludeReservationsFromCreditTotal>
    </GetSubscriberRequest>
  </se:Body>
</se:Envelope>
```

