



## **Ultra Cloud Core 5G Policy Control Function, Release 2020.02 - API Reference**

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## CONTENTS

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### PREFACE

<a href="#">About this Guide</a>	<a href="#">xi</a>
<a href="#">Conventions Used</a>	<a href="#">xi</a>
<a href="#">Contacting Customer Support</a>	<a href="#">xii</a>

---

### CHAPTER 1

<a href="#">Npcf_AMPolicyControl</a>	<a href="#">1</a>
<a href="#">OpenAPI</a>	<a href="#">1</a>
<a href="#">info</a>	<a href="#">1</a>
<a href="#">externalDocs</a>	<a href="#">1</a>
<a href="#">servers</a>	<a href="#">1</a>
<a href="#">security</a>	<a href="#">2</a>
<a href="#">paths</a>	<a href="#">2</a>
<a href="#">/policies</a>	<a href="#">2</a>
<a href="#">/policies/{polAssoId}</a>	<a href="#">4</a>
<a href="#">/policies/{polAssoId}/update</a>	<a href="#">6</a>
<a href="#">components</a>	<a href="#">7</a>
<a href="#">securitySchemes</a>	<a href="#">7</a>
<a href="#">oAuth2ClientCredentials</a>	<a href="#">7</a>
<a href="#">schemas</a>	<a href="#">7</a>
<a href="#">PolicyAssociation</a>	<a href="#">7</a>
<a href="#">PolicyAssociationRequest</a>	<a href="#">8</a>
<a href="#">PolicyAssociationUpdateRequest</a>	<a href="#">9</a>
<a href="#">PolicyUpdate</a>	<a href="#">10</a>
<a href="#">TerminationNotification</a>	<a href="#">11</a>
<a href="#">RequestTrigger</a>	<a href="#">11</a>
<a href="#">PolicyAssociationReleaseCause</a>	<a href="#">12</a>

CHAPTER 2

**Nnrf\_NFDiscovery 13**

- OpenAPI 13
- info 13
- servers 13
- security 14
- paths 14
  - /nf-instances 14
- components 21
  - securitySchemes 21
    - oAuth2ClientCredentials 21
  - schemas 22
    - SearchResult 22
    - NFProfile 22
    - NFService 24
- externalDocs 26

CHAPTER 3

**Nnrf\_NFManagement 27**

- OpenAPI 27
- info 27
- servers 27
- security 28
- paths 28
  - /nf-instances 28
  - /nf-instances/{nfInstanceID} 29
  - /subscriptions 33
  - /subscriptions/{subscriptionID} 34
- components 37
  - securitySchemes 37
    - oAuth2ClientCredentials 37
  - schemas 37
    - NFProfile 37
    - NFService 40
    - NFType 43

Fqdn	43
IpEndPoint	43
SubscriptionData	44
NfInstanceIdCond	45
NfTypeCond	45
ServiceNameCond	45
AmfCond	46
GuamiListCond	46
NetworkSliceCond	46
NfGroupCond	47
NotifCondition	47
UdrInfo	47
SupiRange	48
IdentityRange	49
DataSetId	49
UdmInfo	49
AusfInfo	50
AmfInfo	50
SmfInfo	52
SnsaiSmfInfoItem	52
DnnSmfInfoItem	53
UpfInfo	53
SnsaiUpfInfoItem	54
DnnUpfInfoItem	54
InterfaceUpfInfoItem	54
UPInterfaceType	55
PcfInfo	55
BsfInfo	56
ChfInfo	57
Ipv4AddressRange	57
Ipv6PrefixRange	57
DefaultNotificationSubscription	58
NotificationType	58
TransportProtocol	58

- NotificationEventType 58
- NotificationData 59
- NFStatus 60
- NFServiceVersion 61
- ServiceName 61
- N2InterfaceAmfInfo 62
- NFServiceStatus 62
- TaiRange 63
- TacRange 63
- ChfServiceInfo 63
- PlmnRange 64
- NrfInfo 64
- externalDocs 65

**CHAPTER 4**

**Npcf\_SMPolicyControl 67**

- OpenAPI 67
- info 67
- externalDocs 67
- security 67
- servers 68
- paths 68
  - /sm-policies 68
  - /sm-policies/{smPolicyId} 71
  - /sm-policies/{smPolicyId}/update 71
  - /sm-policies/{smPolicyId}/delete 72
- components 73
  - securitySchemes 73
    - oAuth2ClientCredentials 73
- schemas 74
  - SmPolicyControl 74
  - SmPolicyContextData 74
  - SmPolicyDecision 76
  - SmPolicyNotification 79
  - PccRule 80

SessionRule	81
QosData	82
ConditionData	84
TrafficControlData	84
ChargingData	85
UsageMonitoringData	86
RedirectInformation	87
FlowInformation	87
SmPolicyDeleteData	88
QosCharacteristics	89
ChargingInformation	90
AccuUsageReport	90
SmPolicyUpdateContextData	91
UpPathChgEvent	93
TerminationNotification	94
AccNetChId	94
AccNetChargingAddress	95
RequestedRuleData	95
RequestedUsageData	96
UeCampingRep	96
RuleReport	97
RanNasRelCause	98
UeInitiatedResourceRequest	98
PacketFilterInfo	99
RequestedQos	99
QosNotificationControlInfo	100
PartialSuccessReport	100
AuthorizedDefaultQos	101
ErrorReport	101
5GSmCause	102
PacketFilterContent	102
FlowDescription	102
FlowDirection	102
FlowDirectionRm	102

- ReportingLevel 103
- MeteringMethod 103
- PolicyControlRequestTrigger 104
- RequestedRuleDataType 105
- RuleStatus 105
- FailureCode 105
- AfSigProtocol 107
- PacketFilterOperation 107
- RedirectAddressType 107
- QosFlowUsage 108

---

**CHAPTER 5**

**Nchf\_SpendingLimitControl 109**

- OpenAPI 109
- info 109
- externalDocs 109
- security 109
- servers 110
- paths 110
  - /subscriptions 110
  - /subscriptions/{subscriptionId} 112
- components 114
  - securitySchemes 114
    - oAuth2ClientCredentials 114
  - schemas 114
    - SpendingLimitContext 114
    - SpendingLimitStatus 115
    - PolicyCounterInfo 115
    - PendingPolicyCounterStatus 116
    - PolicyCounterId 116
    - SubscriptionTerminationInfo 116
    - TerminationCause 117

---

**CHAPTER 6**

**Npcf\_SMPolicyControl 119**

- OpenAPI 119



info	119
externalDocs	119
servers	119
security	120
paths	120
/npcf/callbacks/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}/notify	120
/npcf/callbacks/nchf-spendinglimitcontrol/v1/subscriptions/{subscriptionId}/terminate	121
components	122
securitySchemes	122
oAuth2ClientCredentials	122





## About this Guide

This preface describes the *Ultra Cloud Core 5G Policy Control Function, Release 2020.02 - API Reference*, the document conventions, and the customer support details.

- [Conventions Used, on page xi](#)
- [Contacting Customer Support, on page xii](#)

## Conventions Used

The following tables describe the conventions used throughout this documentation.

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

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

Typeface Conventions	Description
Text represented as a <b>command</b> <i>variable</i>	This typeface represents a variable that is part of a command, for example: <b>show card</b> <i>slot_number</i> <i>slot_number</i> is a variable representing the desired chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example: Click the <b>File</b> menu, then click <b>New</b>

## Contacting Customer Support

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

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

- [OpenAPI, on page 1](#)
- [info, on page 1](#)
- [externalDocs, 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

### externalDocs

**Description:** 3GPP TS 29.507 V15.2.0; 5G System; Access and Mobility Policy Control Service.

**URL:** 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.507/'

### 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' 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' No Content, Notification was successful

'307' 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': No Content, Notification was successful

'307': 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: polAssold

**In:** path

**Description:** Identifier of a policy association

**Required/Optional:** true

**Schema:**

**Type:** string

**Responses:**



'200' OK. Resource representation is returned

**Content:**

**Application/JSON:**

**Schema:**

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

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'401': Reference 'TS29571\_CommonData.yaml#/components/responses/401'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'406': Reference 'TS29571\_CommonData.yaml#/components/responses/406'

'429': Reference 'TS29571\_CommonData.yaml#/components/responses/429'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

**delete:**

**Parameters:**

- name: polAssoid

**In:** path

**Description:** Identifier of a policy association

**Required/Optional:** true

**Schema:**

**Type:** string

**Responses:**

'204' No Content. Resource was successfully 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: polAssold

**In:** path

**Description:** Identifier of a policy association

**Required/Optional:** true

**Schema:**

**Type:** string

**Responses:**

'200': 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

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.

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

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.

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 13](#)
- [info, on page 13](#)
- [servers, on page 13](#)
- [security, on page 14](#)
- [paths, on page 14](#)
- [components, on page 21](#)
- [externalDocs, on page 26](#)

## OpenAPI

OpenAPI Version: 3.0.0

## info

**Version:** '1.0.0'

**Title:** 'NRF NFDiscovery Service'

**Description:** 'NRF NFDiscovery Service'

## servers

**URL:** '{apiRoot}/nnrf-disc/v1'

**Variables:**

**API Root:**

**Default:** https://example.com

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

## security

- {}
- oAuth2ClientCredentials:
- nnrf-disc

## paths

### /nf-instances

**get:**

**Summary:** Search a collection of NF Instances

**Operation ID:** SearchNFInstances

**Tags:**

- NF Instances (Store)

**Parameters:**

- name: target-nf-type

**In:** query

**Description:** Type of the target NF

**Required/Optional:** true

**Schema:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NFType'

- name: requester-nf-type

**In:** query

**Description:** Type of the requester NF

**Required/Optional:** true

**Schema:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NFType'

- name: service-names

**In:** query

**Description:** Name of the service offered by the NF

**Schema:**

**Type:** array

**items:**

**Type:** string

**minItems:** 1

**style:** form

**explode:** false

- name: requester-nf-instance-fqdn

**In:** query

**Description:** FQDN of the requester NF

**Schema:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/Fqdn'

- name: target-plmn-list

**In:** query

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

**Content:**

**Application/JSON:**

**Schema:**

**Type:** array

**items:**

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

**minItems:** 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'

**minItems:** 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: hnr-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'

**minItems:** 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

**minItems:** 1

**style:** form

**explode:** false

- name: smf-serving-area

**In:** query

**Schema:**

**Type:** string

- name: tai

**In:** query

**Description:** Tracking Area Identity

**Content:**

**Application/JSON:**

**Schema:**

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

- name: amf-region-id

**In:** query

**Description:** AMF Region Identity

**Schema:**

**Type:** string

- name: amf-set-id

**In:** query

**Description:** AMF Set Identity

**Schema:**

**Type:** string

- name: guami

**In:** query

**Description:** Guami used to search for an appropriate AMF

**Schema:**

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

- name: supi

**In:** query

**Description:** SUPI of the user

**Schema:**

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

- name: ue-ipv4-address

**In:** query

**Description:** IPv4 address of the UE

**Schema:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

- name: ip-domain

**In:** query

**Description:** IP domain of the UE, which supported by BSF

**Schema:**

**Type:** string

- name: ue-ipv6-prefix

**In:** query

**Description:** IPv6 prefix of the UE

**Schema:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

- name: pgw-ind

**In:** query

**Description:** Combined PGW-C and SMF or a standalone SMF

**Schema:**

**Type:** boolean

- name: pgw

**In:** query

**Description:** PGW FQDN of a combined PGW-C and SMF

**Schema:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/Fqdn'

- name: gpsi

**In:** query

**Description:** GPSI of the user

**Schema:**

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

- name: external-group-identity

**In:** query

**Description:** external group identifier of the user

**Schema:**

**Type:** string

- name: data-set

**In:** query

**Description:** data set supported by the NF

**Schema:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/DataSetId'

- name: routing-indicator

**In:** query

**Description:** routing indicator in SUCI

**Schema:**

**Type:** string

**pattern:** '^[0-9]{1,4}\$'

- name: group-id-list

**In:** query

**Description:** Group IDs of the NFs being discovered

**Schema:**

**Type:** array

**items:**

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

**minItems:** 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'

**minItems:** 1

**style:** form

**explode:** false

- name: supported-features

**In:** query

**Description:** Features required to be supported by the target NF

**Schema:**

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

- name: upf-iwk-eps-ind

**In:** query

**Description:** UPF supporting interworking with EPS or not

**Schema:**

**Type:** boolean

- name: chf-supported-plmn

**In:** query

**Description:** PLMN ID supported by a CHF

**Content:**

**Application/JSON:**

**Schema:**

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

- name: preferred-locality

**In:** query

**Description:** preferred target NF location

**Schema:**

**Type:** string

- name: access-type

**In:** query

**Description:** AccessType supported by the target NF

**Schema:**

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

- name: If-None-Match

**In:** header

**Description:** Validator for conditional requests, as described in IETF RFC 7232, 3.2

**Schema:**

**Type:** string

**Responses:**

'200' Expected response to a valid request

**Content:**

**Application/JSON:**

**Schema:**

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



**Headers:****Cache-Control:**

**Description:** Cache-Control containing max-age, described in IETF RFC 7234, 5.2

**Schema:**

**Type:** string

**ETag:**

**Description:** Entity Tag containing a strong validator, described in IETF RFC 7232, 2.3

**Schema:**

**Type:** string

'307' Temporary Redirect

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'501': Reference 'TS29571\_CommonData.yaml#/components/responses/501'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## components

### securitySchemes

#### oAuth2ClientCredentials

**Type:** oauth2

**Flows:**

**clientCredentials:**

**tokenUrl:** '/oauth2/token'

**scopes:**

**nnrf-disc:** Access to the Nnrf\_NFDIScovery API

## schemas

### SearchResult

**Type:** object

**Required:**

- nfInstances

**Properties:**

**validityPeriod:**

**Type:** integer

**nfInstances:**

**Type:** array

**Items:**

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

### NFProfile

**Type:** object

**Required:**

- nfInstanceId

- nfType

- nfStatus

**Properties:**

**nfInstanceId:**

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

**nfType:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NFType'

**nfStatus:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NFStatus'

**plmnList:**

**Type:** array

**Items:**

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

**minItems:** 1

**sNssais:**

**Type:** array

**Items:**

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

**minItems:** 1

**nsiList:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**fqdn:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/Fqdn'

**ipv4Addresses:**

**Type:** array

**Items:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**minItems:** 1

**ipv6Addresses:**

**Type:** array

**Items:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

**minItems:** 1

**capacity:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**load:**

**Type:** integer

**Minimum:** 0

**Maximum:** 100

**locality:**

**Type:** string

**priority:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**udrInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/UdrInfo'

**udmInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/UdmInfo'

**ausfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/AusfInfo'

**amfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/AmfInfo'

**smfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/SmfInfo'

**upfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/UpfInfo'

**pcfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/PcfInfo'

**bsfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/BsfInfo'

**chfInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ChfInfo'

**customInfo:**

**Type:** object

**recoveryTime:**

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

**nfServicePersistence:**

**Type:** boolean

**Default:** false

**nfServices:**

**Type:** array

**Items:**

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

**minItems:** 1

## NFService

**Type:** object

**Required:**

- serviceInstanceId

- serviceName

- versions
- scheme
- nfServiceStatus

**Properties:****serviceInstanceId:**

Type: string

**serviceName:**

Reference: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ServiceName'

**versions:**

Type: array

**Items:**

Reference: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NFServiceVersion'

**minItems: 1****scheme:**

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

**nfServiceStatus:**

Reference: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NFServiceStatus'

**fqdn:**

Reference: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/Fqdn'

**ipEndpoints:**

Type: array

**Items:**

Reference: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/IpEndPoint'

**minItems: 1****apiPrefix:**

Type: string

**defaultNotificationSubscriptions:**

Type: array

**Items:**

Reference: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/DefaultNotificationSubscription'

**minItems: 1****capacity:**

Type: integer

Minimum: 0

**Maximum:** 65535

**load:**

**Type:** integer

**Minimum:** 0

**Maximum:** 100

**priority:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**recoveryTime:**

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

**chfServiceInfo:**

**Reference:** 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/ChfServiceInfo'

**supportedFeatures:**

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

## externalDocs

**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 27](#)
- [info, on page 27](#)
- [servers, on page 27](#)
- [security, on page 28](#)
- [paths, on page 28](#)
- [components, on page 37](#)
- [externalDocs, on page 65](#)

## OpenAPI

OpenAPI Version: 3.0.0

## info

**Version:** '1.0.0'

**Title:** 'NRF NFManagement Service'

**Description:** 'NRF NFManagement Service'

## servers

**URL:** '{apiRoot}/nnrf-nfm/v1'

**Variables:**

**API Root:**

**Default:** https://example.com

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

## security

- {}
- oAuth2ClientCredentials:
- nnrf-nfm

## paths

### /nf-instances

**get:**

**Summary:** Retrieves a collection of NF Instances

**Operation ID:** GetNFInstances

**Tags:**

- NF Instances (Store)

**Parameters:**

- name: nf-type

**In:** query

**Description:** Type of NF

**Required/Optional:** false

**Schema:**

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

- name: limit

**In:** query

**Description:** How many items to return at one time

**Required/Optional:** false

**Schema:**

**Type:** integer

**Responses:**

'200' Expected response to a valid request

**Content:**

application/3gppHal+json:

**Schema:**

**Type:** object



**Properties:**

\_links:

**Type:** object

**Description:** 'List of the URI of NF instances. It has two members whose names are item and self. The item one contains an array of URIs.'

**additionalProperties:**

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

**minProperties:** 1

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'501': Reference 'TS29571\_CommonData.yaml#/components/responses/501'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## /nf-instances/{nfInstanceId}

**get:**

**Summary:** Read the profile of a given NF Instance

**Operation ID:** GetNFInstance

**Tags:**

- NF Instance ID (Document)

**Parameters:**

- name: nfInstanceId

**In:** path

**Description:** Unique ID of the NF Instance

**Required/Optional:** true

**Schema:**

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

**Responses:**

'200' Expected response to a valid request

**Content:**

**Application/JSON:****Schema:****Reference:** '#/components/schemas/NFProfile'

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'501': Reference 'TS29571\_CommonData.yaml#/components/responses/501'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'**put:****Summary:** Register a new NF Instance**Operation ID:** RegisterNFInstance**Tags:**

- NF Instance ID (Document)

**Parameters:**

- name: nfInstanceID

**In:** path**Required/Optional:** true**Description:** Unique ID of the NF Instance to register**Schema:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'**Request Body:****Content:****Application/JSON:****Schema:****Reference:** '#/components/schemas/NFProfile'**Required/Optional:** true**Responses:**

'200' OK (Profile Replacement)

**Content:**

**Application/JSON:****Schema:****Reference:** '#/components/schemas/NFProfile'

'201' Expected response to a valid request

**Content:****Application/JSON:****Schema:****Reference:** '#/components/schemas/NFProfile'**Headers:****Location:****Description:** 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/nnrf-nfm/v1/nf-instances/{nfInstanceId}'**Required/Optional:** true**Schema:****Type:** string**'400':** Reference 'TS29571\_CommonData.yaml#/components/responses/400'**'403':** Reference 'TS29571\_CommonData.yaml#/components/responses/403'**'404':** Reference 'TS29571\_CommonData.yaml#/components/responses/404'**'411':** Reference 'TS29571\_CommonData.yaml#/components/responses/411'**'413':** Reference 'TS29571\_CommonData.yaml#/components/responses/413'**'415':** Reference 'TS29571\_CommonData.yaml#/components/responses/415'**'500':** Reference 'TS29571\_CommonData.yaml#/components/responses/500'**'501':** Reference 'TS29571\_CommonData.yaml#/components/responses/501'**'503':** Reference 'TS29571\_CommonData.yaml#/components/responses/503'**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'**patch:****Summary:** Update NF Instance profile**Operation ID:** UpdateNFInstance**Tags:**

- NF Instance ID (Document)

**Parameters:**

- name: nfInstanceId

**In:** path**Required/Optional:** true**Description:** Unique ID of the NF Instance to update

**Schema:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/NfInstanceId'**Request Body:****Content:**

application/json-patch+json:

**Schema:****Type:** array**items:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/PatchItem'**minItems:** 1**Required/Optional:** true**Responses:**

'200' Expected response to a valid request

**Content:****Application/JSON:****Schema:****Reference:** '#/components/schemas/NFProfile'

'204' Expected response with empty body

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'501': Reference 'TS29571\_CommonData.yaml#/components/responses/501'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'**delete:****Summary:** Deregisters a given NF Instance**Operation ID:** DeregisterNFInstance**Tags:**

- NF Instance ID (Document)

**Parameters:**

- name: nfInstanceID

**In:** path

**Required/Optional:** true

**Description:** Unique ID of the NF Instance to deregister

**Schema:**

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

**Responses:**

'204' Expected response to a successful deregistration

## /subscriptions

**Method:** Post

**Summary:** Create a new subscription

**Operation ID:** CreateSubscription

**Tags:**

- Subscriptions (Collection)

**Request Body:**

**Content:**

**Application/JSON:**

**Schema:**

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

**Required/Optional:** true

**Responses:**

'201' Expected response to a valid request

**Content:**

**Application/JSON:**

**Schema:**

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

**Headers:**

**Location:**

**Description:** 'Contains the URI of the newly created resource, according to the structure: {apiRoot}/nnrf-nfm/v1/subscriptions/{subscriptionId}'

**Required/Optional:** true

**Schema:**

**Type:** string

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'501': Reference 'TS29571\_CommonData.yaml#/components/responses/501'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

**Callbacks:**

**onNFStatusEvent:**

'{\$request.body#/nfStatusNotificationUri}':

**Method:** Post

**Request Body:**

**Description:** Notification Payload

**Content:**

**Application/JSON:**

**Schema:**

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

**Responses:**

'204' Expected response to a successful callback processing

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'501': Reference 'TS29571\_CommonData.yaml#/components/responses/501'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## /subscriptions/{subscriptionID}

**patch:**

**Summary:** Updates a subscription

**Operation ID:** UpdateSubscription

**Tags:**

- Subscription ID (Document)

**Parameters:**

- name: subscriptionID

**In:** path

**Required/Optional:** true

**Description:** Unique ID of the subscription to update

**Schema:**

**Type:** string

**pattern:** '^([0-9]{5,6}-)?[^\-]+\$'

**Request Body:**

**Content:**

application/json-patch+json:

**Schema:**

**Type:** array

**items:**

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

**Required/Optional:** true

**Responses:**

'200' Expected response to a valid request

**Content:**

**Application/JSON:**

**Schema:**

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

'204' No Content

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

**'501'**: Reference 'TS29571\_CommonData.yaml#/components/responses/501'

**'503'**: Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default**: Reference 'TS29571\_CommonData.yaml#/components/responses/default'

**delete**:

**Summary**: Deletes a subscription

**Operation ID**: RemoveSubscription

**Tags**:

- Subscription ID (Document)

**Parameters**:

- name: subscriptionID

**In**: path

**Required/Optional**: true

**Description**: Unique ID of the subscription to remove

**Schema**:

**Type**: string

**pattern**: '^([0-9]{5,6}-)?[^-]+\$'

**Responses**:

**'204'** Expected response to a successful subscription removal

**'400'**: Reference 'TS29571\_CommonData.yaml#/components/responses/400'

**'403'**: Reference 'TS29571\_CommonData.yaml#/components/responses/403'

**'404'**: Reference 'TS29571\_CommonData.yaml#/components/responses/404'

**'411'**: Reference 'TS29571\_CommonData.yaml#/components/responses/411'

**'413'**: Reference 'TS29571\_CommonData.yaml#/components/responses/413'

**'415'**: Reference 'TS29571\_CommonData.yaml#/components/responses/415'

**'500'**: Reference 'TS29571\_CommonData.yaml#/components/responses/500'

**'501'**: Reference 'TS29571\_CommonData.yaml#/components/responses/501'

**'503'**: Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default**: Reference 'TS29571\_CommonData.yaml#/components/responses/default'



# components

## securitySchemes

### oAuth2ClientCredentials

**Type:** oauth2

**Flows:**

**clientCredentials:**

**tokenUrl:** '/oauth2/token'

**scopes:**

**nrf-nfm:** Access to the Nnrf\_NFManagement API

## schemas

### NFProfile

**Type:** object

**Required:**

- nfInstanceId

- nfType

- nfStatus

**anyOf:**

- required: [ fqdn ]

- required: [ ipv4Addresses ]

- required: [ ipv6Addresses ]

**Properties:**

**nfInstanceId:**

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

**nfType:**

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

**nfStatus:**

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

**heartBeatTimer:**

**Type:** integer

**plmnList:**

**Type:** array

**Items:**

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

**minItems:** 1

**sNssais:**

**Type:** array

**Items:**

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

**minItems:** 1

**nsiList:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**fqdn:**

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

**interPlmnFqdn:**

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

**ipv4Addresses:**

**Type:** array

**Items:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**minItems:** 1

**ipv6Addresses:**

**Type:** array

**Items:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

**minItems:** 1

**allowedPlmns:**

**Type:** array

**Items:**

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

**minItems:** 1

**allowedNfTypes:**

**Type:** array

**Items:**

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

**minItems:** 1

**allowedNfDomains:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**allowedNssais:**

**Type:** array

**Items:**

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

**minItems:** 1

**priority:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**capacity:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**load:**

**Type:** integer

**Minimum:** 0

**Maximum:** 100

**locality:**

**Type:** string

**udrInfo:**

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

**udmInfo:**

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

**ausfInfo:**

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

**amfInfo:****Reference:** '#/components/schemas/AmfInfo'**smfInfo:****Reference:** '#/components/schemas/SmfInfo'**upfInfo:****Reference:** '#/components/schemas/UpfInfo'**pcfInfo:****Reference:** '#/components/schemas/PcfInfo'**bsfInfo:****Reference:** '#/components/schemas/BsfInfo'**chfInfo:****Reference:** '#/components/schemas/ChfInfo'**nrfInfo:****Reference:** '#/components/schemas/NrfInfo'**customInfo:****Type:** object**recoveryTime:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DateTime'**nfServicePersistence:****Type:** boolean**Default:** false**nfServices:****Type:** array**Items:****Reference:** '#/components/schemas/NFService'**minItems:** 1

## NFService

**Type:** object**Required:**

- serviceInstanceId
- serviceName
- versions
- scheme
- nfServiceStatus

**Properties:****serviceInstanceId:**

Type: string

**serviceName:**

Reference: '#/components/schemas/ServiceName'

**versions:**

Type: array

**Items:**

Reference: '#/components/schemas/NFServiceVersion'

minItems: 1

**scheme:**

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

**nfServiceStatus:**

Reference: '#/components/schemas/NFServiceStatus'

**fqdn:**

Reference: '#/components/schemas/Fqdn'

**interPlmnFqdn:**

Reference: '#/components/schemas/Fqdn'

**ipEndPoints:**

Type: array

**Items:**

Reference: '#/components/schemas/IpEndPoint'

minItems: 1

**apiPrefix:**

Type: string

**defaultNotificationSubscriptions:**

Type: array

**Items:**

Reference: '#/components/schemas/DefaultNotificationSubscription'

minItems: 1

**allowedPlmns:**

Type: array

**Items:**

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

**minItems:** 1

**allowedNfTypes:**

**Type:** array

**Items:**

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

**minItems:** 1

**allowedNfDomains:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**allowedNssais:**

**Type:** array

**Items:**

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

**minItems:** 1

**priority:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**capacity:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

**load:**

**Type:** integer

**Minimum:** 0

**Maximum:** 100

**recoveryTime:**

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

**chfServiceInfo:**

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

**supportedFeatures:**

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

## NFType

**anyOf:**

- type: string

**enum:**

- NRF
  - UDM
  - AMF
  - SMF
  - AUSF
  - NEF
  - PCF
  - SMSF
  - NSSF
  - UDR
  - LMF
  - GMLC
  - 5G\_EIR
  - SEPP
  - UPF
  - N3IWF
  - AF
  - UDSF
  - BSF
  - CHF
  - NWDAF
- type: string

## Fqdn

**Type:** string

## IpEndPoint

**Type:** object

**Properties:****ipv4Address:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**ipv6Address:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

**transport:**

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

**port:**

**Type:** integer

**Minimum:** 0

**Maximum:** 65535

## SubscriptionData

**Type:** object

**Required:**

- nfStatusNotificationUri
- subscriptionId

**Properties:**

**nfStatusNotificationUri:**

**Type:** string

**subscrCond:**

**oneOf:**

- \$ref: '#/components/schemas/NfInstanceIdCond'
- \$ref: '#/components/schemas/NfTypeCond'
- \$ref: '#/components/schemas/ServiceNameCond'
- \$ref: '#/components/schemas/AmfCond'
- \$ref: '#/components/schemas/GuamiListCond'
- \$ref: '#/components/schemas/NetworkSliceCond'
- \$ref: '#/components/schemas/NfGroupCond'

**subscriptionId:**

**Type:** string

**Pattern:** '^[0-9]{5,6}-?[^-]+\$'

**readOnly:** true

**validityTime:**

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

**reqNotifEvents:**

**Type:** array

**Items:**



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

**minItems:** 1

**plmnId:**

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

**notifCondition:**

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

**reqNFType:**

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

**reqNfFqdn:**

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

## NfInstanceIdCond

**Type:** object

**Required:**

- nfInstanceId

**Properties:**

**nfInstanceId:**

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

## NfTypeCond

**Type:** object

**Required:**

- nfType

**Properties:**

**nfType:**

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

## ServiceNameCond

**Type:** object

**Required:**

- serviceName

**Properties:**

**serviceName:**

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

## AmfCond

**Type:** object

**anyOf:**

- required: [ amfSetId ]

- required: [ amfRegionId ]

**Properties:**

**amfSetId:**

**Type:** string

**amfRegionId:**

**Type:** string

## GuamiListCond

**Type:** object

**Required:**

- guamiList

**Properties:**

**guamiList:**

**Type:** array

**Items:**

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

## NetworkSliceCond

**Type:** object

**Required:**

- snssaiList

**Properties:**

**snssaiList:**

**Type:** array

**Items:**

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

**nsiList:**

**Type:** array

**Items:**

**Type:** string

## NfGroupCond

**Type:** object

**Required:**

- nfType
- nfGroupId

**Properties:**

**nfType:**

**Type:** string

**enum:**

- UDM
- AUSF
- UDR

**nfGroupId:**

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

## NotifCondition

**Type:** object

**not:**

**Required:** [ monitoredAttributes, unmonitoredAttributes ]

**Properties:**

**monitoredAttributes:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**unmonitoredAttributes:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

## UdrInfo

**Type:** object

**Properties:**

**groupId:**

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

**supiRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**gpsiRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**externalGroupIdentifiersRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**supportedDataSets:**

**Type:** array

**Items:**

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

**minItems:** 1

## SupiRange

**Type:** object

**Properties:**

**start:**

**Type:** string

**Pattern:** '^[0-9]+\$'

**end:**

**Type:** string

**Pattern:** '^[0-9]+\$'

**Pattern:**

**Type:** string

## IdentityRange

**Type:** object

**Properties:**

**start:**

**Type:** string

**Pattern:** '^[0-9]+\$'

**end:**

**Type:** string

**Pattern:** '^[0-9]+\$'

**Pattern:**

**Type:** string

## DataSetId

**anyOf:**

- type: string

**enum:**

- SUBSCRIPTION

- POLICY

- EXPOSURE

- APPLICATION

- type: string

## UdmlInfo

**Type:** object

**Properties:**

**groupId:**

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

**supiRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**gpsiRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**externalGroupIdentifiersRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**routingIndicators:**

**Type:** array

**Items:**

**Type:** string

**Pattern:** '^[0-9]{1,4}\$'

**minItems:** 1

## AusfInfo

**Type:** object

**Properties:**

**groupId:**

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

**supiRanges:**

**Type:** array

**Items:**

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

**minItems:** 1

**routingIndicators:**

**Type:** array

**Items:**

**Type:** string

**Pattern:** '^[0-9]{1,4}\$'

**minItems:** 1

## AmfInfo

**Type:** object

**Required:**

- amfSetId

- amfRegionId

- guamiList

**Properties:**

**amfSetId:**

Type: string

**amfRegionId:**

Type: string

**guamiList:**

Type: array

**Items:**

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

minItems: 1

**taiList:**

Type: array

**Items:**

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

minItems: 1

**taiRangeList:**

Type: array

**Items:**

Reference: '#/components/schemas/TaiRange'

minItems: 1

**backupInfoAmfFailure:**

Type: array

**Items:**

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

minItems: 1

**backupInfoAmfRemoval:**

Type: array

**Items:**

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

minItems: 1

**n2InterfaceAmfInfo:**

Reference: '#/components/schemas/N2InterfaceAmfInfo'

## SmfInfo

**Type:** object

**Required:**

- sNssaiSmfInfoList

**Properties:**

**sNssaiSmfInfoList:**

**Type:** array

**Items:**

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

**minItems:** 1

**taiList:**

**Type:** array

**Items:**

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

**minItems:** 1

**taiRangeList:**

**Type:** array

**Items:**

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

**minItems:** 1

**pgwFqdn:**

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

**accessType:**

**Type:** array

**Items:**

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

**minItems:** 1

## SnssaiSmfInfoItem

**Type:** object

**Required:**

- sNssai

- dnnSmfInfoList

**Properties:**



**sNssai:**

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

**dnnSmfInfoList:**

**Type:** array

**Items:**

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

**minItems:** 1

## DnnSmfInfoItem

**Type:** object

**Required:**

- dnn

**Properties:**

**dnn:**

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

## UpfInfo

**Type:** object

**Required:**

- sNssaiUpfInfoList

**Properties:**

**sNssaiUpfInfoList:**

**Type:** array

**Items:**

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

**minItems:** 1

**smfServingArea:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**interfaceUpfInfoList:**

**Type:** array

**Items:**

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

**minItems:** 1  
**iwkEpsInd:**  
**Type:** boolean  
**Default:** false

## SnsaiUpfInfoItem

**Type:** object  
**Required:**  
- sNssai  
- dnnUpfInfoList  
**Properties:**  
**sNssai:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Snsai'  
**dnnUpfInfoList:**  
**Type:** array  
**Items:**  
**Reference:** '#/components/schemas/DnnUpfInfoItem'  
**minItems:** 1

## DnnUpfInfoItem

**Type:** object  
**Required:**  
- dnn  
**Properties:**  
**dnn:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Dnn'  
**dnaiList:**  
**Type:** array  
**Items:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Dnai'  
**minItems:** 1

## InterfaceUpfInfoItem

**Type:** object  
**Required:**  
- interfaceType

**Properties:****interfaceType:****Reference:** '#/components/schemas/UPInterfaceType'**ipv4EndpointAddresses:****Type:** array**Items:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'**minItems:** 1**ipv6EndpointAddresses:****Type:** array**Items:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'**minItems:** 1**endpointFqdn:****Reference:** '#/components/schemas/Fqdn'**networkInstance:****Type:** string

## UPInterfaceType

**anyOf:**

- type: string

**enum:**

- N3

- N6

- N9

- type: string

## PcflInfo

**Type:** object**Properties:****dnnList:****Type:** array**Items:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Dnn'**minItems:** 1

**supiRanges:****Type:** array**Items:****Reference:** '#/components/schemas/SupiRange'**minItems:** 1**rxDiamHost:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DiameterIdentity'**rxDiamRealm:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DiameterIdentity'

## BsflInfo

**Type:** object**Properties:****dnnList:****Type:** array**Items:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Dnn'**minItems:** 1**ipDomainList:****Type:** array**Items:****Type:** string**minItems:** 1**ipv4AddressRanges:****Type:** array**Items:****Reference:** '#/components/schemas/Ipv4AddressRange'**minItems:** 1**ipv6PrefixRanges:****Type:** array**Items:****Reference:** '#/components/schemas/Ipv6PrefixRange'**minItems:** 1

## ChfInfo

Type: object

Properties:

**supiRangeList:**

Type: array

Items:

Reference: '#/components/schemas/SupiRange'

minItems: 1

**gpsiRangeList:**

Type: array

Items:

Reference: '#/components/schemas/IdentityRange'

minItems: 1

**plmnRangeList:**

Type: array

Items:

Reference: '#/components/schemas/PlmnRange'

minItems: 1

## Ipv4AddressRange

Type: object

Properties:

**start:**

Reference: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**end:**

Reference: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

## Ipv6PrefixRange

Type: object

Properties:

**start:**

Reference: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

**end:**

Reference: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

## DefaultNotificationSubscription

**Type:** object

**Required:**

- notificationType
- callbackUri

**Properties:**

**notificationType:**

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

**callbackUri:**

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

**n1MessageClass:**

**Reference:** 'TS29518\_Namf\_Communication.yaml#/components/schemas/N1MessageClass'

**n2InformationClass:**

**Reference:** 'TS29518\_Namf\_Communication.yaml#/components/schemas/N2InformationClass'

## NotificationType

**anyOf:**

- type: string

**enum:**

- N1\_MESSAGES
- N2\_INFORMATION
- LOCATION\_NOTIFICATION
- DATA\_REMOVAL\_NOTIFICATION
- DATA\_CHANGE\_NOTIFICATION
- type: string

## TransportProtocol

**anyOf:**

- type: string

**enum:**

- TCP
- type: string

## NotificationEventType

**anyOf:**

- type: string
- enum:**
- NF\_REGISTERED
- NF\_DEREGISTERED
- NF\_PROFILE\_CHANGED
- type: string

## NotificationData

**Type:** object

**Required:**

- event
- nfInstanceUri

**allOf:**

- anyOf:
- not:

**Properties:**

**event:**

**Type:** string

**enum:**

- NF\_PROFILE\_CHANGED
- oneOf:
- required: [ nfProfile ]
- required: [ profileChanges ]
- anyOf:
- not:

**Properties:**

**event:**

**Type:** string

**enum:**

- NF\_REGISTERED
- required: [ nfProfile ]

**Properties:**

**event:**

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

**nfInstanceUri:**

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

**nfProfile:**

**allOf:**

- \$ref: '#/components/schemas/NFProfile'

- not:

**Required:** [ interPlmnFqdn ]

- properties:

**nfServices:**

**Type:** array

**Items:**

**allOf:**

- \$ref: '#/components/schemas/NFService'

- not:

**Required:** [ interPlmnFqdn ]

- not:

**Required:** [ allowedPlmns ]

- not:

**Required:** [ allowedNfTypes ]

- not:

**Required:** [ allowedNfDomains ]

- not:

**Required:** [ allowedNssais ]

**profileChanges:**

**Type:** array

**Items:**

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

**minItems:** 1

## NFStatus

**anyOf:**

- type: string

**enum:**

- REGISTERED

- SUSPENDED

- type: string



## NFServiceVersion

**Type:** object

**Required:**

- apiVersionInUri
- apiFullVersion

**Properties:**

**apiVersionInUri:**

**Type:** string

**apiFullVersion:**

**Type:** string

**expiry:**

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

## ServiceName

**anyOf:**

- type: string

**enum:**

- nnrf-nfm
- nnrf-disc
- nudm-sdm
- nudm-uecm
- nudm-ueau
- nudm-ee
- nudm-pp
- namf-comm
- namf-evts
- namf-mt
- namf-loc
- nsmf-pdusession
- nsmf-event-exposure
- nausf-auth
- nausf-sorprotection
- nnef-pfdmanagement
- npcfc-am-policy-control
- npcfc-smpolicycontrol

- npcf-policyauthorization
- npcf-bdtpolicycontrol
- npcf-eventexposure
- npcf-ue-policy-control
- nsmsf-sms
- mnssf-nssselection
- mnssf-nssaiavailability
- nudr-dr
- nlmf-loc
- n5g-eir-eic
- nbsf-management
- nchf-spendinglimitcontrol
- nchf-convergedcharging
- nnwdaf-eventssubscription
- nnwdaf-analyticsinfo
- type: string

## N2InterfaceAmfInfo

**Type:** object

**Properties:**

**ipv4EndpointAddress:**

**Type:** array

**Items:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**minItems:** 1

**ipv6EndpointAddress:**

**Type:** array

**Items:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

**minItems:** 1

**amfName:**

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

## NFServiceStatus

**anyOf:**

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

## TaiRange

**Type:** object  
**Required:**  
 - plmnId  
 - tacRangeList  
**Properties:**  
**plmnId:**  
**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/PlmnId'  
**tacRangeList:**  
**Type:** array  
**Items:**  
**Reference:** '#/components/schemas/TacRange'  
**minItems:** 1

## TacRange

**Type:** object  
**Properties:**  
**start:**  
**Type:** string  
**Pattern:** '^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})\$'  
**end:**  
**Type:** string  
**Pattern:** '^([A-Fa-f0-9]{4}|[A-Fa-f0-9]{6})\$'  
**Pattern:**  
**Type:** string

## ChfServiceInfo

**Type:** object  
**not:**  
**Required:** [ primaryChfServiceInstance, secondaryChfServiceInstance ]

**Properties:****primaryChfServiceInstance:****Type:** string**secondaryChfServiceInstance:****Type:** string**PlmnRange****Type:** object**Properties:****start:****Type:** string**Pattern:** '^[0-9]{3}[0-9]{2,3}\$'**end:****Type:** string**Pattern:** '^[0-9]{3}[0-9]{2,3}\$'**Pattern:****Type:** string**NrfInfo****Type:** object**Properties:****servedUdrInfo:****Type:** object**additionalProperties:****Reference:** '#/components/schemas/UdrInfo'**minProperties:** 1**servedUdmInfo:****Type:** object**additionalProperties:****Reference:** '#/components/schemas/UdmInfo'**minProperties:** 1**servedAusfInfo:****Type:** object**additionalProperties:****Reference:** '#/components/schemas/AusfInfo'

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

## externalDocs

**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

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

- [OpenAPI, on page 67](#)
- [info, on page 67](#)
- [externalDocs, on page 67](#)
- [security, on page 67](#)
- [servers, on page 68](#)
- [paths, on page 68](#)
- [components, on page 73](#)

## OpenAPI

OpenAPI Version: 3.0.0

## info

**Description:** Session Management Policy Control Service

**Version:** "1.0.0"

**Title:** Npcf\_SMPolicyControl

## externalDocs

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

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

## security

- {}
- oAuth2Clientcredentials:

- npcf-smpolicycontrol

## servers

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

**Variables:**

**API Root:**

**Default:** https://example.com

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

## paths

### /sm-policies

**Method:** Post

**Request Body:**

**Required/Optional:** true

**Content:**

**Application/JSON:**

**Schema:**

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

**Responses:**

'201' Created

**Content:**

**Application/JSON:**

**Schema:**

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

**Headers:**

**Location:**

**Description:** 'Contains the URI of the newly created resource'

**Required/Optional:** true

**Schema:**

**Type:** string

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'401': Reference 'TS29571\_CommonData.yaml#/components/responses/401'



'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'  
'404' Not Found  
'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'  
'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'  
'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'  
'429': Reference 'TS29571\_CommonData.yaml#/components/responses/429'  
'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'  
'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'  
**default**: Reference 'TS29571\_CommonData.yaml#/components/responses/default'

**Callbacks:****SmPolicyUpdateNotification:**

'{\$request.body#/notificationUri}/update':

**Method:** Post

**Request Body:**

**Required/Optional:** true

**Content:**

**Application/JSON:**

**Schema:**

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

**Responses:**

'200' OK. The current applicable values corresponding to the policy control request trigger is reported

**Content:**

**Application/JSON:**

**Schema:**

**oneOf:**

- \$ref: '#/components/schemas/UeCampingRep'

- type: array

**items:**

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

**minItems:** 1

'204' No Content, Notification was successful

**Content:**

**Application/JSON:**

**Schema:**

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

'400' Bad Request.

**Content:**

**Application/JSON:**

**Schema:**

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

'401': Reference 'TS29571\_CommonData.yaml#/components/responses/401'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'429': Reference 'TS29571\_CommonData.yaml#/components/responses/429'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

**SmPolicyControlTerminationRequestNotification:**

'{\$request.body#/notificationUri}/terminate':

**Method:** Post

**Request Body:**

**Required/Optional:** true

**Content:**

**Application/JSON:**

**Schema:**

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

**Responses:**

'204' No Content, Notification was successful

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'401': Reference 'TS29571\_CommonData.yaml#/components/responses/401'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'429': Reference 'TS29571\_CommonData.yaml#/components/responses/429'  
 '500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'  
 '503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'  
**default**: Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## /sm-policies/{smPolicyId}

**get:**

**Parameters:**

- name: smPolicyId

**In:** path

**Description:** Identifier of a policy association

**Required/Optional:** true

**Schema:**

**Type:** string

**Responses:**

'200' OK. Resource representation is returned

**Content:**

**Application/JSON:**

**Schema:**

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

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'  
 '401': Reference 'TS29571\_CommonData.yaml#/components/responses/401'  
 '403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'  
 '404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'  
 '406': Reference 'TS29571\_CommonData.yaml#/components/responses/406'  
 '429': Reference 'TS29571\_CommonData.yaml#/components/responses/429'  
 '500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'  
 '503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'  
**default**: Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## /sm-policies/{smPolicyId}/update

**Method:** Post

**Request Body:**

**Required/Optional:** true

**Content:**

**Application/JSON:**

**Schema:**

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

**Parameters:**

- name: smPolicyId

**In:** path

**Description:** Identifier of a policy association

**Required/Optional:** true

**Schema:**

**Type:** string

**Responses:**

'200': OK. Updated policies are returned

**Content:**

**Application/JSON:**

**Schema:**

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

'400': Reference 'TS29571\_CommonData.yaml#/components/responses/400'

'401': Reference 'TS29571\_CommonData.yaml#/components/responses/401'

'403': Reference 'TS29571\_CommonData.yaml#/components/responses/403'

'404': Reference 'TS29571\_CommonData.yaml#/components/responses/404'

'411': Reference 'TS29571\_CommonData.yaml#/components/responses/411'

'413': Reference 'TS29571\_CommonData.yaml#/components/responses/413'

'415': Reference 'TS29571\_CommonData.yaml#/components/responses/415'

'429': Reference 'TS29571\_CommonData.yaml#/components/responses/429'

'500': Reference 'TS29571\_CommonData.yaml#/components/responses/500'

'503': Reference 'TS29571\_CommonData.yaml#/components/responses/503'

**default:** Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## /sm-policies/{smPolicyId}/delete

**Method:** Post

**Request Body:**

**Required/Optional:** true

**Content:**

**Application/JSON:****Schema:****Reference:** '#/components/schemas/SmPolicyDeleteData'**Parameters:**

- name: smPolicyId

**In:** path**Description:** Identifier of a policy association**Required/Optional:** true**Schema:****Type:** string**Responses:****'204'** No content**'400'**: Reference 'TS29571\_CommonData.yaml#/components/responses/400'**'401'**: Reference 'TS29571\_CommonData.yaml#/components/responses/401'**'403'**: Reference 'TS29571\_CommonData.yaml#/components/responses/403'**'404'**: Reference 'TS29571\_CommonData.yaml#/components/responses/404'**'411'**: Reference 'TS29571\_CommonData.yaml#/components/responses/411'**'413'**: Reference 'TS29571\_CommonData.yaml#/components/responses/413'**'415'**: Reference 'TS29571\_CommonData.yaml#/components/responses/415'**'429'**: Reference 'TS29571\_CommonData.yaml#/components/responses/429'**'500'**: Reference 'TS29571\_CommonData.yaml#/components/responses/500'**'503'**: Reference 'TS29571\_CommonData.yaml#/components/responses/503'**default**: Reference 'TS29571\_CommonData.yaml#/components/responses/default'

## components

### securitySchemes

#### oAuth2ClientCredentials

**Type:** oauth2**Flows:****clientCredentials:****tokenUrl:** '{nrfApiRoot}/oauth2/token'**scopes:**

**npcf-smpolicycontrol:** Access to the Npcf\_SMPolicyControl API

## schemas

### SmPolicyControl

**Type:** object

**Properties:**

**context:**

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

**policy:**

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

**Required:**

- context
- policy

### SmPolicyContextData

**Type:** object

**Properties:**

**accNetChId:**

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

**chargEntityAddr:**

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

**gpsi:**

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

**supi:**

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

**interGrpIds:**

**Type:** array

**Items:**

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

**minItems:** 1

**pduSessionId:**

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

**pduSessionType:**

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

**chargingcharacteristics:****Type:** string**dnn:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Dnn'**notificationUri:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Uri'**accessType:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/AccessType'**ratType:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/RatType'**servingNetwork:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/NetworkId'**userLocationInfo:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'**ueTimeZone:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'**pei:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Pei'**ipv4Address:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'**ipv6AddressPrefix:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'**ipDomain:****Type:** string**Description:** Indicates the IPv4 address domain**subsSessAmbr:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ambr'**subsDefQos:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/SubscribedDefaultQos'**numOfPackFilter:****Type:** integer**Description:** Contains the number of supported packet filter for signalled QoS rules.**online:****Type:** boolean

**Description:** If it is included and set to true, the online charging is applied to the PDU session.

**offline:**

**Type:** boolean

**Description:** If it is included and set to true, the offline charging is applied to the PDU session.

**3gppPsDataOffStatus:**

**Type:** boolean

**Description:** If it is included and set to true, the 3GPP PS Data Off is activated by the UE.

**refQosIndication:**

**Type:** boolean

**Description:** If it is included and set to true, the reflective QoS is supported by the UE.

**traceReq:**

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

**sliceInfo:**

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

**qosFlowUsage:**

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

**suppFeat:**

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

**Required:**

- supi
- pduSessionId
- pduSessionType
- dnn
- notificationUri
- sliceInfo

## SmPolicyDecision

**Type:** object

**Properties:**

**sessRules:**

**Type:** object

**additionalProperties:**

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

**minProperties:** 1

**Description:** A map of Sessionrules with the content being the SessionRule as described in subclause 5.6.2.7.



**pccRules:**

Type: object

**additionalProperties:**

Reference: '#/components/schemas/PccRule'

minProperties: 1

Description: A map of PCC rules with the content being the PCCRule as described in subclause 5.6.2.6.

nullable: true

**pcscfRestIndication:**

Type: boolean

Description: If it is included and set to true, it indicates the P-CSCF Restoration is requested.

**qosDecs:**

Type: object

**additionalProperties:**

Reference: '#/components/schemas/QosData'

minProperties: 1

Description: Map of QoS data policy decisions.

**chgDecs:**

Type: object

**additionalProperties:**

Reference: '#/components/schemas/ChargingData'

minProperties: 1

Description: Map of Charging data policy decisions.

nullable: true

**chargingInfo:**

Reference: '#/components/schemas/ChargingInformation'

**traffContDecs:**

Type: object

**additionalProperties:**

Reference: '#/components/schemas/TrafficControlData'

minProperties: 1

Description: Map of Traffic Control data policy decisions.

**umDecs:**

Type: object

**additionalProperties:**

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

**minProperties:** 1

**Description:** Map of Usage Monitoring data policy decisions.

**nullable:** true

**qosChars:**

**Type:** object

**additionalProperties:**

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

**minProperties:** 1

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

**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 or PCC rule.

**online:**

**Type:** boolean

**Description:** Indicates the online charging is applicable to the PDU session or PCC rule.

**policyCtrlReqTriggers:**

**Type:** array

**Items:**

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

**minItems:** 1

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

**nullable:** true

**lastReqRuleData:****Type:** array**Items:****Reference:** '#/components/schemas/RequestedRuleData'**minItems:** 1**Description:** Defines the last list of rule control data requested by the PCF.**lastReqUsageData:****Reference:** '#/components/schemas/RequestedUsageData'**prafInfos:****Type:** object**additionalProperties:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfoRm'**minProperties:** 1**Description:** Map of PRA information.**nullable:** true**ipv4Index:****Reference:** 'TS29519\_ApplicationData.yaml#/components/schemas/IpIndex'**Description:** Information that identifies which IP pool or external server is used to allocate the IPv4 address.**ipv6Index:****Reference:** 'TS29519\_ApplicationData.yaml#/components/schemas/IpIndex'**Description:** Information that identifies which IP pool or external server is used to allocate the IPv6 address.**qosFlowUsage:****Reference:** '#/components/schemas/QosFlowUsage'**suppFeat:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

## SmPolicyNotification

**Type:** object**Properties:****resourceUri:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Uri'**smPolicyDecision:****Reference:** '#/components/schemas/SmPolicyDecision'

## PccRule

**Type:** object

**Properties:**

**flowInfos:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** An array of IP flow packet filter information.

**appId:**

**Type:** string

**Description:** A reference to the application detection filter configured at the UPF.

**contVer:**

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

**pccRuleId:**

**Type:** string

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

**precedence:**

**Type:** integer

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

**afSigProtocol:**

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

**nullable:** true

**appReloc:**

**Type:** boolean

**Description:** Indication of application relocation possibility.

**refQosData:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**maxItems:** 1

**Description:** A reference to the QoSData policy type decision type. It is the qosId described in subclause 5.6.2.8. (NOTE)

**refTcData:****Type:** array**Items:****Type:** string**minItems:** 1**maxItems:** 1**Description:** A reference to the TrafficControlData policy decision type. It is the tcId described in subclause 5.6.2.10. (NOTE)**refChgData:****Type:** array**Items:****Type:** string**minItems:** 1**maxItems:** 1**Description:** A reference to the ChargingData policy decision type. It is the chgId described in subclause 5.6.2.11. (NOTE)**nullable:** true**refUmData:****Type:** array**Items:****Type:** string**minItems:** 1**maxItems:** 1**Description:** A reference to UsageMonitoringData policy decision type. It is the umId described in subclause 5.6.2.12. (NOTE)**nullable:** true**refCondData:****Type:** string**Description:** A reference to the condition data. It is the condId described in subclause 5.6.2.9.**nullable:** true**Required:**

- pccRuleId

**nullable:** true

## SessionRule

**Type:** object

**Properties:****authSessAmbr:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ambr'**authDefQos:****Reference:** '#/components/schemas/AuthorizedDefaultQos'**sessRuleId:****Type:** string**Description:** Univocally identifies the session rule within a PDU session.**refUmData:****Type:** string**Description:** A reference to UsageMonitoringData policy decision type. It is the umId described in subclause 5.6.2.12.**nullable:** true**refCondData:****Type:** string**Description:** A reference to the condition data. It is the condId described in subclause 5.6.2.9.**nullable:** true**Required:**

- sessRuleId

**nullable:** true**QosData****Type:** object**Properties:****qosId:****Type:** string**Description:** Univocally identifies the QoS control policy data within a PDU session.**5qi:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/5Qi'**maxbrUl:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'**maxbrDl:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'**gbrUl:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/BitRateRm'

**gbrDI:**

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

**arp:**

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

**qnc:**

**Type:** boolean

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

**priorityLevel:**

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

**averWindow:**

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

**maxDataBurstVol:**

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

**reflectiveQos:**

**Type:** boolean

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

**sharingKeyDI:**

**Type:** string

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

**sharingKeyUI:**

**Type:** string

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

**maxPacketLossRateDI:**

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

**maxPacketLossRateUI:**

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

**defQoSFlowIndication:**

**Type:** boolean

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

**Required:**

- qosId

**nullable:** true

## ConditionData

**Type:** object

**Properties:**

**condId:**

**Type:** string

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

**activationTime:**

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

**deactivationTime:**

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

**Required:**

- condId

**nullable:** true

## TrafficControlData

**Type:** object

**Properties:**

**tcId:**

**Type:** string

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

**flowStatus:**

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

**redirectInfo:**

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

**muteNotif:**

**Type:** boolean

**Description:** Indicates whether applicat'on's start or stop notification is to be muted.

**trafficSteeringPolIdDL:**

**Type:** string

**Description:** Reference to a pre-configured traffic steering policy for downlink traffic at the SMF.

**nullable:** true

**trafficSteeringPolIdUL:**

**Type:** string

**Description:** Reference to a pre-configured traffic steering policy for uplink traffic at the SMF.



**nullable:** true

**routeToLocs:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** A list of location which the traffic shall be routed to for the AF request

**upPathChgEvent:**

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

**Required:**

- tcId

**nullable:** true

## ChargingData

**Type:** object

**Properties:**

**chgId:**

**Type:** string

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

**meteringMethod:**

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

**nullable:** true

**offline:**

**Type:** boolean

**Description:** Indicates the offline charging is applicable to the PDU session or PCC rule.

**online:**

**Type:** boolean

**Description:** Indicates the online charging is applicable to the PDU session or PCC rule.

**ratingGroup:**

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

**reportingLevel:**

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

**nullable:** true

**serviceId:**

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

**sponsorId:****Type:** string**Description:** Indicates the sponsor identity.**appSvcProvId:****Type:** string**Description:** Indicates the application service provider identity.**afChargingIdentifier:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'**Required:**

- chgId

**nullable:** true

## UsageMonitoringData

**Type:** object**Properties:****umId:****Type:** string**Description:** Univocally identifies the usage monitoring policy data within a PDU session.**volumeThreshold:****Reference:** 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'**volumeThresholdUplink:****Reference:** 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'**volumeThresholdDownlink:****Reference:** 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'**timeThreshold:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DurationSecRm'**monitoringTime:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DateTimeRm'**nextVolThreshold:****Reference:** 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'**nextVolThresholdUplink:****Reference:** 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'**nextVolThresholdDownlink:****Reference:** 'TS29122\_CommonData.yaml#/components/schemas/VolumeRm'**nextTimeThreshold:**

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

**inactivityTime:**

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

**exUsagePccRuleIds:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**Description:** Contains the PCC rule identifier(s) which corresponding service data flow(s) shall be excluded from PDU Session usage monitoring. It is only included in the UsageMonitoringData instance for session level usage monitoring.

**nullable:** true

**Required:**

- umId

**nullable:** true

## RedirectInformation

**Type:** object

**Properties:**

**redirectEnabled:**

**Type:** boolean

**Description:** Indicates the redirect is enable.

**redirectAddressType:**

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

**redirectServerAddress:**

**Type:** string

**Description:** Indicates the address of the redirect server.

## FlowInformation

**Type:** object

**Properties:**

**flowDescription:**

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

**ethFlowDescription:**

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

**Description:** Defines a packet filter for an Ethernet flow. "fDir" attribute is not applicable.

**packFiltId:****Type:** string**Description:** An identifier of packet filter.**packetFilterUsage:****Type:** boolean**Description:** The packet shall be sent to the UE.**tosTrafficClass:****Type:** string**Description:** Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and mask field.**nullable:** true**spi:****Type:** string**Description:** the security parameter index of the IPSec packet.**nullable:** true**flowLabel:****Type:** string**Description:** the Ipv6 flow label header field.**nullable:** true**flowDirection:****Reference:** '#/components/schemas/FlowDirectionRm'

## SmPolicyDeleteData

**Type:** object**Properties:****userLocationInfo:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'**ueTimeZone:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'**servingNetwork:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/NetworkId'**userLocationInfoTime:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DateTime'**ranNasRelCauses:****Type:** array**Items:**

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

**minItems:** 1

**Description:** Contains the RAN and/or NAS release cause.

**accuUsageReports:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** Contains the usage report

## QosCharacteristics

**Type:** object

**Properties:**

**5qi:**

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

**resourceType:**

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

**priorityLevel:**

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

**packetDelayBudget:**

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

**packetErrorRate:**

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

**averagingWindow:**

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

**maxDataBurstVol:**

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

**Required:**

- 5qi
- resourceType
- priorityLevel
- packetDelayBudget
- packetErrorRate

## ChargingInformation

**Type:** object

**Properties:**

**primaryChfAddress:**

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

**secondaryChfAddress:**

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

**Required:**

- primaryChfAddress
- secondaryChfAddress

## AccuUsageReport

**Type:** object

**Properties:**

**refUmIds:**

**Type:** string

**Description:** An id referencing UsageMonitoringData objects associated with this usage report.

**volUsage:**

**Reference:** 'TS29122\_CommonData.yaml#/components/schemas/Volume'

**volUsageUplink:**

**Reference:** 'TS29122\_CommonData.yaml#/components/schemas/Volume'

**volUsageDownlink:**

**Reference:** 'TS29122\_CommonData.yaml#/components/schemas/Volume'

**timeUsage:**

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

**nextVolUsage:**

**Reference:** 'TS29122\_CommonData.yaml#/components/schemas/Volume'

**nextVolUsageUplink:**

**Reference:** 'TS29122\_CommonData.yaml#/components/schemas/Volume'

**nextVolUsageDownlink:**

**Reference:** 'TS29122\_CommonData.yaml#/components/schemas/Volume'

**nextTimeUsage:**

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

**Required:**

- refUmIds

## SmPolicyUpdateContextData

**Type:** object

**Properties:**

**repPolicyCtrlReqTriggers:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** The policy control request triggers which are met.

**accNetChIds:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** Indicates the access network charging identifier for the PCC rule(s) or whole PDU session.

**accessType:**

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

**ratType:**

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

**servingNetwork:**

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

**userLocationInfo:**

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

**ueTimeZone:**

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

**relIpv4Address:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**ipv4Address:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

**ipv6AddressPrefix:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

**relIpv6AddressPrefix:**

**Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

**relUeMac:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'**ueMac:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/MacAddr48'**subsSessAmbr:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ambr'**subsDefQos:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/SubscribedDefaultQos'**numOfPackFilter:****Type:** integer**Description:** Contains the number of supported packet filter for signalled QoS rules.**accuUsageReports:****Type:** array**Items:****Reference:** '#/components/schemas/AccuUsageReport'**minItems:** 1**Description:** Contains the usage report**3gppPsDataOffStatus:****Type:** boolean**Description:** If it is included and set to true, the 3GPP PS Data Off is activated by the UE.**appDetectionInfos:****Type:** array**Items:****Reference:** '#/components/schemas/AppDetectionInfo'**minItems:** 1**Description:** Report the start/stop of the application traffic and detected SDF descriptions if applicable.**ruleReports:****Type:** array**Items:****Reference:** '#/components/schemas/RuleReport'**minItems:** 1**Description:** Used to report the PCC rule failure.**qncReports:****Type:** array



**Items:****Reference:** '#/components/schemas/QosNotificationControlInfo'**minItems:** 1**Description:** QoS Notification Control information.**userLocationInfoTime:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DateTime'**repPraInfos:****Type:** object**additionalProperties:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/PresenceInfo'**minProperties:** 1**Description:** Reports the changes of presence reporting area.**ueInitResReq:****Reference:** '#/components/schemas/UeInitiatedResourceRequest'**Description:** Indicates a UE requests specific QoS handling for selected SDF.**refQosIndication:****Type:** boolean**Description:** If it is included and set to true, the reflective QoS is supported by the UE. If it is included and set to false, the reflective QoS is revoked by the UE.**qosFlowUsage:****Reference:** '#/components/schemas/QosFlowUsage'**traceReq:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/TraceData'

## UpPathChgEvent

**Type:** object**Properties:****notificationUri:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Uri'**notifCorreId:****Type:** string**Description:** It is used to set the value of Notification Correlation ID in the notification sent by the SMF.**dnaiChgType:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/DnaiChangeType'**Required:**

- notificationUri
- notifCorreId
- dnaiChgType

**nullable:** true

## TerminationNotification

**Type:** object

**Properties:**

**resourceUri:**

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

**cause:**

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

**Required:**

- resourceUri
- cause

AppDetectionInfo :

**Type:** object

**Properties:**

**appId:**

**Type:** string

**Description:** A reference to the application detection filter configured at the UPF

**instanceId:**

**Type:** string

**Description:** Identifier dynamically assigned by the SMF in order to allow correlation of application Start and Stop events to the specific service data flow description, if service data flow descriptions are deducible.

**sdfDescriptions:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** Contains the detected service data flow descriptions if they are deducible.

**Required:**

- appId

## AccNetChId

**Type:** object

**Properties:****accNetChaIdValue:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/ChargingId'**refPccRuleIds:****Type:** array**Items:****Type:** string**minItems:** 1**Description:** Contains the identifier of the PCC rule(s) associated to the provided Access Network Charging Identifier.**sessionChScope:****Type:** boolean**Description:** When it is included and set to true, indicates the Access Network Charging Identifier applies to the whole PDU Session**Required:**

- accNetChaIdValue

## AccNetChargingAddress

**Description:** Describes the network entity within the access network performing charging**Type:** object**anyOf:**

- required: [anChargIpv4Addr]

- required: [anChargIpv6Addr]

**Properties:****anChargIpv4Addr:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'**anChargIpv6Addr:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

## RequestedRuleData

**Type:** object**Properties:****refPccRuleIds:****Type:** array**Items:****Type:** string

**minItems:** 1

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

**reqData:**

**Type:** array

**Items:**

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

**minItems:** 1

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

**Required:**

- refPccRuleIds

- reqData

## RequestedUsageData

**Type:** object

**Properties:**

**refUmIds:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

**Description:** An array of usage monitoring data id references to the usage monitoring data instances for which the PCF is requesting a usage report. This attribute shall only be provided when allUmIds is not set to true.

**allUmIds:**

**Type:** boolean

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

## UeCampingRep

**Type:** object

**Properties:**

**accessType:**

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

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

**ratType:**

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

**servingNetwork:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/NetworkId'**userLocationInfo:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/UserLocation'**ueTimeZone:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/TimeZone'

## RuleReport

**Type:** object**Properties:****pccRuleIds:****Type:** array**Items:****Type:** string**minItems:** 1**Description:** Contains the identifier of the affected PCC rule(s).**ruleStatus:****Reference:** '#/components/schemas/RuleStatus'**Description:** Indicates the status of the PCC rule(s).**contVers:****Type:** array**Items:****Reference:** 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/ContentVersion'**minItems:** 1**Description:** Indicates the version of a PCC rule.**failureCode:****Reference:** '#/components/schemas/FailureCode'**Description:** Indicates the reason that the PCC Rule is being reported.**finUnitAct:****Reference:** 'TS32291\_Nchf\_ConvergedCharging.yaml#/components/schemas/FinalUnitAction'**Description:** Contains the related filter parameters and redirect address parameters (if available), when the user's account cannot cover the service cost.**ranNasRelCauses:****Type:** array**Items:**

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

**minItems:** 1

**Description:** indicates the RAN or NAS release cause code information.

**Required:**

- pccRuleIds
- ruleStatus
- failureCode

## RanNasRelCause

**Type:** object

**Properties:**

**ngApCause:**

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

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

**5gMmCause:**

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

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

**5gSmCause:**

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

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

## UeInitiatedResourceRequest

**Type:** object

**Properties:**

**packFiltOp:**

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

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

**packFiltInfo:**

**Type:** array

**Items:**

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

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

**minItems:** 1

**reqQos:**

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

**Description:** Contains the QoS information requested by the UE.

**Required:**

- packFiltOp
- packFiltInfo

## PacketFilterInfo

**Type:** object

**Properties:**

**packFiltId:**

**Type:** string

**Description:** An identifier of packet filter.

**precedence:**

**Type:** integer

**Description:** The requested order for the PCC rule generated from the packet filter information.

**packFiltCont:**

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

**Description:** Contains the content of the packet filter as requested by the UE and required by the PCF to create the PCC rules.

**tosTrafficClass:**

**Type:** string

**Description:** Contains the Ipv4 Type-of-Service and mask field or the Ipv6 Traffic-Class field and mask field.

**spi:**

**Type:** string

**Description:** The security parameter index of the IPSec packet.

**flowLabel:**

**Type:** string

**Description:** The Ipv6 flow label header field.

**flowDirection:**

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

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

## RequestedQos

**Type:** object

**Properties:**

**5qi:**

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

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

**gbrUl:**

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

**Description:** Indicates the guaranteed bandwidth in uplink requested by the UE.

**gbrDl:**

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

**Description:** Indicates the guaranteed bandwidth in downlink requested by the UE.

**Required:**

- 5qi

## QosNotificationControllInfo

**Type:** object

**Properties:**

**refPccRuleIds:**

**Type:** array

**Items:**

**Type:** string

**minItems:** 1

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

**notifType:**

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

**contVer:**

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

**Required:**

- refPccRuleIds

- notifType

## PartialSuccessReport

**Type:** object

**Properties:**

**failureCause:**

**Type:** string

**Description:** Application error cause specific to this report.



**ruleReports:****Type:** array**Items:****Reference:** '#/components/schemas/RuleReport'**minItems:** 1**Description:** Information about the PCC rules provisioned by the PCF not successfully installed/activated.**ueCampingRep:****Reference:** '#/components/schemas/UeCampingRep'**Description:** Includes the current applicable values corresponding to the provisioned policy control request triggers.**Required:**

- failureCause
- ruleReports

## AuthorizedDefaultQos

**Type:** object**Properties:****5qi:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/5Qi'**Description:** Identifier for the 5QI.**arp:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/Arp'**priorityLevel:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/5QIPriorityLevelRm'**averWindow:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/AverWindowRm'**maxDataBurstVol:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/MaxDataBurstVolRm'

## ErrorReport

**Type:** object**Properties:****error:****Reference:** 'TS29571\_CommonData.yaml#/components/schemas/ProblemDetails'**ruleReports:**

**Type:** array

**Items:**

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

**minItems:** 1

**Description:** Used to report the PCC rule failure.

## 5GSmCause

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

**Description:** Indicating the cause value of 5GSM protocol.

## PacketFilterContent

**Type:** string

**Description:** Defines a packet filter for an IP flow. Refer to subclause 5.3.54 of 3GPP TS 29.212 [23] for encoding.

## FlowDescription

**Type:** string

**Description:** Defines a packet filter for an IP flow. Refer to subclause 5.4.2 of 3GPP TS 29.212 [23] for encoding.

## FlowDirection

**anyOf:**

- type: string

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.

Possible values are

- DOWNLINK: The corresponding filter applies for traffic to the UE.

- UPLINK: The corresponding filter applies for traffic from the UE.

- BIDIRECTIONAL: The corresponding filter applies for traffic both to and from the UE.

- UNSPECIFIED: The corresponding filter applies for traffic to the UE (downlink), but has no specific direction declared. The service data flow detection shall apply the filter for uplink traffic as if the filter was bidirectional. The PCF shall not use the value UNSPECIFIED in filters created by the network in NW-initiated procedures. The PCF shall only include the value UNSPECIFIED in filters in UE-initiated procedures if the same value is received from the SMF.

## FlowDirectionRm

**anyOf:**

- type: string

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.

Possible values are

- DOWNLINK: The corresponding filter applies for traffic to the UE.
- UPLINK: The corresponding filter applies for traffic from the UE.
- BIDIRECTIONAL: The corresponding filter applies for traffic both to and from the UE.
- UNSPECIFIED: The corresponding filter applies for traffic to the UE (downlink), but has no specific direction declared. The service data flow detection shall apply the filter for uplink traffic as if the filter was bidirectional. The PCF shall not use the value UNSPECIFIED in filters created by the network in NW-initiated procedures. The PCF shall only include the value UNSPECIFIED in filters in UE-initiated procedures if the same value is received from the SMF.

**nullable:** true

## ReportingLevel

**anyOf:**

- type: string

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.

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

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.

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

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.

Possible values are

- PLMN\_CH: PLMN Change
- RES\_MO\_RE: A request for resource modification has been received by the SMF. The SMF always reports to the PCF.
- AC\_TY\_CH: Access Type Change
- UE\_IP\_CH: UE IP address change. The SMF always reports to the PCF.
- UE\_MAC\_CH: A new UE MAC address is detected or a used UE MAC address is inactive for a specific period
- AN\_CH\_COR: Access Network Charging Correlation Information
- US\_RE: The PDU Session or the Monitoring key specific resources consumed by a UE either reached the threshold or needs to be reported for other reasons.
- APP\_STA: The start of application traffic has been detected.
- APP\_STO: The stop of application traffic has been detected.
- AN\_INFO: Access Network Information report
- CM\_SES\_FAIL: Credit management session failure
- PS\_DA\_OFF: The SMF reports when the 3GPP PS Data Off status changes. The SMF always reports to the PCF.
- DEF\_QOS\_CH: Default QoS Change. The SMF always reports to the PCF.
- SE\_AMBR\_CH: Session AMBR Change. The SMF always reports to the PCF.
- QOS\_NOTIF: The SMF notify the PCF when receiving notification from RAN that QoS targets of the QoS Flow cannot be guaranteed or guaranteed again.
- NO\_CREDIT: Out of credit
- PRA\_CH: Change of UE presence in Presence Reporting Area
- SAREA\_CH: Location Change with respect to the Serving Area
- SCNN\_CH: Location Change with respect to the Serving CN node
- RE\_TIMEOUT: Indicates the SMF generated the request because there has been a PCC revalidation timeout
- RES\_RELEASE: Indicate that the SMF can inform the PCF of the outcome of the release of resources for those rules that require so.
- SUCC\_RES\_ALLO: Indicates that the requested rule data is the successful resource allocation.

- RAT\_TY\_CH: RAT Type Change.
- REF\_QOS\_IND\_CH: Reflective QoS indication Change

## RequestedRuleDataType

### anyOf:

- type: string

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.

Possible values are

- CH\_ID: Indicates that the requested rule data is the charging identifier.
- MS\_TIME\_ZONE: Indicates that the requested access network info type is the UE's timezone.
- USER\_LOC\_INFO: Indicates that the requested access network info type is the UE's location.
- RES\_RELEASE: Indicates that the requested rule data is the result of the release of resource.
- SUCC\_RES\_ALLO: Indicates that the requested rule data is the successful resource allocation.

## RuleStatus

### anyOf:

- type: string

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.

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

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.

Possible values are

- UNK\_RULE\_ID: Indicates that the pre-provisioned PCC rule could not be successfully activated because the PCC rule identifier is unknown to the SMF.

- RA\_GR\_ERR: Indicate that the PCC rule could not be successfully installed or enforced because the Rating Group specified within the Charging Data policy decision which the PCC rule refers to is unknown or, invalid.
- SER\_ID\_ERR: Indicate that the PCC rule could not be successfully installed or enforced because the Service Identifier specified within the Charging Data policy decision which the PCC rule refers to is invalid, unknown, or not applicable to the service being charged.
- NF\_MAL: Indicate that the PCC rule could not be successfully installed (for those provisioned from the PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to SMF/UPF malfunction.
- RES\_LIM: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to a limitation of resources at the SMF/UPF.
- MAX\_NR\_QoS\_FLOW: Indicate that the PCC rule could not be successfully installed (for those provisioned from PCF) or activated (for those pre-defined in SMF) or enforced (for those already successfully installed) due to the fact that the maximum number of QoS flows has been reached for the PDU session.
- MISS\_FLOW\_INFO: Indicate that the PCC rule could not be successfully installed or enforced because the Flow Information AVP is not specified within the "pccRule" attribute by the PCF during the first install request of the PCC rule.
- RES\_ALLO\_FAIL: Indicate that the PCC rule could not be successfully installed or maintained since the QoS flow establishment/modification failed, or the QoS flow was released.
- UNSUCC\_QOS\_VAL: indicate that the QoS validation has failed or when Guaranteed Bandwidth > Max-Requested-Bandwidth.
- INCOR\_FLOW\_INFO: Indicate that the PCC rule could not be successfully installed or modified at the SMF because the provided flow information is not supported by the network (e.g. the provided IP address(es) or Ipv6 prefix(es) do not correspond to an IP version applicable for the PDU session).
- PS\_TO\_CS\_HAN: Indicate that the PCC rule could not be maintained because of PS to CS handover.
- APP\_ID\_ERR: Indicate that the rule could not be successfully installed or enforced because the Application Identifier is invalid, unknown, or not applicable to the application required for detection.
- NO\_QOS\_FLOW\_BOUND: Indicate that there is no QoS flow which the SMF can bind the PCC rule(s) to.
- FILTER\_RES: Indicate that the Flow Information cannot be handled by the SMF because any of the restrictions was not met.
- MISS\_REDI\_SER\_ADDR: Indicate that the PCC rule could not be successfully installed or enforced at the SMF because there is no valid Redirect Server Address within the Traffic Control Data policy decision which the PCC rule refers to provided by the PCF and no preconfigured redirection address for this PCC rule at the SMF.
- CM\_END\_USER\_SER\_DENIED: Indicate that the charging system denied the service request due to service restrictions (e.g. terminate rating group) or limitations related to the end-user, for example the end-user's account could not cover the requested service.
- CM\_CREDIT\_CON\_NOT\_APP: Indicate that the charging system determined that the service can be granted to the end user but no further credit control is needed for the service (e.g. service is free of charge or is treated for offline charging).
- CM\_AUTH\_REJ: Indicate that the charging system denied the service request in order to terminate the service for which credit is requested.

- CM\_USER\_UNK: Indicate that the specified end user could not be found in the charging system.
- CM\_RAT\_FAILED: Indicate that the charging system cannot rate the service request due to insufficient rating input, incorrect AVP combination or due to an attribute or an attribute value that is not recognized or supported in the rating.
- SESS\_AMBR\_FAILURE: Indicate that the session AMBR update is failure.
- DEF\_QOS\_FAILURL: Indicate that the default QoS update is failure.

## AfSigProtocol

### anyOf:

- type: string

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.

Possible values are

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

## PacketFilterOperation

### anyOf:

- type: string

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.

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

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.

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

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.

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.





## CHAPTER 5

# Nchf\_SpendingLimitControl

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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 109](#)
- [info, on page 109](#)
- [externalDocs, on page 109](#)
- [security, on page 109](#)
- [servers, on page 110](#)
- [paths, on page 110](#)
- [components, on page 114](#)

## OpenAPI

OpenAPI Version: 3.0.0

## info

**Description:** Spending Limit Control Service API

**Version:** "1.0.0"

**Title:** Nchf\_SpendingLimitControl

## externalDocs

**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/'

## security

- {}

- oAuth2ClientCredentials:
- 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

## paths

### /subscriptions

**Method:** Post

**Request Body:**

**Required/Optional:** true

**Content:**

**Application/JSON:**

**Schema:**

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

**Responses:**

'201' 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' No Content, Notification was successful

'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': No Content, Notification was successful

'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' OK. Resource was successfully 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' No Content. Resource was successfully 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

TerminationCause



## CHAPTER 6

# Npcf\_SMPolicyControl

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

- [OpenAPI](#), on page 119
- [info](#), on page 119
- [externalDocs](#), on page 119
- [servers](#), on page 119
- [security](#), on page 120
- [paths](#), on page 120
- [components](#), on page 122

## OpenAPI

OpenAPI Version: 3.0.0

## info

**Description:** Spending Limit Control Service API Callbacks

**Version:** "1.0.0"

**Title:** Nchf\_SpendingLimitControl Callbacks

## externalDocs

**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/'

## 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'** 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'  
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 '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' No Content, Notification was successful

'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