

# ETSI TS 129 543 V18.1.0 (2024-07)



**5G;  
5G System;  
Data Transfer Policy Control Services;  
Stage 3  
(3GPP TS 29.543 version 18.1.0 Release 18)**



---

**Reference**

RTS/TSGC-0329543vi10

---

**Keywords**

5G

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° w061004871

---

**Important notice**

The present document can be downloaded from the  
ETSI [Search & Browse Standards application](#).

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on [ETSI deliver](#).

Users should be aware that the present document may be revised or have its status changed,  
this information is available in the [Milestones listing](#).

If you find errors in the present document, please send your comments to  
the relevant service listed under [Committee Support Staff](#).

If you find a security vulnerability in the present document, please report it through our  
[Coordinated Vulnerability Disclosure \(CVD\)](#) program.

---

**Notice of disclaimer & limitation of liability**

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

---

**Copyright Notification**

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2024.  
All rights reserved.

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

---

# Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <https://webapp.etsi.org/key/queryform.asp>.

---

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

# Contents

Intellectual Property Rights .....	2
Legal Notice .....	2
Modal verbs terminology.....	2
Foreword.....	5
1 Scope .....	7
2 References .....	7
3 Definitions, symbols and abbreviations .....	8
3.1 Definitions .....	8
3.2 Symbols.....	8
3.3 Abbreviations .....	8
4 Overview .....	8
5 Data Transfer Policy Control Services offered by the PCF.....	9
5.1 Introduction .....	9
5.2 Npcf_PDTQPolicyControl Service .....	10
5.2.1 Service Description.....	10
5.2.2 Service Operations.....	10
5.2.2.1 Introduction.....	10
5.2.2.2 Npcf_PDTQPolicyControl_Create service operation .....	10
5.2.2.2.1 General .....	10
5.2.2.2.2 Retrieval of PDTQ policies .....	10
5.2.2.3 Npcf_PDTQPolicyControl_Update service operation .....	13
5.2.2.3.1 General .....	13
5.2.2.3.2 Indication about selected PDTQ policy .....	13
5.2.2.3.3 Modification of PDTQ warning notification request indication .....	14
5.2.2.4 Npcf_PDTQPolicyControl_Notify service operation .....	14
5.2.2.4.1 General .....	14
5.2.2.4.2 Sending the PDTQ warning notification .....	14
6 API Definitions .....	15
6.1 Npcf_PDTQPolicyControl Service API.....	15
6.1.1 Introduction.....	15
6.1.2 Usage of HTTP .....	16
6.1.2.1 General .....	16
6.1.2.2 HTTP standard headers .....	16
6.1.2.2.1 General .....	16
6.1.2.2.2 Content type .....	16
6.1.2.3 HTTP custom headers .....	16
6.1.3 Resources.....	16
6.1.3.1 Overview.....	16
6.1.3.2 Resource: PDTQ policies (Collection).....	17
6.1.3.2.1 Description .....	17
6.1.3.2.2 Resource Definition.....	17
6.1.3.2.3 Resource Standard Methods .....	17
6.1.3.2.4 Resource Custom Operations .....	18
6.1.3.3 Resource: Individual PDTQ policy (Document).....	18
6.1.3.3.1 Description .....	18
6.1.3.3.2 Resource Definition.....	18
6.1.3.3.3 Resource Standard Methods .....	18
6.1.4 Custom Operations without associated resources .....	20
6.1.5 Notifications .....	21
6.1.5.1 General .....	21
6.1.5.2 PDTQ warning notification.....	21
6.1.5.2.1 Description .....	21

6.1.5.2.2	Target URI.....	21
6.1.5.2.3	Standard Methods.....	21
6.1.6	Data Model .....	22
6.1.6.1	General .....	22
6.1.6.2	Structured data types .....	23
6.1.6.2.1	Introduction .....	23
6.1.6.2.2	Type: PdtqPolicyData.....	24
6.1.6.2.3	Type: QosParameterSet .....	26
6.1.6.2.4	Type: AltQosParamSet .....	26
6.1.6.2.5	Type: PdtqPolicy .....	27
6.1.6.2.6	Type PdtqPolicyPatchData .....	27
6.1.6.2.7	Type Notification.....	27
6.1.6.3	Simple data types and enumerations .....	27
6.1.6.3.1	Introduction .....	27
6.1.6.3.2	Simple data types.....	27
6.1.6.4	Data types describing alternative data types or combinations of data types .....	28
6.1.6.5	Binary data .....	28
6.1.6.5.1	Binary Data Types .....	28
6.1.7	Error Handling .....	28
6.1.7.1	General .....	28
6.1.7.2	Protocol Errors .....	28
6.1.7.3	Application Errors.....	28
6.1.8	Feature negotiation .....	28
6.1.9	Security .....	28
<b>Annex A (normative): OpenAPI specification.....</b>		<b>30</b>
A.1	General .....	30
A.2	Npcf_PDTQPolicyControl API.....	30
<b>Annex B (informative): Withdrawn API versions.....</b>		<b>36</b>
B.1	General .....	36
B.2	Npcf_PDTQPolicyControl API.....	36
<b>Annex C (informative): Change history .....</b>		<b>37</b>
History .....		38

---

# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

- shall** indicates a mandatory requirement to do something
- shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

- should** indicates a recommendation to do something
- should not** indicates a recommendation not to do something
- may** indicates permission to do something
- need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

- can** indicates that something is possible
- cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

- will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document
- will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document
- might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

---

# 1 Scope

The present document specifies the stage 3 protocol and data model for the Service Based Interface (SBI) of the Data Transfer Policy Control Services. It provides stage 3 protocol definitions and message flows, and specifies the APIs of the Data Transfer Policy Control Services offered by the Policy Control Function (PCF).

The 5G System stage 2 architecture is specified in 3GPP TS 23.501 [2]. The stage 2 definition and related procedures for Data Transfer Policy Control Services are specified in 3GPP TS 23.502 [3] and 3GPP TS 23.503 [14].

The 5G System stage 3 call flows are provided in 3GPP TS 29.513 [15].

The Technical Realization of the Service Based Architecture and the Principles and Guidelines for Services Definition are specified in 3GPP TS 29.500 [4] and 3GPP TS 29.501 [5].

---

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
- [3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
- [4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".
- [5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [6] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.
- [7] 3GPP TR 21.900: "Technical Specification Group working methods".
- [8] 3GPP TS 33.501: "Security architecture and procedures for 5G system".
- [9] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".
- [10] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".
- [11] IETF RFC 9113: "HTTP/2".
- [12] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".
- [13] IETF RFC 9457: "Problem Details for HTTP APIs".
- [14] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".
- [15] 3GPP TS 29.513: "5G System; Policy and Charging Control signalling flows and QoS parameter mapping; Stage 3".
- [16] 3GPP TS 29.504: "5G System; Unified Data Repository Services; Stage 3".
- [17] 3GPP TS 29.519: "5G System; Usage of the Unified Data Repository service for Policy Data, Application Data and Structured Data for exposure; Stage 3".



- [18] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".
- [19] IETF RFC 7396: "JSON Merge Patch".
- [20] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".
- [21] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".
- [22] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".
- [23] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

---

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.501 [2], clause 3.1 apply:

**5G System**  
**Network Function**  
**NF service**  
**Service based interface**

### 3.2 Symbols

No symbol is defined in this Release of the present document.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5QI	5G QoS Identifier
AF	Application Function
ASP	Application Service Provider
DNN	Data Network Name
NEF	Network Exposure Function
NWDAF	Network Data Analytics Function
PCF	Policy Control Function
PDTQ	Planned Data Transfer with QoS
QoS	Quality of Service
S-NSSAI	Single Network Slice Selection Assistance Information
SBI	Service Based Interface
TAI	Tracking Area Identity
UDR	Unified Data Repository

---

## 4 Overview

The Data Transfer Policy Control Services, as defined in 3GPP TS 23.502 [3] and 3GPP TS 23.503 [14], are part of the Npcf service based interface exhibited by the Policy Control Function (PCF).

The Network Exposure Function (NEF) is the only NF service consumer of the Data Transfer Policy Control Services.

The NEF accesses the Data Transfer Policy Control Services at the PCF via the N30 Reference point. In this release, the roaming is not supported.

Figures°4-1 and 4-2 depict the Data Transfer Policy Control Services related reference architecture of the PCF respectively in SBI representation and reference point representation.

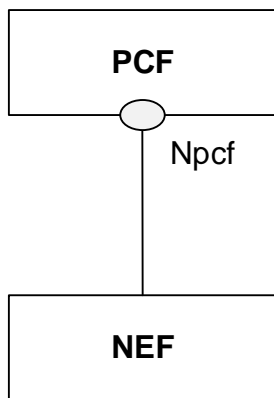


Figure 4-1: Reference Architecture for the Npcf Data Transfer Policy Control Services; SBI representation

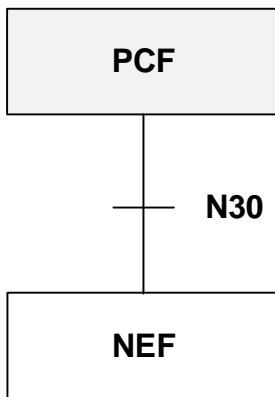


Figure 4-2: Reference Architecture for the Npcf Data Transfer Policy Control Services; reference point representation

## 5 Data Transfer Policy Control Services offered by the PCF

### 5.1 Introduction

Table 5.1-1 summarizes the corresponding APIs defined for this specification.

Table 5.1-1: API Descriptions

Service Name	Clause	Description	OpenAPI Specification File	apiName	Annex
Npcf_PDTQPolicy Control	5.2	Planned Data Transfer with QoS (PDTQ) Policy Control service	TS29543_Npcf_PDT QPolicyControl.yaml	npcf-pdtq-policy-control	A.2

## 5.2 Npcf\_PDTQPolicyControl Service

### 5.2.1 Service Description

The PDTQ Policy Control service, as defined in 3GPP TS 23.502 [3] and 3GPP TS 23.503 [14], provides negotiation for planned data transfer with QoS requirements (PDTQ) policies.

The PDTQ Policy Control service offers the following functionalities:

- provide PDTQ policies based on the request from the NF service consumer;
- update an existing PDTQ data based on the request from the NF service consumer; and
- provide a PDTQ warning notification to trigger renegotiation of a PDTQ policy.

### 5.2.2 Service Operations

#### 5.2.2.1 Introduction

The service operations defined for the Npcf\_PDTQPolicyControl service are shown in table 5.2.2.1-1.

**Table 5.2.2.1-1: Operations of the Npcf\_PDTQPolicyControl service**

Service operation name	Description	Initiated by
Npcf_PDTQPolicyControl_Create	Provides the requested PDTQ policies to the NF service consumer.	NF service consumer (e.g. NEF)
Npcf_PDTQPolicyControl_Update	Updates the existing PDTQ data.	NF service consumer (e.g. NEF)
Npcf_PDTQPolicyControl_Notify	Sends a PDTQ warning notification to the NF service consumer.	PCF

#### 5.2.2.2 Npcf\_PDTQPolicyControl\_Create service operation

##### 5.2.2.2.1 General

The Npcf\_PDTQPolicyControl\_Create service operation is used by an NF service consumer to request the PCF to create an "Individual PDTQ policy" resource.

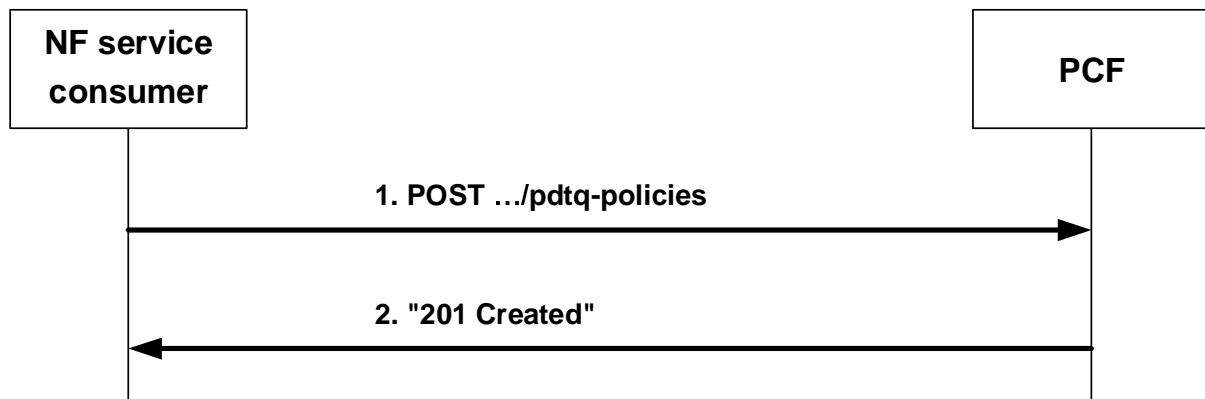
The following procedure using the Npcf\_PDTQPolicyControl\_Create service operation is supported:

- retrieval of PDTQ policies.

##### 5.2.2.2.2 Retrieval of PDTQ policies

This procedure is used by the NF service consumer to request PDTQ policies from the PCF, as defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [14].

Figure 5.2.2.2.2-1 illustrates retrieval of PDTQ policies.



**Figure 5.2.2.2-1: Retrieval of PDTQ policies**

In order to get PDTQ policies, the NF service consumer shall invoke the `Npcf_PDTQPolicyControl_Create` service operation by sending an HTTP POST request to the URI representing a "PDTQ policies" collection resource of the PCF (as shown in figure 5.2.2.2-1, step 1). The NF service consumer shall include in a body of the HTTP POST request a `PdtqPolicyData` data type which shall contain:

- a) an ASP identifier in the "aspId" attribute;
- b) an expected number of UEs in the "numOfUes" attribute;
- c) a list of desired time windows in the "desTimeInts" attribute;
- d) requested QoS requirements provided as a QoS Reference in the "qosReference" attribute or as a QoS parameter set in the "qosParamSet" attribute that shall contain one or more of the following individual QoS parameters:
  - 1) Priority Level in the "priorLevel" attribute;
  - 2) Maximum Burst Size:
    - A) if the Maximum Burst Size value is greater than 4095 Bytes in the "extMaxBurstSize" attribute; or
    - B) if the Maximum Burst Size value is lower than or equal to 4095 Bytes in the "maxBurstSize" attribute;
  - 3) 5GS Delay in the "pdb" attribute;
  - 4) Maximum Bitrate in downlink and/or uplink directions in the "maxBitRateDL" and/or "maxBitRateUL" attributes;
  - 5) Guaranteed Flow Bitrate in downlink and/or uplink directions in the "gfbrDL" and/or "gfbrUL" attributes; and
  - 6) Packet Error Rate in the "per" attribute,

and may contain:

- a) a network area information (e.g. list of TAIs and/or list of NG-RAN nodes and/or list of cells identifiers) in the "nwAreaInfo" attribute;
- b) an application identifier in the "appId" attribute;
- c) a DNN corresponding to the ASP identifier, in the "dnn" attribute;
- d) an S-NSSAI corresponding to the ASP identifier, in the "snssai" attribute;
- e) alternative service requirements provided as:
  - 1) one or more alternative QoS References in a prioritized order in the "altQosRefs" attribute; or
  - 2) one or more alternative QoS Parameter Sets in a prioritized order in the "altQosParamSets" attribute which shall contain one or more of the following individual QoS parameters:
    - A) 5GS Delay in the "pdb" attribute;

- B) Guaranteed Flow Bitrate in downlink and/or uplink directions in the "gbrDI" and/or "gbrUI" attributes; and
- C) Packet Error Rate in the "per" attribute; and
- f) a notification URI in the "notifUri" attribute and a request to enable a PDTQ warning notification for the planned data transfer with QoS requirements in the "warnNotifReq" attribute.

NOTE 1: The PCF can be configured to map the ASP identifier to a target DNN and S-NSSAI if the NF service consumer did not provide the DNN, S-NSSAI to the PCF.

Upon the reception of the HTTP POST request from the NF service consumer indicating a PDTQ policies request, the PCF:

- a) shall invoke the Nudr\_DataRepository\_Query service operation, as described in 3GPP TS 29.504 [16] and 3GPP TS 29.519 [17], to request from the UDR all existing PDTQ policies;
- b) may invoke the Nnwdaf\_EventsSubscription\_Subscribe service operation and/or the Nnwdaf\_AnalyticsInfo\_Request service operation as described in 3GPP TS 29.520 [18], to get from the NWDAF the Network Performance analytics or the DN Performance analytics;

NOTE 2: Whether the PCF subscribes to Network Performance analytics or DN Performance analytics is based on PCF configuration.

- c) shall determine one or more acceptable PDTQ policy based on:
  - 1) information provided by the NF service consumer; and
  - 2) other available information (e.g. the network analytics related to "Network Performance" or "DN Performance", the existing PDTQ policies, the network policy);
- d) shall create a PDTQ Reference ID;
- e) shall send to the NF service consumer a "201 Created" response to the HTTP POST request, as shown in figure 5.2.2.2.2-1, step 2. The PCF shall include in the "201 Created" response a Location header field containing the URI of the created "Individual PDTQ policy" resource, and the response body with a PdtqPolicyData data type which shall contain:
  - 1) acceptable PDTQ policy/ies in the "pdtqPolicies" attribute. For each included PDTQ policy, the PCF shall provide:
    - A) an identity of a PDTQ policy represented as an integer value greater than zero in the "pdtqPolicyId" attribute; and
    - B) recommended time window in the "recTimeInt" attribute; and
  - 2) the PDTQ Reference ID in the "pdtqRefId" attribute; or
- f) if the PCF cannot successfully fulfil the received HTTP POST request due to the internal PCF error or due to the error in the HTTP POST request, shall send the HTTP error response as specified in clause 6.1.7.

If the PCF included in the PdtqPolicyData data type:

- more than one PDTQ policy, the PCF shall wait for an indication about selected PDTQ policy from the NF service consumer as described in clause 5.2.2.3.2; or
- only one PDTQ policy, the PCF shall invoke the Nudr\_DataRepository\_Update service operation, as described in 3GPP TS 29.504 [16] and 3GPP TS 29.519 [17], to update the UDR with the selected PDTQ policy, the corresponding PDTQ Reference ID, the expected number of UEs, the list of desired time windows, the QoS Reference or individual QoS parameters, whether the PDTQ policy renegotiation has been accepted and, if available, the network area information and the alternative service requirements listed in a prioritized order for the provided ASP identifier.

NOTE 3: The selected PDTQ policy can be deleted in the PCF when the time window within the "recTimeInt" attribute reaches the maximum timestamp value.

### 5.2.2.3 Npcf\_PDTQPolicyControl\_Update service operation

#### 5.2.2.3.1 General

The Npcf\_PDTQPolicyControl\_Update service operation is used by an NF service consumer to request the PCF to update an existing "Individual PDTQ policy" resource.

The following procedures using the Npcf\_PDTQPolicyControl\_Update service operation are supported:

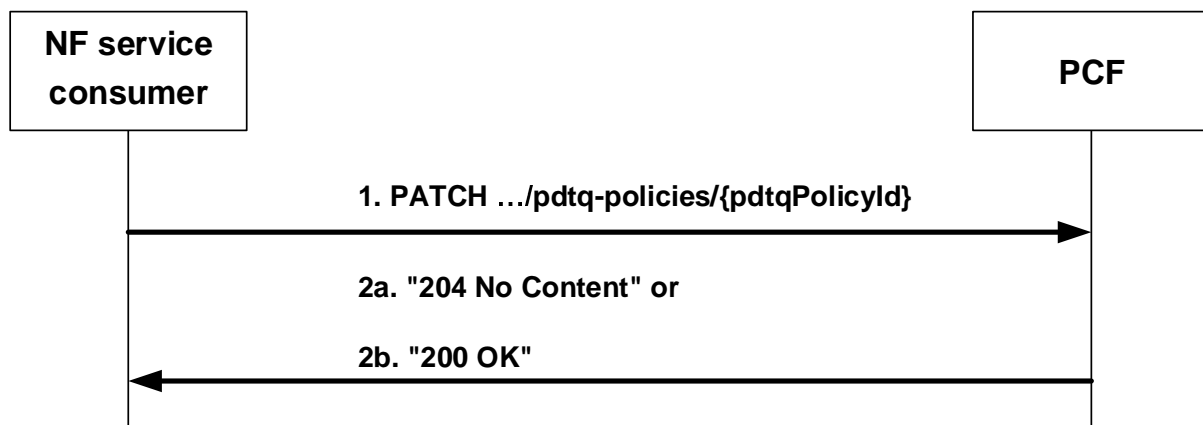
- indication about selected PDTQ policy; and
- modification of a PDTQ warning notification request indication.

#### 5.2.2.3.2 Indication about selected PDTQ policy

This procedure is used by the NF service consumer to inform the PCF about selected PDTQ policy, as defined in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.503 [14], if the PDTQ policy has been selected from the received list of PDTQ policies after:

- retrieval of PDTQ policies as described in clause 5.2.2.2.2; or
- reception of a PDTQ warning notification as described in clause 5.2.2.4.2.

Figure 5.2.2.3.2-1 illustrates an indication about selected PDTQ policy.



**Figure 5.2.2.3.2-1: Indication about selected PDTQ policy**

In order to inform the PCF about selected PDTQ policy, the NF service consumer shall invoke the Npcf\_PDTQPolicyControl\_Update service operation by sending an HTTP PATCH targeting the URI of the corresponding "Individual PDTQ policy" resource (as shown in figure 5.2.2.3.2-1, step 1). The NF service consumer shall include in a body of the HTTP PATCH request a PdtqPolicyPatchData data type which shall contain:

- a) if the NF service consumer has provided the selected PDTQ policy, the identifier of the selected PDTQ policy in the "selPdtqPolicyId" attribute; or
- b) in case of a PDTQ policy renegotiation and if no PDTQ policy has been selected, the "selPdtqPolicyId" attribute set to value "0" to indicate no PDTQ policy is selected.

Upon the reception of the HTTP PATCH request from the NF service consumer, if the PCF determines the received HTTP PATCH request needs to be redirected, the PCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4]. Otherwise, the PCF:

- a) in case of the initial PDTQ policy negotiation, may invoke the Nudr\_DataRepository\_Update service operation, as described in 3GPP TS 29.504 [16] and 3GPP TS 29.519 [17], with the selected PDTQ policy, the corresponding PDTQ Reference ID, the expected number of UEs, the list of desired time windows, the QoS Reference or individual QoS parameters, whether the PDTQ policy renegotiation has been accepted and, if available, the network area information and the alternative service requirements listed in a prioritized order for the provided ASP identifier;

- b) in case of the PDTQ policy renegotiation if the PDTQ policy is selected and the PCF invoked the Nudr\_DataRepository\_Update service operation during the initial PDTQ policy negotiation the PCF shall invoke the Nudr\_DataRepository\_Update service operation, as described in 3GPP TS 29.504 [16] and 3GPP TS 29.519 [17], to update the UDR with the selected PDTQ policy; and

NOTE: If the NF service consumer has not provided any of the PDTQ policies included in the candidate list, the previously negotiated PDTQ policy shall be kept.

- c) shall acknowledge the received HTTP PATCH request by sending to the NF service consumer:
- 1) a "204 No Content" response (as shown in figure 5.2.2.3.2-1, step 2a);
  - 2) a "200 OK" response (as shown in figure 5.2.2.3.2-1, step 2b) with a PdtqPolicyData data type in the response body; or
  - 3) if the PCF cannot successfully fulfil the received HTTP PATCH request due to the internal PCF error or due to the error in the HTTP PATCH request, an HTTP error response as specified in clause 6.1.7.

### 5.2.2.3.3 Modification of PDTQ warning notification request indication

This procedure is used by the NF service consumer to inform the PCF whether the PDTQ warning notification has to be enabled or disabled.

In order to modify a PDTQ warning notification request indication, the NF service consumer shall invoke the Npcf\_PDTQPolicyControl\_Update service operation by sending an HTTP PATCH request to the PCF, as described in clause 5.2.2.3.2. The NF service consumer shall include in a PdtqPolicyPatchData data type a "warnNotifReq" attribute set to value:

- "false" if the PDTQ warning notification is no longer required; or
- "true" if the PDTQ warning notification is required.

If the PDTQ warning notification is required and a notification URI was not previously provided or has been changed, the NF service consumer shall include:

- the notification URI in the "notifUri" attribute.

Upon the reception of the HTTP PATCH request from the NF service consumer indicating a modification of the PDTQ warning notification request indication, the PCF shall:

- acknowledge that request by sending an HTTP response message as described in clause 5.2.2.3.2; and
- if the PCF invoked the Nudr\_DataRepository\_Update service operation during the initial PDTQ policy negotiation, invoke the Nudr\_DataRepository\_Update service operation, as described in 3GPP TS 29.504 [16] and 3GPP TS 29.519 [17], to update the UDR with the modified PDTQ warning notification request indication.

### 5.2.2.4 Npcf\_PDTQPolicyControl\_Notify service operation

#### 5.2.2.4.1 General

The Npcf\_PDTQPolicyControl\_Notify service operation is used by the PCF to send a PDTQ notification to the NF service consumer.

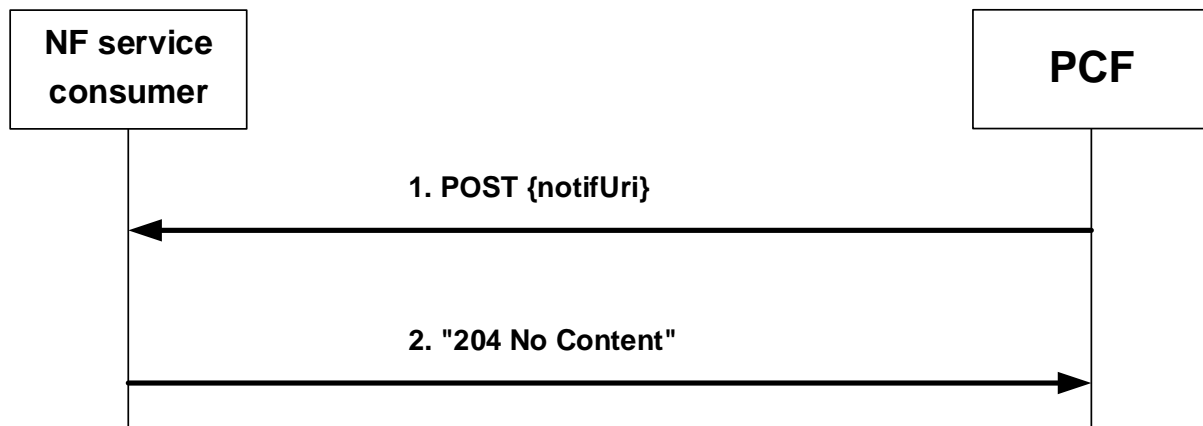
The following procedure using the Npcf\_PDTQPolicyControl\_Notify service operation is supported:

- sending a PDTQ warning notification to the NF service consumer.

#### 5.2.2.4.2 Sending the PDTQ warning notification

This procedure is used by the PCF to provide a list of new candidate PDTQ policies to the NF service consumer due to a network performance or DN performance degradation, as defined in clause 4.16.15.2.2 of 3GPP TS 23.502 [3] and clause 6.1.2.7 of 3GPP TS 23.503 [14].

Figure 5.2.2.4.2-1 illustrates a PDTQ warning notification from the PCF.



**Figure 5.2.2.4.2-1: PDTQ warning notification**

When the PCF gets the notification from the NWDAF, that the network performance or DN performance in the requested area of interest reaches the reporting threshold as described in 3GPP TS 29.520 [18] and if the PDTQ warning notification is enabled, the PCF may try to renegotiate the affected PDTQ policies. To do this, the PCF retrieves all the PDTQ policies together with their additionally stored NF service consumer provided information for PDTQ policy decision (e.g. their corresponding list of desired time windows, the number of UEs, etc.) from the UDR, identifies the PDTQ policy(ies) that are not desirable anymore due to the degradation of the network performance or DN performance and tries to calculate one or more new candidate PDTQ policies based on the NF service consumer provided information, the PDTQ policies retrieved from the UDR and the current network performance or DN performance. If the PCF does not find any new candidate PDTQ policy, the previously negotiated PDTQ policy shall be kept and no interaction with the NF service consumer shall occur.

If one or more new candidate PDTQ policies are calculated, the PCF shall invoke the Npcf\_PDTQPolicyControl\_Notify service operation by sending the HTTP POST request with a PDTQ warning notification to the NF service consumer.

The PCF shall include in a body of the HTTP POST request a "Notification" data type which shall contain:

- the PDTQ Reference ID of the impacted PDTQ policy within the "pdtqRefId" attribute; and
- the list of candidates PDTQ policies in the "candPolicies" attribute.

NOTE: The NF service consumer might, or might not provide a new PDTQ policy from the offered candidate list.

Upon the reception of the HTTP POST request from the PCF, the NF service consumer shall acknowledge that request by sending an HTTP response message with the corresponding status code:

- if the NF service consumer determines the received HTTP POST request needs to be redirected, the NF service consumer shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4];
- if the HTTP POST request from the PCF is accepted, the NF service consumer shall acknowledge the receipt of the notification with a "204 No Content" response to HTTP POST request, as shown in figure 5.2.2.4.2-1, step 2; or
- if the HTTP POST request from the PCF is not accepted, the NF service consumer shall send an HTTP error response as specified in clause 6.1.7.

## 6 API Definitions

### 6.1 Npcf\_PDTQPolicyControl Service API

#### 6.1.1 Introduction

The PDTQ Policy Control shall use the Npcf\_PDTQPolicyControl API.



The API URI of the Npcf\_PDTQPolicyControl API shall be:

**{apiRoot}/<apiName>/<apiVersion>**

The request URIs used in HTTP requests from the NF service consumer towards the NF service producer shall have the Resource URI structure defined in clause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

**{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>**

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].
- The <apiName> shall be "npcf-pdtq-policy-control".
- The <apiVersion> shall be "v1".
- The <apiSpecificResourceUriPart> shall be set as described in clause 6.1.3.

## 6.1.2 Usage of HTTP

### 6.1.2.1 General

HTTP/2, IETF RFC 9113 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the Npcf\_PDTQPolicyControl API is contained in clause A.2.

### 6.1.2.2 HTTP standard headers

#### 6.1.2.2.1 General

See clause 5.2.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

#### 6.1.2.2.2 Content type

JSON, IETF RFC 8259 [12], shall be used as content type of the HTTP bodies specified in the present specification as specified in clause 5.4 of 3GPP TS 29.500 [4]. The use of the JSON format shall be signalled by the content type "application/json".

"Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 9457 [13].

JSON object used in the HTTP PATCH request shall be encoded according to "JSON Merge Patch" and shall be signalled by the content type "application/merge-patch+json", as defined in IETF RFC 7396 [19].

### 6.1.2.3 HTTP custom headers

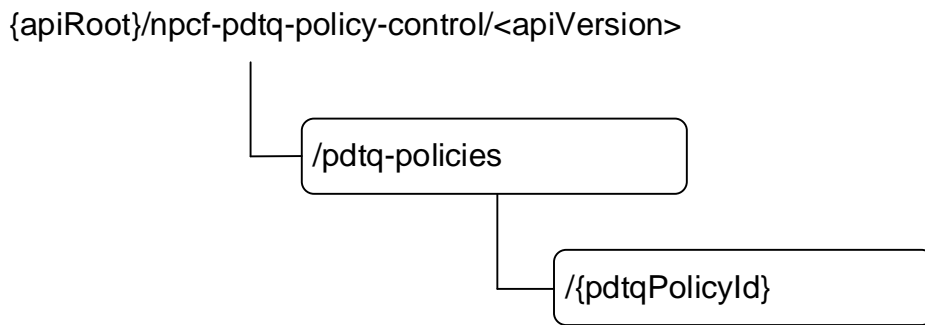
The mandatory HTTP custom header fields specified in clause 5.2.3.2 of 3GPP TS 29.500 [4] shall be supported, and the optional HTTP custom header fields specified in clause 5.2.3.3 of 3GPP TS 29.500 [4] may be supported.

## 6.1.3 Resources

### 6.1.3.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 6.1.3.1-1 depicts the resource URIs structure for the Npcf\_PDTQPolicyControl API.



**Figure 6.1.3.1-1: Resource URI structure of the Npcf\_PDTQPolicyControl API**

Table 6.1.3.1-1 provides an overview of the resources and applicable HTTP methods.

**Table 6.1.3.1-1: Resources and methods overview**

Resource purpose/name	Resource URI (relative path after API URI)	HTTP method or custom operation	Description (service operation)
PDTQ policies	/pdtq-policies	POST	Creates a new Individual PDTQ policy resource.
Individual PDTQ policy	/pdtq-policies/{pdtqPolicyId}	GET	Reads an Individual PDTQ policy resource.
		PATCH	Modifies an existing Individual PDTQ policy resource.

### 6.1.3.2 Resource: PDTQ policies (Collection)

#### 6.1.3.2.1 Description

The PDTQ policies resource represents all PDTQ policies that exist in the PDTQ Policy Control service at a given PCF instance.

#### 6.1.3.2.2 Resource Definition

Resource URI: {apiRoot}/npcf-pdtq-policy-control/<apiVersion>/pdtq-policies

This resource shall support the resource URI variables defined in table 6.1.3.2.2-1.

**Table 6.1.3.2.2-1: Resource URI variables for this resource**

Name	Data type	Definition
apiRoot	string	See clause 6.1.1

#### 6.1.3.2.3 Resource Standard Methods

##### 6.1.3.2.3.1 POST

This method shall support the URI query parameters specified in table 6.1.3.2.3.1-1.

**Table 6.1.3.2.3.1-1: URI query parameters supported by the POST method on this resource**

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.2.3.1-2 and the response data structures and response codes specified in table 6.1.3.2.3.1-3.

**Table 6.1.3.2.3.1-2: Data structures supported by the POST Request Body on this resource**

Data type	P	Cardinality	Description
PdtqPolicyData	M	1	Contains information for the creation of a new Individual PDTQ policy resource.

**Table 6.1.3.2.3.1-3: Data structures supported by the POST Response Body on this resource**

Data type	P	Cardinality	Response codes	Description
PdtqPolicyData	M	1	201 Created	Successful case. An Individual PDTQ policy resource is created and a representation of that resource is returned.
NOTE: The mandatory HTTP error status code for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

**Table 6.1.3.2.3.1-4: Headers supported by the 201 response code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains the URI of the newly created resource, according to the structure: {apiRoot}/npcf-pdtq-policy-control/<apiVersion>/pdtq-policies/{pdtqPolicyId}

#### 6.1.3.2.4 Resource Custom Operations

None.

### 6.1.3.3 Resource: Individual PDTQ policy (Document)

#### 6.1.3.3.1 Description

The Individual PDTQ policy resource represents the planned data transfer with QoS requirements policy that exist in the PDTQ Policy Control service at a given PCF instance.

#### 6.1.3.3.2 Resource Definition

Resource URI: {apiRoot}/npcf-pdtq-policy-control/<apiVersion>/pdtq-policies/{pdtqPolicyId}

This resource shall support the resource URI variables defined in table 6.1.3.3.2-1.

**Table 6.1.3.3.2-1: Resource URI variables for this resource**

Name	Data type	Definition
apiRoot	string	See clause 6.1.1.
pdtqPolicyId	string	Identifies the individual PDTQ policy resource in the PCF. To enable the value to be used as part of a URI, the string shall only contain allowed characters according to the "lower-with-hyphen" naming convention defined in clause 5.1.3 of 3GPP TS 29.501 [5] and rules for a path segment defined in IETF RFC 3986 [20].

#### 6.1.3.3.3 Resource Standard Methods

##### 6.1.3.3.3.1 GET

This method shall support the URI query parameters specified in table 6.1.3.3.3.1-1.

**Table 6.1.3.3.3.1-1: URI query parameters supported by the GET method on this resource**

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.3.3.1-2 and the response data structures and response codes specified in table 6.1.3.3.3.1-3.

**Table 6.1.3.3.3.1-2: Data structures supported by the GET Request Body on this resource**

Data type	P	Cardinality	Description
n/a			

**Table 6.1.3.3.3.1-3: Data structures supported by the GET Response Body on this resource**

Data type	P	Cardinality	Response codes	Description
PdtqPolicyData	M	1	200 OK	A representation of an Individual PDTQ policy resource is returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. (NOTE 2)
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. (NOTE 2)
ProblemDetails	O	0..1	404 Not Found	(NOTE 3)
NOTE 1: The mandatory HTTP error status code for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				
NOTE 2: The RedirectResponse data structure may be provided by an SCP (refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]).				
NOTE 3: Failure cases are described in clause 6.1.7.				

**Table 6.1.3.3.3.1-4: Headers supported by the 307 Response Code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains an alternative URI of the resource located in an alternative PCF (service) instance towards which the request is redirected. For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4].
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target PCF (service) instance towards which the request is redirected.

**Table 6.1.3.3.3.1-5: Headers supported by the 308 Response Code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains an alternative URI of the resource located in an alternative PCF (service) instance towards which the request is redirected. For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4].
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target PCF (service) instance towards which the request is redirected.

#### 6.1.3.3.3.2 PATCH

This method shall support the URI query parameters specified in table 6.1.3.3.3.2-1.

**Table 6.1.3.3.3.2-1: URI query parameters supported by the PATCH method on this resource**

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.3.3.2-2 and the response data structures and response codes specified in table 6.1.3.3.3.2-3.

**Table 6.1.3.3.3.2-2: Data structures supported by the PATCH Request Body on this resource**

Data type	P	Cardinality	Description
PdtqPolicyPatchData	M	1	Contains modifications that shall be applied on the existing Individual PDTQ policy resource.

**Table 6.1.3.3.3.2-3: Data structures supported by the PATCH Response Body on this resource**

Data type	P	Cardinality	Response codes	Description
PdtqPolicyData	M	1	200 OK	The Individual PDTQ policy resource is modified and a representation of that resource is returned.
n/a			204 No Content	The Individual PDTQ policy resource is modified.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. (NOTE 2)
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. (NOTE 2)
ProblemDetails	O	0..1	404 Not Found	(NOTE 3)

NOTE 1: The mandatory HTTP error status code for the PATCH method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.

NOTE 2: The RedirectResponse data structure may be provided by an SCP (refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]).

NOTE 3: Failure cases are described in clause 6.1.7.

**Table 6.1.3.3.3.2-4: Headers supported by the 307 Response Code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains an alternative URI of the resource located in an alternative PCF (service) instance towards which the request is redirected. For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4].
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target PCF (service) instance towards which the request is redirected.

**Table 6.1.3.3.3.2-5: Headers supported by the 308 Response Code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains an alternative URI of the resource located in an alternative PCF (service) instance towards which the request is redirected. For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4].
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target PCF (service) instance towards which the request is redirected.

## 6.1.4 Custom Operations without associated resources

No custom operation is defined in this Release of the specification.

## 6.1.5 Notifications

### 6.1.5.1 General

Notifications shall comply to clause 6.2 of 3GPP TS 29.500 [4] and clause 4.6.2.3 of 3GPP TS 29.501 [5].

**Table 6.1.5.1-1: Notifications overview**

Notification	Callback URI	HTTP method or custom operation	Description (service operation)
PDTQ warning notification	{notifUri}	POST	Provides a PDTQ warning notification.

### 6.1.5.2 PDTQ warning notification

#### 6.1.5.2.1 Description

The PDTQ warning notification is used by the PCF to notify the NF service consumer about changed conditions for a planned data transfer with QoS requirements e.g. that a network performance or DN performance in the area of interest goes below the criteria set by the operator.

#### 6.1.5.2.2 Target URI

The Callback URI "{**notifUri**}" shall be used with the callback URI variables defined in table 6.1.5.2.2-1.

**Table 6.1.5.2.2-1: Callback URI variables**

Name	Definition
notifUri	String formatted as URI with the Callback Uri

#### 6.1.5.2.3 Standard Methods

##### 6.1.5.2.3.1 POST

This method shall support the request data structures specified in table 6.1.5.2.3.1-1 and the response data structures and response codes specified in table 6.1.5.2.3.1-2.

**Table 6.1.5.2.3.1-1: Data structures supported by the POST Request Body**

Data type	P	Cardinality	Description
Notification	M	1	Provides a PDTQ warning notification.

**Table 6.1.5.2.3.1-2: Data structures supported by the POST Response Body**

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The reception of a PDTQ warning notification is acknowledged.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. (NOTE 2)
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. (NOTE 2)
NOTE 1: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				
NOTE 2: The RedirectResponse data structure may be provided by an SCP (refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]).				

**Table 6.1.5.2.3.1-3: Headers supported by the 307 Response Code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains an alternative URI representing the end point of an alternative NF service consumer instance towards which the notification is redirected. For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4].
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF service consumer instance towards which the notification request is redirected.

**Table 6.1.5.2.3.1-4: Headers supported by the 308 Response Code on this resource**

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains an alternative URI representing the end point of an alternative NF service consumer instance towards which the notification is redirected. For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4].
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF service consumer instance towards which the notification request is redirected.

## 6.1.6 Data Model

### 6.1.6.1 General

This clause specifies the application data model supported by the API.

Table 6.1.6.1-1 specifies the data types defined for the Npcf\_PDTQPolicyControl service based interface protocol.

**Table 6.1.6.1-1: Npcf\_PDTQPolicyControl specific Data Types**

Data type	Clause defined	Description	Applicability
AltQoSParamSet	6.1.6.2.4	Contains the alternative QoS requirements expressed as the list of individual QoS parameter sets.	
Notification	6.1.6.2.7	Contains the PDTQ notification information.	
PdtqPolicy	6.1.6.2.5	Describes a PDTQ policy.	
PdtqPolicyData	6.1.6.2.2	Describes an Individual PDTQ policy resource.	
PdtqPolicyPatchData	6.1.6.2.6	Represents modifications of an Individual PDTQ policy resource.	
PdtqReferencId	6.1.6.3.2	Represents a PDTQ Reference ID.	
QoSParameterSet	6.1.6.2.3	Contains the QoS requirements expressed as one or more individual QoS parameters.	

Table 6.1.6.1-2 specifies data types re-used by the Npcf\_PDTQPolicyControl service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Npcf\_PDTQPolicyControl service based interface.

Table 6.1.6.1-2: Npcf\_PDTQPolicyControl re-used Data Types

Data type	Reference	Comments	Applicability
5QIPriorityLevel	3GPP TS 29.571 [21]	Represents the 5QI Priority Level (see clauses 5.7.3.3 and 5.7.4 of 3GPP TS 23.501 [2]) within the range 1 to 127.	
ApplicationId	3GPP TS 29.571 [21]	Contains the application identifier.	
BitRate	3GPP TS 29.571 [21]	Represents the bitrate in kbits per second.	
Dnn	3GPP TS 29.571 [21]	Identifies a Data Network Name.	
ExtMaxDataBurstVol	3GPP TS 29.571 [21]	Represents the Maximum Data Burst Volume (see clauses 5.7.3.7 and 5.7.4 of 3GPP TS 23.501 [2]), expressed in Bytes. Minimum = 4096. Maximum = 2000000.	
MaxDataBurstVol	3GPP TS 29.571 [21]	Represents the Maximum Data Burst Volume (see clauses 5.7.3.7 and 5.7.4 of 3GPP TS 23.501 [2]), expressed in Bytes. Minimum = 1. Maximum = 4095.	
NetworkAreaInfo	3GPP TS 29.554 [22]	Describes a network area information in which the NF service consumer requests the number of UEs.	
PacketDelBudget	3GPP TS 29.571 [21]	Represents the Packet Delay Budget (see clauses 5.7.3.4 and 5.7.4 of 3GPP TS 23.501 [2]), expressed in milliseconds.	
PacketErrRate	3GPP TS 29.571 [21]	Represents the Packet Error Rate (see clause 5.7.3.5 and 5.7.4 of 3GPP TS 23.501 [2]), expressed as a "scalar x 10-k" where the scalar and the exponent k are each encoded as one decimal digit.	
ProblemDetails	3GPP TS 29.571 [21]	Used in error responses to provide more detailed information about an error.	
RedirectResponse	3GPP TS 29.571 [21]	Contains redirection related information.	
Snssai	3GPP TS 29.571 [21]	Identifies a Single Network Slice Selection Assistance Information.	
SupportedFeatures	3GPP TS 29.571 [21]	Used to negotiate the applicability of the optional features defined in table 6.1.8-1.	
TimeWindow	3GPP TS 29.122 [23]	Specifies a time interval.	
Uri	3GPP TS 29.571 [21]	String providing an URI.	

## 6.1.6.2 Structured data types

### 6.1.6.2.1 Introduction

This clause defines the structures to be used in resource representations.



6.1.6.2.2 Type: PdtqPolicyData

**Table 6.1.6.2.2-1: Definition of type PdtqPolicyData**

Attribute name	Data type	P	Cardinality	Description	Applicability
altQosParamSets	array(AltQosParameterSet)	O	1..N	This IE contains the alternative QoS requirements expressed as the list of individual QoS parameter sets in a prioritized order. The lower the index of the array for a given entry, the higher the priority. (NOTE 4)	
altQosRefs	array(string)	O	1..N	This IE contains the alternative QoS requirements expressed as the list of QoS References in a prioritized order. The lower the index of the array for a given entry, the higher the priority. (NOTE 3)	
appld	ApplicationId	O	0..1	This IE contains an application identifier.	
aspld	string	M	1	This IE contains an identity of an application service provider.	
desTimeInts	array(TimeWindow)	M	1..N	This IE contains a list of desired time windows for PDTQ.	
dnn	Dnn	O	0..1	This IE identifies a DNN. A full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. (NOTE 1)	
notifUri	Uri	O	0..1	This IE contains an URI of the recipient of the PDTQ notification.	
nwAreaInfo	NetworkAreaInfo	O	0..1	This IE represents a network area information in which the NF service consumer requests a number of UEs.	
numOfUes	integer	M	1	This IE indicates a number of UEs.	
pdtqPolicies	array(PdtqPolicy)	C	1..N	This IE contains PDTQ policies. Shall be present in the response of the create message.	
pdtqRefId	PdtqReferenceId	O	0..1	This IE identifies PDTQ policies of planned data transfer with QoS requirements for provided ASP.	
qosParamSet	QosParameterSet	C	0..1	This IE contains the requested QoS requirements expressed as one or more individual QoS parameters. (NOTE 2)	
qosReference	string	C	0..1	This IE contains the requested QoS requirements expressed as the QoS Reference which represents a pre-defined QoS information. (NOTE 2)	
selPdtqPolicyId	integer	O	0..1	This IE contains the identity of the selected PDTQ policy. (NOTE 5)	
snssai	Snssai	O	0..1	This IE identifies a slice.	
suppFeat	SupportedFeatures	O	0..1	This IE represents a list of Supported features used as described in clause 6.1.8.	
warnNotifReq	boolean	O	0..1	This IE indicates whether the PDTQ warning notification is enabled or disabled.  true: enabled; false: disabled (default).	

NOTE 1: The PCF uses the DNN as received from the NF service consumer without applying any transformation. To successfully perform DNN matching, in a specific deployment a DNN shall always be encoded either with the full DNN (e.g., because there are multiple Operator Identifiers for a Network Identifier) or the DNN Network Identifier only. The NF service consumer may include the DNN Operator Identifier based on local configuration.

NOTE 2: Either the "qosReference" attribute or the "qosParamSet" attribute shall be included.

NOTE 3: The "altQosRefs" attribute may be included only if the "qosReference" attribute is included.

NOTE 4: The "altQosParamSets" attribute may be included only if the "qosParamSet" attribute is included.

NOTE 5: The value "0" indicates that no PDTQ policy is selected.

### 6.1.6.2.3 Type: QosParameterSet

**Table 6.1.6.2.3-1: Definition of type QosParameterSet**

Attribute name	Data type	P	Cardinality	Description	Applicability
extMaxBurstSize	ExtMaxDataBurstVol	O	0..1	This IE represents the Maximum Burst Size value greater than 4095 Bytes. (NOTE 1)	
gfbrDL	BitRate	O	0..1	This IE represents the Guaranteed Flow Bitrate in downlink direction.	
gfbrUL	BitRate	O	0..1	This IE represents the Guaranteed Flow Bitrate in uplink direction.	
maxBitRateDL	BitRate	O	0..1	This IE represents the Maximum Bitrate in downlink direction.	
maxBitRateUL	BitRate	O	0..1	This IE represents the Maximum Bitrate in uplink direction.	
maxBurstSize	MaxDataBurstVol	O	0..1	This IE represents the Maximum Burst Size value lower than or equal to 4095 Bytes. (NOTE 1)	
pdb	PacketDelBudget	O	0..1	This IE represents the 5GS Packet Delay Budget.	
per	PacketErrRate	O	0..1	This IE represents the Packet Error Rate.	
priorLevel	5QiPriorityLevel	O	0..1	This represents the Priority Level.	
NOTE 1: The attributes "extMaxBurstSize" and "maxBurstSize" are mutually exclusive.					
NOTE 2: At least one of the attributes shall be present.					

### 6.1.6.2.4 Type: AltQosParamSet

**Table 6.1.6.2.4-1: Definition of type AltQosParamSet**

Attribute name	Data type	P	Cardinality	Description	Applicability
gfbrDL	BitRate	O	0..1	This IE represents the Guaranteed Flow Bitrate in downlink direction.	
gfbrUL	BitRate	O	0..1	This IE represents the Guaranteed Flow Bitrate in uplink direction.	
pdb	PacketDelBudget	O	0..1	This IE represents the 5GS Packet Delay Budget.	
per	PacketErrRate	O	0..1	This IE represents the Packet Error Rate.	
NOTE: At least one of the attributes shall be present.					

## 6.1.6.2.5 Type: PdtqPolicy

**Table 6.1.6.2.5-1: Definition of type PdtqPolicy**

Attribute name	Data type	P	Cardinality	Description	Applicability
pdqtPolicyId	integer	M	1	This IE contains an identity of a PDTQ policy. (NOTE)	
recTimeInt	TimeWindow	M	1	This IE contains a recommended time window of a PDTQ policy.	

NOTE: The identity of a PDTQ policy shall be greater than zero.

## 6.1.6.2.6 Type PdtqPolicyPatchData

**Table 6.1.6.2.6-1: Definition of type PdtqPolicyPatchData**

Attribute name	Data type	P	Cardinality	Description	Applicability
notifUri	Uri	O	0..1	This IE contains an URI of the recipient of the PDTQ notification.	
selPdtqPolicyId	integer	O	0..1	This IE contains an identity (i.e. the pdqtPolicyId value) of a selected PDTQ policy. (NOTE 2)	
warnNotifReq	boolean	O	0..1	This IE indicates whether the PDTQ warning notification is enabled or disabled.  true: enabled; false: disabled.	

NOTE 1: At least one of the attributes shall be included.  
NOTE 2: The value "0" indicates that no PDTQ policy is selected.

## 6.1.6.2.7 Type Notification

**Table 6.1.6.2.7-1: Definition of type Notification**

Attribute name	Data type	P	Cardinality	Description	Applicability
pdqtRefId	PdtqReferenceId	M	1	This IE identifies the PDTQ policy to which the notification corresponds.	
candPolicies	array(PdtqPolicy)	M	1..N	This IE contains a list of the candidate PDTQ policies from which the NF service consumer may provide a new PDTQ policy.	

## 6.1.6.3 Simple data types and enumerations

## 6.1.6.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

## 6.1.6.3.2 Simple data types

The simple data types defined in table 6.1.6.3.2-1 shall be supported.

**Table 6.1.6.3.2-1: Simple data types**

Type Name	Type Definition	Description	Applicability
PdtqReferenceId	string	Represents a PDTQ Reference ID.	

#### 6.1.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this Release of the present document.

#### 6.1.6.5 Binary data

##### 6.1.6.5.1 Binary Data Types

**Table 6.1.6.5.1-1: Binary Data Types**

Name	Clause defined	Content type

#### 6.1.7 Error Handling

##### 6.1.7.1 General

For the Npcf\_PDTQPolicyControl API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Npcf\_PDTQPolicyControl API.

##### 6.1.7.2 Protocol Errors

No specific procedures for the Npcf\_PDTQPolicyControl service are specified.

##### 6.1.7.3 Application Errors

The application errors defined for the Npcf\_PDTQPolicyControl service are listed in table 6.1.7.3-1.

**Table 6.1.7.3-1: Application errors**

Application Error	HTTP status code	Description
PDTQ_POLICY_NOT_FOUND	404 Not Found	The HTTP request is rejected because the specified Individual PDTQ policy resource does not exist.
NOTE: Including a "ProblemDetails" data structure with the "cause" attribute in the HTTP response is optional unless explicitly mandated in the service operation clauses.		

#### 6.1.8 Feature negotiation

The optional features in table 6.1.8-1 are defined for the Npcf\_PDTQPolicyControl API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

**Table 6.1.8-1: Supported Features**

Feature number	Feature Name	Description

#### 6.1.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Npcf\_PDTQPolicyControl API may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [9]), based on local configuration, using the "Client Credentials" authorization grant, where the NRF (see 3GPP TS 29.510 [10]) plays the role of the authorization server.

If OAuth2 is used, an NF service consumer, prior to consuming services offered by the Npcf\_PDTQPolicyControl API, shall obtain a "token" from the authorization server, by invoking the Access Token Request service, as described in 3GPP TS 29.510 [10], clause 5.4.2.2.

NOTE: When multiple NRFs are deployed in a network, the NRF used as authorization server is the same NRF that the NF Service Consumer used for discovering the Npcf\_PDTQPolicyControl service.

The Npcf\_PDTQPolicyControl API defines a single scope "npcf-pdtq-policy-control" for the entire service, and it does not define any additional scopes at resource or operation level.

---

# Annex A (normative): OpenAPI specification

## A.1 General

This Annex specifies the formal definition of the API(s) defined in the present specification. It consists of OpenAPI specifications in YAML format.

This Annex takes precedence when being discrepant to other parts of the specification with respect to the encoding of information elements and methods within the API(s).

NOTE 1: The semantics and procedures, as well as conditions, e.g. for the applicability and allowed combinations of attributes or values, not expressed in the OpenAPI definitions but defined in other parts of the specification also apply.

Informative copies of the OpenAPI specification files contained in this 3GPP Technical Specification are available on a Git-based repository that uses the GitLab software version control system (see clause 5.3.1 of 3GPP TS 29.501 [5] and clause 5B of 3GPP TR 21.900 [7]).

---

## A.2 Npcf\_PDTQPolicyControl API

openapi: 3.0.0

info:

```
title: Npcf_PDTQPolicyControl API
version: 1.0.0
description: |
  PCF PDTQ Policy Control service.
  © <2024>, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
  All rights reserved.
```

externalDocs:

```
description: 3GPP TS 29.543 V18.1.0; 5G System; Data Transfer Policy Control Services; Stage 3.
url: 'https://www.3gpp.org/ftp/Specs/archive/29_series/29.543/'
```

servers:

```
- url: '{apiRoot}/npcf-pdtq-policy-control/v1'
  variables:
    apiRoot:
      default: https://example.com
      description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501.
```

security:

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

paths:

```
/pdtq-policies:
  post:
    summary: Creates a new Individual PDTQ policy resource.
    operationId: CreatePDTQPolicy
    tags:
      - PDTQ policies (Collection)
    requestBody:
      description: >
        Contains information for the creation of a new Individual PDTQ policy resource.
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/PdtqPolicyData'
    responses:
      '201':
        description: >
          Created, an Individual PDTQ policy resource is created and a representation of that
```

```

    resource is returned.
  content:
    application/json:
      schema:
        $ref: '#/components/schemas/PdtqPolicyData'
  headers:
    Location:
      description: >
        Contains the URI of the created Individual PDTQ policy resource,
        according to the structure
        {apiRoot}/npcf-pdtq-policy-control/v1/pdtq-policies/{pdtqPolicyId}
      required: true
      schema:
        type: string
'400':
  $ref: 'TS29571_CommonData.yaml#/components/responses/400'
'401':
  $ref: 'TS29571_CommonData.yaml#/components/responses/401'
'403':
  $ref: 'TS29571_CommonData.yaml#/components/responses/403'
'404':
  $ref: 'TS29571_CommonData.yaml#/components/responses/404'
'411':
  $ref: 'TS29571_CommonData.yaml#/components/responses/411'
'413':
  $ref: 'TS29571_CommonData.yaml#/components/responses/413'
'415':
  $ref: 'TS29571_CommonData.yaml#/components/responses/415'
'429':
  $ref: 'TS29571_CommonData.yaml#/components/responses/429'
'500':
  $ref: 'TS29571_CommonData.yaml#/components/responses/500'
'502':
  $ref: 'TS29571_CommonData.yaml#/components/responses/502'
'503':
  $ref: 'TS29571_CommonData.yaml#/components/responses/503'
default:
  $ref: 'TS29571_CommonData.yaml#/components/responses/default'
callbacks:
  PDTQNotification:
    '{$request.body#/notifUri}':
      post:
        requestBody:
          required: true
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/Notification'
  responses:
    '204':
      description: >
        No Content, the reception of a PDTQ warning notification is acknowledged.
    '307':
      $ref: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      $ref: 'TS29571_CommonData.yaml#/components/responses/308'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '403':
      $ref: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      $ref: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '502':
      $ref: 'TS29571_CommonData.yaml#/components/responses/502'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'

```



```

    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

/pdtq-policies/{pdtqPolicyId}:

get:
  summary: Reads an Individual PDTQ policy resource.
  operationId: GetIndPDTQPolicy
  tags:
    - Individual PDTQ policy (Document)
  parameters:
    - name: pdtqPolicyId
      description: String identifying the individual PDTQ policy resource in the PCF.
      in: path
      required: true
      schema:
        type: string
  responses:
    '200':
      description: OK, a representation of an Individual PDTQ policy resource is returned.
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/PdtqPolicyData'
    '307':
      $ref: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      $ref: 'TS29571_CommonData.yaml#/components/responses/308'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '401':
      $ref: 'TS29571_CommonData.yaml#/components/responses/401'
    '403':
      $ref: 'TS29571_CommonData.yaml#/components/responses/403'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '406':
      $ref: 'TS29571_CommonData.yaml#/components/responses/406'
    '429':
      $ref: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '502':
      $ref: 'TS29571_CommonData.yaml#/components/responses/502'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

patch:
  summary: Modifies an existing Individual PDTQ policy resource.
  operationId: ModifyIndPDTQPolicy
  tags:
    - Individual PDTQ policy (Document)
  parameters:
    - name: pdtqPolicyId
      description: String identifying the individual PDTQ policy resource in the PCF.
      in: path
      required: true
      schema:
        type: string
  requestBody:
    description: >
      Contains modifications that shall be applied on the existing Individual PDTQ
      policy resource.
    required: true
    content:
      application/merge-patch+json:
        schema:
          $ref: '#/components/schemas/PdtqPolicyPatchData'
  responses:
    '200':
      description: >
        OK, the Individual PDTQ policy resource is modified and a representation of
        that resource is returned.
      content:
        application/json:
          schema:

```

```

    $ref: '#/components/schemas/PdtqPolicyData'
  '204':
    description: No Content, the Individual PDTQ policy resource is modified.
  '307':
    $ref: 'TS29571_CommonData.yaml#/components/responses/307'
  '308':
    $ref: 'TS29571_CommonData.yaml#/components/responses/308'
  '400':
    $ref: 'TS29571_CommonData.yaml#/components/responses/400'
  '401':
    $ref: 'TS29571_CommonData.yaml#/components/responses/401'
  '403':
    $ref: 'TS29571_CommonData.yaml#/components/responses/403'
  '404':
    $ref: 'TS29571_CommonData.yaml#/components/responses/404'
  '411':
    $ref: 'TS29571_CommonData.yaml#/components/responses/411'
  '413':
    $ref: 'TS29571_CommonData.yaml#/components/responses/413'
  '415':
    $ref: 'TS29571_CommonData.yaml#/components/responses/415'
  '429':
    $ref: 'TS29571_CommonData.yaml#/components/responses/429'
  '500':
    $ref: 'TS29571_CommonData.yaml#/components/responses/500'
  '502':
    $ref: 'TS29571_CommonData.yaml#/components/responses/502'
  '503':
    $ref: 'TS29571_CommonData.yaml#/components/responses/503'
  default:
    $ref: 'TS29571_CommonData.yaml#/components/responses/default'

```

components:

```

securitySchemes:
  oAuth2ClientCredentials:
    type: oauth2
    flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          npcf-pdtq-policy-control: Access to the Npcf_PDTQPolicyControl API

```

schemas:

# Structured data types

```

PdtqPolicyData:
  description: Describes an Individual PDTQ policy resource.
  type: object
  required:
    - aspId
    - desTimeInts
    - numOfUes
  oneOf:
    - required: [qosReference]
    - required: [qosParamSet]
  properties:
    altQosParamSets:
      description: >
        Contains the alternative QoS requirements expressed as the list of individual
        QoS parameter sets in a prioritized order. The lower the index of the array for
        a given entry, the higher the priority.
      type: array
      items:
        $ref: '#/components/schemas/AltQosParamSet'
      minItems: 1
    altQosRefs:
      description: >
        Contains the alternative QoS requirements expressed as the list of QoS References
        in a prioritized order. The lower the index of the array for a given entry, the
        higher the priority.
      type: array
      items:
        type: string
      minItems: 1
    appId:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/ApplicationId'

```

```

aspId:
  description: Contains an identity of an application service provider.
  type: string
desTimeInts:
  description: Contains a list of desired time windows for PDTQ.
  type: array
  items:
    $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
  minItems: 1
dnn:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/Dnn'
notifUri:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
nwAreaInfo:
  $ref: 'TS29554_Npcf_BDTPolicyControl.yaml#/components/schemas/NetworkAreaInfo'
numOfUes:
  description: Indicates a number of UEs.
  type: integer
pdtqPolicies:
  description: Contains PDTQ policies.
  type: array
  items:
    $ref: '#/components/schemas/PdtqPolicy'
  minItems: 1
pdtqRefId:
  $ref: '#/components/schemas/PdtqReferenceId'
qosParamSet:
  $ref: '#/components/schemas/QosParameterSet'
qosReference:
  description: >
    Contains the requested QoS requirements expressed as the QoS Reference which
    represents a pre-defined QoS information.
  type: string
selPdtqPolicyId:
  description: Contains the identity of the selected PDTQ policy.
  type: integer
snssai:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/Snssai'
suppFeat:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
warnNotifReq:
  description: >
    Indicates whether the PDTQ warning notification is enabled (true) or
    disabled (false). Default value is false.
  type: boolean
  default: false

QosParameterSet:
  description: >
    Contains the QoS requirements expressed as one or more individual QoS parameters.
  type: object
  properties:
    extMaxBurstSize:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/ExtMaxDataBurstVol'
    gfbrDl:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    gfbrUl:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    maxBitRateDl:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    maxBitRateUl:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
    maxBurstSize:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/MaxDataBurstVol'
    pdb:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/PacketDelBudget'
    per:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/PacketErrRate'
    priorLevel:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/5QiPriorityLevel'

AltQosParamSet:
  description: >
    Contains the alternative QoS requirements expressed as the list of individual QoS
    parameter sets.
  type: object
  properties:
    gfbrDl:

```

```
  $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
gfbrUl:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
pdb:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/PacketDelBudget'
per:
  $ref: 'TS29571_CommonData.yaml#/components/schemas/PacketErrRate'
```

```
PdtqPolicy:
description: Describes a PDTQ policy.
type: object
required:
- pdtqPolicyId
- recTimeInt
properties:
  pdtqPolicyId:
    description: Contains an identity of a PDTQ policy.
    type: integer
  recTimeInt:
    $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
```

```
PdtqPolicyPatchData:
description: Represents modifications of an Individual PDTQ policy resource.
type: object
properties:
  notifUri:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
  selPdtqPolicyId:
    description: Contains the identity of the selected PDTQ policy.
    type: integer
  warnNotifReq:
    description: >
      Indicates whether the PDTQ warning notification is enabled (true) or
      disabled (false).
    type: boolean
```

```
Notification:
description: Contains the PDTQ notification information.
type: object
required:
- pdtqRefId
- candPolicies
properties:
  pdtqRefId:
    $ref: '#/components/schemas/PdtqReferenceId'
  candPolicies:
    description: >
      Contains a list of the candidate PDTQ policies from which the NF service
      consumer may provide a new PDTQ policy.
    type: array
    items:
      $ref: '#/components/schemas/PdtqPolicy'
  minItems: 1
```

# Simple data types

```
PdtqReferenceId:
description: Represents a PDTQ Reference ID.
type: string
```

---

## Annex B (informative): Withdrawn API versions

### B.1 General

This Annex lists withdrawn API versions of the APIs defined in the present specification. 3GPP TS 29.501 [5] clause 4.3.1.6 describes the withdrawal of API versions.

---

### B.2 Npcf\_PDTQPolicyControl API

The API versions listed in table B.2-1 are withdrawn for the Npcf\_PDTQPolicyControl API.

**Table B.2-1: Withdrawn API versions of the Npcf\_PDTQPolicyControl service**

API version number	Remarks

## Annex C (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2023-03						TS template for 5G System; Data Transfer Policy Control Services	0.0.0
2023-04	CT3#127e	C3-231510				Inclusion of: C3-231477, C3-231478, C3-231479 and C3-231480.	0.1.0
2023-06	CT3#128	C3-232460				Inclusion of: C3-232059 and C3-232435.	0.2.0
2023-09	CT3#129	C3-233738				Inclusion of: C3-233070 and C3-233533.	0.3.0
2023-10	CT3#130	C3-234661				Inclusion of: C3-234444.	0.4.0
2023-11	CT3#131	C3-235464				Inclusion of: C3-235220 and C3-235477.	0.5.0
2023-12	CT#102	CP-233290				Presentation to TSG CT for information.	1.0.0
2024-03	CT#103	CP-240215				Presentation to TSG CT for approval.	2.0.0
2024-03	CT#103	CP-240215				Approved by TSG CT.	18.0.0
2024-03	CT#104	CP-241091	000 1	1	B	PDTQ Error handling in roaming scenario	18.1.0
2024-03	CT#104	CP-241091	000 5	1	B	Addition of PDTQ policies Delete service operation	18.1.0
2024-03	CT#104	CP-241255	000 6	1	F	AF usage correction and Annex Update	18.1.0
2024-03	CT#104	CP-241092	000 7	1	F	Corrections on Npcf_PDTQPolicyControl API	18.1.0
2024-03	CT#104	CP-241086	000 8		F	Update of info and externalDocs fields	18.1.0

---

# History

<b>Document history</b>		
V18.0.0	May 2024	Publication
V18.1.0	July 2024	Publication