

ETSI TS 129 512 V15.18.0 (2026-03)



TECHNICAL SPECIFICATION

**5G;
5G System;
Session Management Policy Control Service;
Stage 3
(3GPP TS 29.512 version 15.18.0 Release 15)**



Reference

RTS/TSGC-0329512vfi0

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](#) repository.

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 2026.
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 IPR online database](#).

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™**, **LTE™** and **5G™** logo 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 at [3GPP to ETSI numbering cross-referencing](#).

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.....	8
1 Scope	9
2 References	9
3 Definitions, symbols and abbreviations	10
3.1 Definitions	10
3.2 Abbreviations	11
4 Npcf_SMPolicyControl Service.....	11
4.1 Service Description	11
4.1.1 Overview	11
4.1.2 Service Architecture	12
4.1.3 Network Functions.....	12
4.1.3.1 Policy Control Function (PCF)	12
4.1.3.2 NF Service Consumers.....	13
4.1.4 Rules	13
4.1.4.1 General	13
4.1.4.2 PCC rules	13
4.1.4.2.1 PCC rules definition	13
4.1.4.2.2 PCC rules operation.....	17
4.1.4.3 Session rule	17
4.1.4.3.1 Session rules definition.....	17
4.1.4.3.2 Session rules operation.....	18
4.1.4.4 Policy Decision types.....	18
4.1.4.4.1 General	18
4.1.4.4.2 Traffic control data definition.....	18
4.1.4.4.3 QoS data definition.....	19
4.1.4.4.4 Charging data definition.....	19
4.1.4.4.5 UsageMonitoring data definition.....	20
4.1.5 Policy control request trigger.....	20
4.1.6 Requested rule data.....	20
4.1.7 Requested usage data.....	21
4.1.8 Condition data.....	21
4.2 Service Operations	21
4.2.1 Introduction.....	21
4.2.2 Npcf_SMPolicyControl_Create Service Operation	21
4.2.2.1 General	21
4.2.2.2 SM Policy Association establishment	22
4.2.2.3 Provisioning of charging related information for PDU session	24
4.2.2.3.1 Provisioning of Charging Addresses	24
4.2.2.3.2 Provisioning of Default Charging Method	25
4.2.2.4 Provisioning of revalidation time.....	25
4.2.2.5 Policy provisioning and enforcement of authorized AMBR per PDU session.....	25
4.2.2.6 Policy provisioning and enforcement of authorized default QoS.....	25
4.2.2.7 Provisioning of PCC rule for Application Detection and Control.....	26
4.2.2.8 3GPP PS Data Off Support	26
4.2.2.9 IMS Emergency Session Support.....	26
4.2.2.10 Request Usage Monitoring Control.....	27
4.2.2.11 Access Network Charging Identifier report	27
4.2.2.12 Request for the successful resource allocation notification.....	27
4.2.2.13 Request of Presence Reporting Area Change Report.....	27
4.2.2.14 Provisioning of IP Index Information	27
4.2.2.15 Negotiation of the QoS flow for IMS signalling	27

4.2.2.16	PCF resource cleanup.....	28
4.2.3	Npcf_SMPolicyControl_UpdateNotify Service Operation.....	28
4.2.3.1	General.....	28
4.2.3.2	SM Policy Association Update request.....	29
4.2.3.3	SM Policy Association termination request.....	30
4.2.3.4	Provisioning of revalidation time.....	30
4.2.3.5	Policy provisioning and enforcement of authorized AMBR per PDU session.....	31
4.2.3.6	Policy provisioning and enforcement of authorized default QoS.....	31
4.2.3.7	Provisioning of PCC rule for Application Detection and Control.....	31
4.2.3.8	3GPP PS Data Off Support.....	31
4.2.3.9	IMS Emergency Session Support.....	31
4.2.3.9.1	Provisioning of PCC rule.....	31
4.2.3.9.2	Removal of PCC Rules for Emergency Services.....	32
4.2.3.10	Request of Access Network Information.....	32
4.2.3.11	Request Usage Monitoring Control.....	32
4.2.3.12	IPv6 Multi-homing support.....	32
4.2.3.13	Request for the result of PCC rule removal.....	32
4.2.3.14	Access Network Charging Identifier request.....	32
4.2.3.15	Request for the successful resource allocation notification.....	33
4.2.3.16	PCC Rule Error Report.....	33
4.2.3.17	IMS Restoration Support.....	33
4.2.3.18	P-CSCF Restoration Enhancement Support.....	34
4.2.3.19	Request of Presence Reporting Area Change Report.....	34
4.2.3.20	Session Rule Error Report.....	34
4.2.4	Npcf_SMPolicyControl_Update Service Operation.....	34
4.2.4.1	General.....	34
4.2.4.2	Requesting the update of the Session Management related policies.....	35
4.2.4.3	Request the policy based on revalidation time.....	37
4.2.4.4	Policy provisioning and enforcement of authorized AMBR per PDU session.....	37
4.2.4.5	Policy provisioning and enforcement of authorized default QoS.....	37
4.2.4.6	Application detection information reporting.....	37
4.2.4.7	Indication of QoS Flow Termination Implications.....	38
4.2.4.8	3GPP PS Data Off Support.....	39
4.2.4.9	Request and Report of Access Network Information.....	40
4.2.4.10	Request Usage Monitoring Control and Reporting Accumulated Usage.....	40
4.2.4.11	IPv6 Multi-homing support.....	41
4.2.4.12	Request and report for the result of PCC rule removal.....	41
4.2.4.13	Access Network Charging Identifier request and report.....	42
4.2.4.14	Request and report for the successful resource allocation notification.....	42
4.2.4.15	PCC Rule Error Report.....	42
4.2.4.16	Presence Reporting Area Information Report.....	43
4.2.4.17	UE initiates a resource modification support.....	43
4.2.4.18	Trace Control.....	45
4.2.4.19	Negotiation of the QoS flow for IMS signalling.....	45
4.2.4.20	Notification about Service Data Flow QoS target enforcement.....	45
4.2.4.21	Session Rule Error Report.....	45
4.2.5	Npcf_SMPolicyControl_Delete Service Operation.....	46
4.2.5.1	General.....	46
4.2.5.2	SM Policy Association termination.....	46
4.2.5.3	Report Accumulated Usage.....	47
4.2.5.4	Report Access Network Information.....	47
4.2.6	Provisioning and Enforcement of Policy Decisions.....	47
4.2.6.1	General.....	47
4.2.6.2	PCC Rules.....	49
4.2.6.2.1	Overview.....	49
4.2.6.2.2	Gate function.....	50
4.2.6.2.3	Policy enforcement for authorized QoS per PCC Rule.....	50
4.2.6.2.4	Redirect function.....	51
4.2.6.2.5	Usage Monitoring Control.....	51
4.2.6.2.6	Traffic Steering Control support.....	51
4.2.6.2.7	Conditioned PCC rule.....	53
4.2.6.2.8	PCC rule for resource sharing.....	55

4.2.6.2.9	Resource reservation for services sharing priority.....	55
4.2.6.2.10	PCC rule bound to the default QoS flow	56
4.2.6.2.11	PCC rule for Application Detection and Control.....	57
4.2.6.2.12	Provisioning of PCC Rules for Multimedia Priority Services	57
4.2.6.2.13	Sponsored Data Connectivity	59
4.2.6.2.14	Support for PCC rule versioning	60
4.2.6.2.15	Background data transfer support.....	60
4.2.6.2.16	Number of supported packet filter for signalled QoS rule limitation support	60
4.2.6.3	Session Rules	61
4.2.6.3.1	Overview	61
4.2.6.3.2	Conditioned Session rule	61
4.2.6.3.3	Provisioning of authorized default QoS	62
4.2.6.4	Policy control request triggers.....	63
4.2.6.5	Encoding of the request of information reporting	63
4.2.6.5.1	Request of Access Network Charging Identifier	63
4.2.6.5.2	RAN NAS Cause Support	63
4.2.6.5.3	Provisioning of the Usage Monitoring Control Policy	64
4.2.6.5.4	Request for Access Network Information	65
4.2.6.5.5	Request for the successful resource allocation notification	65
4.2.6.5.6	Provisioning of Presence Reporting Area Information.....	65
4.2.6.5.7	Policy provisioning and enforcement of reflective QoS	66
4.2.6.6	Authorized QoS.....	67
4.2.6.6.1	General	67
4.2.6.6.2	Policy provisioning and enforcement of authorized QoS per service data flow.....	68
4.2.6.6.3	Policy provisioning and enforcement of authorized explicitly signalled QoS Characteristics	69
5	Npcf_SMPolicyControl Service API	69
5.1	Introduction	69
5.2	Usage of HTTP.....	69
5.2.1	General.....	69
5.2.2	HTTP standard headers.....	70
5.2.2.1	General	70
5.2.2.2	Content type	70
5.2.3	HTTP custom headers.....	70
5.2.3.1	General	70
5.3	Resources	70
5.3.1	Resource Structure	70
5.3.2	Resource: SM Policies	71
5.3.2.1	Description	71
5.3.2.2	Resource definition	71
5.3.2.3	Resource Standard Methods.....	71
5.3.2.3.1	POST	71
5.3.2.4	Resource Custom Operations	72
5.3.3	Resource: Individual SM Policy	72
5.3.3.1	Description	72
5.3.3.2	Resource definition	72
5.3.3.3	Resource Standard Methods.....	72
5.3.3.3.1	GET	72
5.3.3.4	Resource Custom Operations	73
5.3.3.4.1	Overview	73
5.3.3.4.2	Operation: delete	73
5.3.3.4.3	Operation: update	73
5.4	Custom Operations without associated resources.....	74
5.5	Notifications.....	74
5.5.1	General.....	74
5.5.2	Policy Update Notification	74
5.5.2.1	Description	74
5.5.2.2	Operation Definition	74
5.5.3	Request for termination of the policy association.....	75
5.5.3.1	Description	75
5.5.3.2	Operation Definition	75
5.6	Data Model.....	75

5.6.1	General.....	75
5.6.2	Structured data types.....	81
5.6.2.1	Introduction.....	81
5.6.2.2	Type SmPolicyControl.....	82
5.6.2.3	Type SmPolicyContextData.....	83
5.6.2.4	Type SmPolicyDecision.....	86
5.6.2.5	Type SmPolicyNotification.....	88
5.6.2.6	Type PccRule.....	89
5.6.2.7	Type SessionRule.....	91
5.6.2.8	Type QosData.....	92
5.6.2.9	Type ConditionData.....	93
5.6.2.10	Type TrafficControlData.....	93
5.6.2.11	Type ChargingData.....	94
5.6.2.12	Type UsageMonitoringData.....	96
5.6.2.13	Type RedirectInformation.....	97
5.6.2.14	Type FlowInformation.....	98
5.6.2.15	Type SmPolicyDeleteData.....	99
5.6.2.16	Type QosCharacteristics.....	99
5.6.2.17	Type ChargingInformation.....	100
5.6.2.18	Type AccuUsageReport.....	100
5.6.2.19	Type SmPolicyUpdateContextData.....	101
5.6.2.20	Type UpPathChgEvent.....	103
5.6.2.21	Type TerminationNotification.....	103
5.6.2.22	Type AppDetectionInfo.....	104
5.6.2.23	Type AccNetChId.....	104
5.6.2.24	Type RequestedRuleData.....	104
5.6.2.25	Type RequestedUsageData.....	105
5.6.2.26	Type UeCampingRep.....	105
5.6.2.27	Type RuleReport.....	106
5.6.2.28	Type RanNasRelCause.....	106
5.6.2.29	Type UeInitiatedResourceRequest.....	106
5.6.2.30	Type PacketFilterInfo.....	107
5.6.2.31	Type RequestedQos.....	107
5.6.2.32	Type QosNotificationControlInfo.....	108
5.6.2.33	Type PartialSuccessReport.....	108
5.6.2.34	Type AuthorizedDefaultQos.....	109
5.6.2.35	Type AccNetChargingAddress.....	109
5.6.2.36	Type ErrorReport.....	109
5.6.2.37	Type SessionRuleReport.....	110
5.6.2.38	Type ServingNfIdentity.....	110
5.6.3	Simple data types and enumerations.....	110
5.6.3.1	Introduction.....	110
5.6.3.2	Simple data types.....	110
5.6.3.3	Enumeration: FlowDirection.....	111
5.6.3.4	Enumeration: ReportingLevel.....	111
5.6.3.5	Enumeration: MeteringMethod.....	112
5.6.3.6	Enumeration: PolicyControlRequestTrigger.....	113
5.6.3.7	Enumeration: RequestedRuleDataType.....	116
5.6.3.8	Enumeration: RuleStatus.....	116
5.6.3.9	Enumeration: FailureCode.....	117
5.6.3.10	Enumeration: AfSigProtocol.....	119
5.6.3.11	Enumeration: RuleOperation.....	119
5.6.3.12	Enumeration: RedirectAddressType.....	119
5.6.3.13	Enumeration: QosFlowUsage.....	120
5.6.3.14	Enumeration: FailureCause.....	120
5.6.3.15	Enumeration: FlowDirectionRm.....	120
5.6.3.16	Enumeration: CreditManagementStatus.....	120
5.6.3.17	Enumeration: SessionRuleFailureCode.....	121
5.6.3.18	Enumeration: NetLocAccessSupport.....	121
5.7	Error handling.....	121
5.7.1	General.....	121
5.7.2	Protocol Errors.....	121

5.7.3	Application Errors	121
5.8	Feature negotiation	123
5.9	Security	124
Annex A (normative): OpenAPI specification		126
A.1	General	126
A.2	Npcf_SMPolicyControl API	126
Annex B (normative): 5GC and EPC interworking scenario support.....		150
B.1	Scope	150
B.2	Npcf_SMPolicyControl Service.....	150
B.2.1	Service Description	150
B.2.1.1	Overview	150
B.2.1.2	Service Architecture	150
B.3	Service Operation.....	151
B.3.1	Introduction	151
B.3.2	Npcf_SMPolicyControl_Create Service Operation.....	151
B.3.2.0	General.....	151
B.3.2.1	UE Location related information	152
B.3.2.2	Access Type related information	152
B.3.3	Npcf_SMPolicyControl_UpdateNotify Service Operation	152
B.3.3.0	General.....	152
B.3.3.1	Policy Update When UE suspends	152
B.3.4	Npcf_SMPolicyControl_Update Service Operation.....	153
B.3.4.0	General.....	153
B.3.4.1	Number of Supported Packet Filters Report.....	153
B.3.4.2	Policy Update When UE suspends	154
B.3.4.2.1	Policy Update Error Report.....	154
B.3.4.2.2	UE State Change Report	154
B.3.4.3	UE Location related information	154
B.3.4.4	Presence Reporting Area Information Report.....	155
B.3.4.5	Access Type related information	155
B.3.4.6	EPS RAN NAS Cause Support.....	155
B.3.5	Npcf_SMPolicyControl_Delete Service Operation.....	156
B.3.5.1	General.....	156
B.3.5.2	EPS RAN NAS Cause Support.....	156
B.3.6	Provisioning and Enforcement of Policy Decisions	156
B.3.6.1	QoS mapping performed by the SMF+PGW-C.....	156
B.3.6.2	Provisioning of Presence Reporting Area Information	156
B.3.6.3	Request and Report of Access Network information.....	157
Annex C (informative): Change history		158
History		164

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.

Sample Document

get full document from standards.iteh.ai

1 Scope

The present document provides the stage 3 specification of the Session Management Policy Control Service of 5G system. The stage 2 definition and related procedures of the Session Management Policy Control Service are contained in 3GPP TS 23.502 [3] and 3GPP TS 23.503 [6]. The 5G System Architecture is defined in 3GPP TS 23.501 [2].

Stage 3 call flows are provided in 3GPP TS 29.513 [7].

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

The Policy Control Function with session related policies provides the Session Management Policy Control Service to the NF consumers (i.e. Session Management Function).

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] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".
- [7] 3GPP TS 29.513: "5G System; Policy and Charging Control signalling flows and QoS parameter mapping; Stage 3".
- [8] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".
- [9] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".
- [10] OpenAPI: "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.
- [11] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".
- [12] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".
- [13] 3GPP TS 29.244: "Interface between the Control Plane and the User Plane of EPC Nodes".
- [14] Void.
- [15] 3GPP TS 29.519: "5G System; Usage of the Unified Data Repository service for Policy Control Data, Application Data and Structured Data for Exposure; Stage 3".
- [16] 3GPP TS 23.228: "IP multimedia subsystem; Stage 2".
- [17] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

- [18] 3GPP TS 29.214: "Policy and Charging Control over Rx reference point 5".
- [19] 3GPP TS 32.291: "5G System; Charging service; Stage 3".
- [20] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".
- [21] 3GPP TS 23.380: "IMS Restoration Procedures".
- [22] 3GPP TS 29.502: "5G System; Session Management Services; Stage 3".
- [23] 3GPP TS 29.212: "Policy and Charging Control (PCC); Reference points".
- [24] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace; Trace control and configuration management".
- [25] 3GPP TS 29.507: "5G System; Access and Mobility Policy Control Service; Stage 3".
- [26] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [27] 3GPP TS 33.501: "Security architecture and procedures for 5G system".
- [28] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".
- [29] 3GPP TS 29.510: "Network Function Repository Services; Stage 3".
- [30] 3GPP TS 32.290: "5G system; Services, operations and procedures of charging using Service Based Interface (SBI)".
- [31] IETF RFC 7807: "Problem Details for HTTP APIs".
- [32] 3GPP TS 29.122: "T8 reference point for Northbound APIs".
- [33] 3GPP TS 23.527: "5G System; Restoration Procedures".
- [34] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".
- [35] 3GPP TS 32.255: "Charging management; 5G data connectivity domain charging; stage 2".
- [36] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".
- [37] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".
- [38] 3GPP TR 21.900: "Technical Specification Group working methods".
- [39] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification".
- [40] 3GPP TS 29.551: "5G System; Packet Flow Description Management Service; Stage 3".

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].

Application detection filter: A logic used to detect packets generated by an application based on extended inspection of these packets, e.g., header and/or payload information, as well as dynamics of packet flows. The logic is entirely internal to a UPF, and is out of scope of this specification.

Application identifier: An identifier, referring to a specific application detection filter.

Detected application traffic: An aggregate set of packet flows that are generated by a given application and detected by an application detection filter.

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

5G QoS Identifier

PCC rule

PDU Session

Service Data Flow

Service Data Flow Filter

Service Data Flow Template

3.2 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].

ADC	Application Detection and Control
AF	Application Function
AMF	Access and Mobility Management Function
API	Application Programming Interface
CHF	Charging Function
DNN	Data Network Name
ePDG	evolved Packet Data Gateway
GFBR	Guaranteed Flow Bit Rate
GUAMI	Globally Unique AMF Identifier
HTTP	Hypertext Transfer Protocol
NEF	Network Exposure Function
NF	Network Function
NRF	Network Repository Function
PCC	Policy and Charging Control
PCF	Policy Control Function
PFD	Packet Flow Description
PFDF	Packet Flow Description Function
PSAP	Public Safety Answering Point
QoS	Quality of Service
SDF	Service Data Flow
SMF	Session Management Function
S-NSSAI	Single Network Slice Selection Assistance Information
SUPL	Secure User Plane for Location
UDM	Unified Data Management
UDR	Unified Data Repository
UE	User Equipment

4 Npcf_SMPolicyControl Service

4.1 Service Description

4.1.1 Overview

The Session Management Policy Control Service performs provisioning, update and removal of session related policies and PCC rules by the Policy Control Function (PCF) to the NF service consumer (i.e. SMF). The Session Management Policy Control Service can be used for charging control, policy control and/or application detection and control. Session

Management Policy Control Service applies to the cases where the SMF interacts with the PCF in the non-roaming scenario, the V-SMF interacts with the V-PCF in the local breakout roaming scenario and the H-SMF interacts with the H-PCF in the home-routed scenario.

4.1.2 Service Architecture

The Session Management Policy Control Service is provided by the PCF to the consumer and shown in the SBI representation model in figure 4.1.2-1 and in the reference point representation model in figure 4.1.2-2. The overall Policy and Charging Control related 5G architecture is depicted in 3GPP TS 29.513 [7].

The only known NF Service Consumer is the SMF.

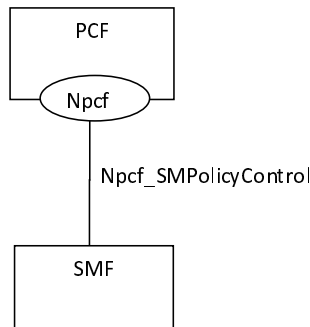


Figure 4.1.2-1: Reference Architecture for the Npcf_SMPolicyControl Service; SBI representation



Figure 4.1.2-2: Reference Architecture for the Npcf_SMPolicyControl Service; reference point representation

NOTE: The SMF represents the V-SMF and the PCF represents the V-PCF in the local breakout scenario. The SMF represents the H-SMF and the PCF represents the H-PCF in the home routed scenario.

4.1.3 Network Functions

4.1.3.1 Policy Control Function (PCF)

The PCF is responsible for policy control decisions and flow based charging control functionalities. The PCF provides the following:

- policies for application and service data flow detection, gating, QoS, flow based charging, traffic steering control, usage monitoring control, access network information report and RAN support information to the SMF.

The policy decisions made by the PCF may be based on one or more of the following:

- Information obtained from the AF, e.g. the session, media and subscriber related information;
- Information obtained from the UDR;
- Information obtained from the AMF, e.g. UE related and access related information;
- Information obtained from the SMF;

- Information obtained from the NWDAAF;
- Information obtained from the NEF;
- information from CHF; and
- PCF pre-configured policy context.

4.1.3.2 NF Service Consumers

The SMF is responsible for the enforcement of session management related policy decisions from the PCF, related to service flow detection, QoS, charging, gating, traffic usage reporting and traffic steering.

The SMF shall support:

- sending the PDU session related attributes to the PCF;
- requesting and receiving the PCC rule(s) from the PCF;
- binding of service data flows to QoS flow as defined in 3GPP TS 29.513 [7];
- deriving rule(s) from the PCC rule(s) and then providing those rules to the user plane function or remove the rule(s) from the user plane as defined in 3GPP TS 29.244 [13];
- deriving the QoS rules towards the UE;
- deriving the QoS profile towards the access network;
- handling the policy control request trigger; and
- handling the PDU session related policy information.

NOTE: SMF functionality related to event exposure is defined in 3GPP TS 29.508 [12].

4.1.4 Rules

4.1.4.1 General

A rule is a set of policy information elements associated with a PDU session, or with service data flows (i.e., with a PCC rule).

Two types of rules are defined:

- Session rule; and
- PCC rule.

Both Session rules and PCC rules are composed of embedded information elements as well as information elements that are part of the referenced objects (e.g. condition data, or usage monitoring policy data type) by the rule.

PCC rule is defined in subclause 4.1.4.2. Session rule is defined in subclause 4.1.4.3.

4.1.4.2 PCC rules

4.1.4.2.1 PCC rules definition

A PCC rule is a set of information elements enabling the detection of a service data flow and providing parameters for policy control and/or charging control. There are two different types of PCC rules as defined in 3GPP TS 23.503 [6]:

- Dynamic PCC rules. PCC rules that are dynamically provisioned by the PCF to the SMF. These PCC rules may be either predefined or dynamically generated in the PCF. Dynamic PCC rules can be installed, modified and removed at any time.

- Predefined PCC rules. PCC rules that are preconfigured in the SMF. Predefined PCC rules can be activated or deactivated by the PCF at any time. Predefined PCC rules within the PCF may be grouped allowing the PCF to dynamically activate a set of PCC rules.

Additionally, predefined PCC rules may be grouped within the SMF as predefined PCC rule bases which allow the PCF to dynamically activate these sets of rules. In this case, the PCC rule identifier is used to hold the predefined PCC rule base identifier.

NOTE: The operator can define a predefined PCC rule, to be activated by the SMF. Such a predefined rule is not explicitly known in the PCF.

A PCC rule consists of:

Sample Document

get full document from standards.iteh.ai