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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.
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[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".

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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], 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].

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
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
UDM	Unified Data Management
UDR	Unified Data Repository
UE	User Equipment

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Full standard:
https://standards.iteh.ai/catalog/standards/sist/bf7cb0b5-2e99-4a9a-8424-a8bb1dc3f7d/etsi-ts-129-512-v15.6.0-2020-01

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.

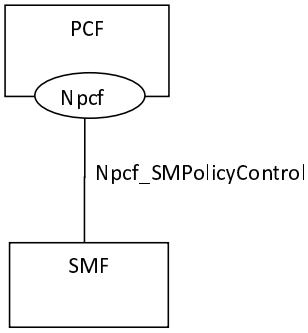

Figure 4.1.2-1: Reference Architecture for the Npcf_SMPolicyControl Service; SBI representation

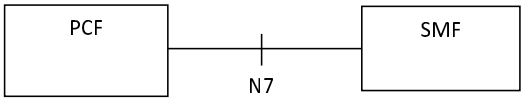

Figure 4.1.2-2: Reference Architecture for the Npcf_SMPolicyControl Service; reference point representation

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.

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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 NWDAF;
- 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.