|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **3GPP TSG-SA5 Meeting #140-e *S5-216302rev1***  **e-meeting, 15 - 24 November 2021**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | *CR-Form-v12.1* | | | | | | | | | | **CHANGE REQUEST** | | | | | | | | | |  | | | | | | | | | |  | **32.240** | **CR** | **0429** | **rev** | **1** | **Current version:** | **17.3.0** |  | |  | | | | | | | | | | *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | | | UICC apps | | | |  | ME |  | Radio Access Network | | | | |  | Core Network | **x** |
|  | | | | | | | | | | | | | | | | | |
| ***Title:*** | Introduction of 5G DDNMF in charging architecture for 5GS | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| ***Source to WG:*** | CATT | | | | | | | | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | | | | |
| ***Work item code:*** | 5G\_ProSe\_CH | | | | | | | | |  | ***Date:*** | | | 2021-11-1 | | | |
|  |  | | | | |  | | | | |  | | |  | | | |
| ***Category:*** | **B** |  | | | | | | | | | ***Release:*** | | | Rel-17 | | | |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | | | | |
|  |  | | | | | | | | | | | | | | | | |
| ***Reason for change:*** | | The new 5G DDNMF as part of 5GS Network functionality needs to be introduced. | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Summary of change:*** | | Introduce 5G DDNMF as ProSe service Node, with service based interface in the converged charging architecture | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Consequences if not approved:*** | | No charging for ProSe over 5GS | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Clauses affected:*** | | 4.2.3 | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
|  | | **Y** | | **N** |  | | | | | | |  | | | | | |
| ***Other specs*** | |  | | **X** | Other core specifications | | | | | | | TS/TR ... CR ... | | | | | |
| ***affected:*** | |  | | **X** | Test specifications | | | | | | | TS/TR ... CR ... | | | | | |
| ***(show related CRs)*** | |  | | **X** | O&M Specifications | | | | | | | TS/TR ... CR ... | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | | | | | | | | |

|  |
| --- |
| **1st modified section** |

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3G 3rd Generation

3GPP 3rd Generation Partnership Project

5GC 5G Core Network

5GS 5G System

5G DDNMF 5G Direct Discovery Name Management Function

ABMF Account Balance Management Function

AF Application Function

AMF Access and Mobility Management Function

AoC Advice of Charge

API Application Program Interfaces

APN Access Point Name

AS Application Server

BD Billing Domain

BGCF Breakout Gateway Control Function

BS Bearer Services

BSC Base Station Controller

BSS Base Station Subsystem

BTS Base Transceiver Station

CAMEL Customized Applications for Mobile network Enhanced Logic

CAP CAMEL Application Part

CCS Converged Charging System

CDF Charging Data Function

CDR Charging Data Record

CG Charging Gateway

CGF Charging Gateway Function

CHF Charging Function

CN Core Network

CP Control Plane

CS Circuit Switched

CSCF Call Session Control Function (I-Interrogating; E-Emergency; P-Proxy; and S-Serving)

CTF Charging Trigger Function

EATF Emergency Access Transfer Function

EBCF Event Based Charging Function

ECUR Event Charging with Unit Reservation

EIR Equipment Identity Register

EPC Evolved Packet Core

ePDG Evolved Packet Data Gateway

EPS Evolved Packet System

E-UTRAN Evolved Universal Terrestrial Radio Access Network

FQPC Fully Qualified Partial CDR

GGSN Gateway GPRS Support Node

GMLC Gateway MLC

GMSC Gateway MSC

GPRS General Packet Radio Service

GSM Global System for Mobile communication

gsmSCF GSM Service Control Function

gsmSSF GSM Service Switching Function

GSN GPRS Support Node (either SGSN or GGSN)

HLR Home Location Register

HPLMN Home PLMN

HSCSD High Speed Circuit Switched Data

IBCF Interconnect Border Control Function

ICS IMS Centralized Services

IE Information Element

IEC Immediate Event Charging

IETF Internet Engineering Task Force

IMEI International Mobile Equipment Identity

IMS GWF IMS GateWay Function

IMS IP Multimedia Subsystem

IMSI International Mobile Subscriber Identity

IP Internet Protocol

ISC IMS Service Control

ISDN Integrated Services Digital Network

ITU-T International Telecommunication Union - Telecommunications standardization sector

LAC Location Area Code

LAN Local Area Network

LCS Location Services

LRF Location Retrieval Function

LTE Long Term Evolution

MAP Mobile Application Part

MBMS Multimedia Broadcast and Multicast Service

ME Mobile Equipment

MGCF Media Gateway Control Function

MGW Media GateWay

MLC Mobile Location Center

MME Mobility Management Entity

MMI Man-Machine Interface

MMS Multimedia Messaging Service

MMSE Multimedia Messaging Service Environment

MMTel MultiMedia Telephony

MnS Management Service

MO Mobile Originated

MOC MO Call

MRF Media Resource Function

MRFC MRF Controller

MS Mobile Station

MSC Mobile Services Switching Centre

MSISDN Mobile Station ISDN number

MT Mobile Terminated

MTC MT Call

NE Network Element

NF Network Function

NWDAF Network Data Analytics Function

OCF Online Charging Function

OCS Online Charging System

OFCS Offline Charging System

OMR Optimal Media Routing

PCEF Policy and Charging Enforcement Function

PCF Policy Control Function

PCRF Policy and Charging Rules Function

PDG Packet Data Gateway

PDN Packet Data Network

PDP Packet Data Protocol, e.g. IP

PLMN Public Land Mobile Network

PoC Push-to-talk over Cellular

ProSe Proximity-based Services

PS Packet-Switched

PSPDN Packet-Switched Public Data Network

QoS Quality of Service

RF Rating Function

RNC Radio Network Controller

RNS Radio Network Subsystem

RPC Reduced Partial CDR

SBCF Session Based Charging Function

SCCP Signalling Connection Control Part

SCEF Service Capability Exposure Function

SCF Service Control FunctionSCS Services Capability Server

SCUR Session Charging with Unit Reservation

SGSN Serving GPRS Support Node

SIM Subscriber Identity Module

SMS Short Message Service

SMF Session Management Function

SSF Service Switching Function

TAP Transferred Account Procedure

TDF Traffic Detection Function

TR Technical Report

TRF Transit and Roaming Function

TS Technical Specification

TWAG Trusted WLAN Access Gateway

UE User Equipment

UMTS Universal Mobile Telecommunications System

UPF User Plane Function

USIM Universal SIM

VAS Value Added Service

VLR Visitor Location Register

VMSC Visited MSC

VPLMN Visited PLMN

WLAN Wireless LAN

|  |
| --- |
| **2nd modified section** |

### 4.2.3 Common architecture – service based interface

Figure 4.2.3.1 provides an overview of the logical ubiquitous charging architecture and the information flows for converged offline and online charging in service based interface variant for 5G systems.



Figure 4.2.3.1: Logical ubiquitous charging architecture and information flows for 5G systems – service based interface

For the sake of simplicity, the SMF+PGW-C is not explicitly added in Figure 4.2.3.1 and is represented by the SMF.The SMF+PGW-C uses Nchf for 5GS and EPC interworking as well as when enhanced to support GERAN/UTRAN.

The Nchf\_SpendingLimitControl service exposed by CHF and consumed by the PCF is specified in TS 23.502 [214].

|  |
| --- |
| **End change** |