**3GPP TSG-SA5 Meeting #141-e *S5-221232***

**e-meeting, 17 -26 January 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **32.255** | **CR** | **0366** | **rev** | **-** | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *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 Annex on Network slice charging | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | MATRIXX Software | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | DUMMY | | | | |  | ***Date:*** | | | 2022-01-07 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Network slice charging has been introduced since Rel-16 under TS 28.201 and TS 28.202, however solutions leveraging from the existing 5G Converged Charging framework for Operator to be able to charge for the Network Slice usage also exist but they are not documented.  The concept of Network Slice (NS) Tenant is missing.  A new Rel-17 WID for Rel-17 to cover the Combined UE CCS - Tenant CCS solution option for when the Communication Service Provider (CSP) and Network Slice Provider (NSP) are the same. The internal structure for this combined CCS will not be detailed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add an Annex to describe how Network slice charging can be achieved under 5G data connectivity charging. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | It can be interpreted operators cannot charge for Network slice usage. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | Annex X (New) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

|  |
| --- |
| **First change** |

Annex X (informative):  
Network slice charging based on 5G data connectivity

# X.1 General

This Annex describes how to realize Network Slice usage charging, when the Network Slice is identified by an S-NSSAI (Single Network Slice Selection Assistance Information), and the Network Slice usage is considered under 5G data connectivity by individual UEs.

The existing Nchf capabilities exposed by CHF to SMF for individual UE 5G data connectivity charging can be used for this purpose when the Mobile Network Operator (MNO) serving the UE is also actingas the Network Slice (NS) Tenant(s).

A given S-NSSAI can be Teneant specific or shared between multiple Tenants.

The MNO Converged Charging system encompasses both individual UEs and NS Tenants(s).

Roaming scenarios are out of scope of this Annex, therefore unless otherwise stated, references to clauses in this document refer to description applicable for non-roaming scenarios only.

# X.2 Architecture

The 5G data connectivity domain converged charging architectures in clause 4.2 of this document apply, with the CHF hosted by Converged Charging system (CCS) extended for Network Slice (NS) Tenant.

The single CCS or multiple CCSs may be used to support converged charging for tenant and UEs belonging to the tenant at same time, which is implementation specific, the interaction of CCS(s) are out of scope of this Annex.

X.3 Network Slice charging based on 5G data connectivity principles

## X.3.1 General

The MNO as the Netwok Slice (NS) Tenant, is assigned with one or more S-NSSAI(s), each S-NSSAI identifying a Network Slice.

The 5G charging supports converged charging per PDU session based on assigned group of S-NSSAI(s).

Converged Charging systems are deployed and configured by the MNO in order to achieve Network slice charging per S-NSSAI. A given Converged charging system can be configured to handle one or more S-NSSAI(s).

Individual UE, when subscribed to the MNO's particular S-NSSAI, is served by the Converged Charging system allocated to this S-NSSAI, when this UE establishes a PDU session under this S-NSSAI.

5G data connectivity charging performed for individual UE over Nchf exposed by the CHF is used to perform Network Slice charging for the NS Tenant for a particular S-NSSAI.

# X.4 Network Slice charging based on 5G data connectivity scenarios

## X.4.1 Basic Principles

### X.4.1.x CHF selection

The CHF selection mechanism at PDU session establishment defined in clause 5.1.8 of this specification, allows the SMF to reach the CHF hosted by the Converged Charging system serving the UE belongs to the particular S-NSSAI and Tenant.

## X.4.2 Message flows

The message flows in clause 5.2.2 apply. The following figure provides a simplified decription focusing on Network slice usage charging for a S-NSSAI.



Figure X.4.2-1: Network slice charging based on 5G data connectivity

1. The SMF collects the charging information for PDU session.

2. The SMF reports the PDU session information with S-NSSAI.

3. CHF includes S-NSSAI in the CDR for the PDU session.

4. CHF sends the charging data response.

# X.5 Definition of charging information

The definition of charging information in clause 6 is applicable for the purpose of Network Slice charging based on 5G data connectivity.

The "Network Slice Instance Identifier" Information Element in subclause 6.2.1.2 Table 6.2.1.2.1: Structure of PDU Session Charging Information is the key identifier S-NSSAI conveyed over Nchf and in CDRs on the Bd interface.

|  |
| --- |
| **End of changes** |