**3GPP TSG-CT WG4 Meeting #110-eC4-223066v1**

**E-Meeting, 12th – 20th May 2022 was C4-223066**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.272** | **CR** | **0836** | **rev** | **1** | **Current version:** | **17.2.0** |  |
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| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** |  | | | | | | | | | |
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| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-05-18 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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)* | |
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| ***Reason for change:*** | | Multiple instance of Paging Time Window may be configured for different RAT types (e.g. EUTRAN, NB-IoT, etc.), and be included in the UE subcription sent by the HSS to the MME/SGSN in IDR/ULA command.  When the HSS sends DSR command to the MME/SGSN, carrying “Paging Time Window Subscription Withdrawn” in the DSF-Flag, the entire Paging Time Window configuration will be deleted from the MME/SGSN.  Using the DSR command, it is not possible for the HSS to partially withdrawn some Paging Time Window configuration specific for some RAT types. Meanwhile, the current description in clause 5.2.2.1.2 doesn't provide clear instruction on the MME/SGSN behavior if the MME/SGSN receives updated Paging-Time-Window AVPs in the IDR command from the HSS. Does the MME/SGSN perform entire replacement or just add the newly received information to the existing stored configuration?  Such unclear behaviour in the specification makes it difficult for a vendor to design their products, and thus clarification is needed. | | | | | | | | |
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| ***Summary of change:*** | | Clarify if the MME/SGSN receives Paging-Time-Window AVPs in the IDR request from the HSS, it shll perform entire replacement rather than adding the received information in the stored information (if any). | | | | | | | | |
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| ***Consequences if not approved:*** | | It is not clear on the MME/SGSN behaviour that if it receives Paging-Time-Window AVPs in the IDR request from the HSS. Thus, it is not possible for the HSS to use the IDR to update the Paging Time Window configuration, e.g. to partial deletion of Paging Time Window configuration for a specific RAT type. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.1.2 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | | Rev#1:  - Revert the change of adding new AVP in DSR command;  - Instead, clarify the MME/SGSN behavior on receiving updated Paging-Time-Window AVPs in IDR command from the HSS. | | | | | | | | |

\* \* \* First Change \* \* \* \*

##### 5.2.2.1.2 Detailed behaviour of the MME and the SGSN

When receiving an Insert Subscriber Data request the MME or SGSN shall check whether the IMSI is known.

If it is not known, a result code of DIAMETER\_ERROR\_USER\_UNKNOWN shall be returned.

If it is known, the MME or SGSN shall replace the specific part of the stored subscription data with the received data, or shall add the received data to the stored data.

When receiving the APN-Configuration-Profile AVP within the Subscription-Data AVP, the MME or SGSN shall check the All-APN-Configurations-Included-Indicator value. If it indicates "All\_APN\_CONFIGURATIONS\_INCLUDED", the MME or SGSN shall delete all stored APN-Configurations and then store all received APN-Configurations. Otherwise, the MME or SGSN shall check the Context-Identifier value of each received APN-Configuration. If the Context-Identifier of a received APN-Configuration matches a Context-Identifier of a stored APN-Configuration, the MME or SGSN shall replace the stored APN-Configuration with the received APN-Configuration. If the Context-Identifier of a received APN-Configuration does not match a Context-Identifier of a stored APN-Configuration, the MME or SGSN shall add the received APN-Configuration to the stored APN-Configurations. If the addition or update of the subscription data succeeds in the MME or SGSN, the Result-Code shall be set to DIAMETER\_SUCCESS. The MME or SGSN shall then acknowledge the Insert Subscriber Data message by returning an Insert Subscriber Data Answer.

For each of the received APN-Configurations in the APN-Configuration-Profile, if both the MIP6-Agent-Info and the PDN-GW-Allocation-Type AVPs are absent in the APN-Configuration AVP, the MME or SGSN shall perform the PGW selection (static or dynamic) according to the local configuration. If MIP6-Agent-Info is present, and PDN-GW-Allocation-Type is not present, this means that the PDN GW address included in MIP6-Agent-Info has been statically allocated.

If the MME/SGSN supports interworking with Gn/Gp-SGSNs, it shall ensure that the context identifier sent over GTPv1 for each of the received APN-Configurations is within the range of 1 and 255.

NOTE 1: If the MME/SGSN receives from HSS a Contex-Identifier value higher than 255, how this value is mapped to a value between 1 and 255 is implementation specific.

If the MME is requested to notify the HSS when the UE becomes reachable, the MME shall set the URRP-MME parameter to indicate the need to inform the HSS about UE reachability, e.g. when the next NAS activity from the UE is detected. If the SGSN is requested to notify the HSS when the UE becomes reachable, the SGSN shall set the URRP-SGSN parameter to indicate the need to inform the HSS about UE reachability, e.g. when the next NAS activity from the UE is detected.

When receiving GPRS-Subscription-Data AVP within the Subscription-Data AVP, the SGSN or combined MME/SGSN shall check the Complete-Data-List-Included-Indicator value. If it indicates "All\_PDP\_CONTEXTS\_INCLUDED", the SGSN or combined MME/SGSN shall delete all stored PDP-Contexts and then store all received PDP-Contexts. Otherwise, the SGSN or combined MME/SGSN shall check the Context-Identifier value of each received PDP-Context. If the Context-Identifier of a received PDP-Context matches a Context-Identifier of a stored PDP-Context, the SGSN or combined MME/SGSN shall replace the stored PDP-Context with the received PDP-Context. If the Context-Identifier of a received PDP-Context does not match a Context-Identifier of a stored PDP-Context, the SGSN or combined MME/SGSN shall add the received PDP-Context to the stored PDP-Contexts.

If the MME or SGSN receives an empty Subscription-Data AVP, it shall take no action with regard to the stored subscription data.

When receiving HPLMN-ODB AVP within the Subscription-Data AVP, the MME or SGSN shall replace stored HPLMN-ODB data (if any) with the received information rather than add the received information to the stored information. Unsupported Barring categories need not be stored.

When receiving Operator-Determined-Barring AVP within the Subscription-Data AVP, the MME or SGSN shall replace stored ODB subscription information (if any) with the received information rather than add the received information to the stored information. Unsupported Barring categories need not be stored.

When receiving Access-Restriction-Data or Adjacent-Access-Restriction-Data AVPs within the Subscription-Data AVP, the MME or SGSN shall replace the corresponding stored information (if any) with the new received information, rather than adding received information to stored information. The handling of access restrictions per-PLMN is defined in 3GPP TS 23.221 [53], clause 6.3.5a and in 3GPP TS 23.401 [2] clause 4.3.28.

When receiving APN-OI-Replacement AVP within the Subscription-Data AVP, the MME or SGSN shall replace the stored information (if any) with the received information.

When receiving Regional-Subscription-Zone-Code AVP within the Subscription-Data AVP, the MME or SGSN shall replace stored Zone Codes (if any) with the received information rather than add the received information to the stored information. MMEs and SGSNs that do not support regional subscription need not store zone codes. If due to regional subscription restrictions or access restrictions the entire SGSN area is restricted, SGSN shall report it to the HSS by returning the "SGSN Area Restricted" indication within the IDA flags.

When receiving CSG-Subscription-Data AVPs within the Subscription-Data AVP the MME or SGSN shall replace all stored information from previously received CSG-Subscription-Data AVPs (if any) with the received information rather than add the received information to the stored information.

When receiving Teleservice-List AVP, Call-Barring-Info, or LCS-Info AVP, the MME or SGSN shall replace stored information (if any) with the received information rather than add the received information to the stored information.

When receiving ProSe-Subscription-Data AVP, the MME or combined MME/SGSN shall replace stored information (if any) with the received information rather than add the received information to the stored information.

When receiving and supporting Reset-ID AVPs within the request, the MME or SGSN shall replace stored information (if any) with received information rather than add received information to stored information.

When receiving the IDR-Flags with the "T-ADS Data Request" bit set, and the UE is in attached state, the MME or SGSN or combined MME/SGSN shall return in the IDA message the time stamp of the UE's most recent radio contact and the associated RAT Type, and an indication of whether or not IMS Voice over PS is supported in the current (and most recently used) TA or RA. If the UE is in detached state, the MME or SGSN or combined MME/SGSN shall answer successfully to the T-ADS request from HSS, but it shall not include any of the T-ADS IEs in the response (IMS Voice over PS Sessions Supported, RAT Type and Last UE Activity Time).

When receiving the IDR-Flags with the "EPS User State Request" bit and/or "EPS Location Information Request" bits set the MME or SGSN shall return the corresponding user information to the HSS. If the serving node is a combined MME/SGSN, and the UE is attached via both E-UTRAN and UTRAN/GERAN on the same node, the combined MME/SGSN shall provide the corresponding user information relevant for both MME and SGSN. If the Current Location Request bit was also set and the UE is in idle mode and is expected to be reachable even when it uses a power saving feature (e.g. extended idle mode DRX or PSM as defined in 3GPP TS 23.685 [55]), then the MME or SGSN or combined MME/SGSN shall page the UE in order to return the most up-to-date corresponding user information. If the Current Location Request bit was also set and either paging is unsuccessful or the UE is not expected to be reachable, then the last known location of the UE shall be returned to the HSS. If the Current Location Request bit was also set and the UE (attached via E-UTRAN) is in connected mode, then the MME or combined MME/SGSN shall use S1AP Location Reporting Control procedure towards the eNB prior to reporting the E-UTRAN Cell Global Identification in order to return the UE's most up-to-date cell information. When the location is returned to the HSS, the MME or the combined MME/SGSN shall provide the age of location information if stored in the MME or the combined MME/SGSN or received from eNB.

When receiving the IDR-Flags with only the "Current Location Request" bit set (i.e. the "EPS Location Information Request" bit is not set), the MME or SGSN or combined MME/SGSN shall set the Result-Code to DIAMETER\_UNABLE\_TO\_COMPLY.

If the "Local Time Zone Request" bit was set the MME or SGSN if supported shall provide the Local Time Zone corresponding to the location (e.g. TAI or RAI) of the UE to the HSS.

If the MME or SGSN cannot fulfil the received request, e.g. due to a database error or any of the required actions cannot be performed, it shall set the Result-Code to DIAMETER\_UNABLE\_TO\_COMPLY. If subscription data are received, the MME or SGSN shall mark the subscription record "Subscriber to be restored in HSS".

If trace data are received in the subscriber data, the MME or SGSN shall start a Trace Session. For details, see 3GPP TS 32.422 [23].

If the Ext-PDP-Type AVP is present in the PDP-Context AVP, the SGSN or combined MME/SGSN shall ignore the value of the PDP-Type AVP.

When receiving the IDR-Flags with the bit "Remove SMS Registration" set, the MME shall consider itself unregistered for SMS.

If the subscription data received for a certain APN includes WLAN-offloadability AVP, then the MME or SGSN shall determine the offloadability of the UE's PDN Connection(s) to that APN based on subscription data and locally configured policy (e.g. for roaming users or when the subscription data does not include any offloadability indication).

NOTE 2: As indicated in clause 7.3.31, if the UE-level access restriction "HO-To-Non-3GPP-Access Not Allowed" is set, the offload of PDN Connections to WLAN is not allowed for any APN.

When receiving the IDR-Flags with the "P-CSCF Restoration Request" bit set, the MME or SGSN or combined MME/SGSN shall execute the procedures for HSS-based P-CSCF Restoration, as described in 3GPP TS 23.380 [51] clause 5.4.

If the subscription data received for the user includes the DL-Buffering-Suggested-Packet-Count AVP, then the MME or SGSN should take into account the subscription data, in addition to local policies, to determine whether to invoke extended buffering of downlink packets at the SGW for High Latency Communication. Otherwise, the MME or SGSN shall make this determination based on local policies only.

When receiving IMSI-Group-Id AVP(s) within the Subscription-Data AVP, the MME or SGSN shall replace stored IMSI-Group Ids (if any) with the received information rather than add the received information to the stored information.

In the present clause, if the feature "Extended Reference IDs" (see clause 7.3.10) is supported by the HSS and the MME/SGSN, the term "SCEF Reference ID" shall refer to the content of the 64-bit long "SCEF-Reference-ID-Ext" AVP, and the term "SCEF Reference ID for Deletion" shall refer to the content of the 64-bit long "SCEF-Reference-ID-for-Deletion-Ext" AVP.

When receiving a Monitoring-Event-Configuration in the IDR:

- if the SCEF Reference ID for Deletion is present in the IDR, the MME or SGSN shall stop the detection of the Monitoring event related to the SCEF Reference ID for Deletion and SCEF-ID pair, and shall delete the corresponding Monitoring event configuration data;

- if the SCEF Reference ID is present in the IDR but not stored in the MME or SGSN, the MME or SGSN shall store the received Monitoring event configuration data related to the SCEF Reference ID and SCEF-ID pair, and shall start the detection for the specified Monitoring event(s).

- if the SCEF Reference ID is present in the IDR and stored in the MME or SGSN, the MME or SGSN shall replace the stored Monitoring event configuration data related to the SCEF Reference ID and SCEF-ID pair with the received information.

NOTE 3: In roaming scenarios the MME/SGSN can reply immediately to the HSS without waiting for the outcome of the interaction with the IWK-SCEF.

For the monitoring event configurations for which the configuration status have changed since the last status informed to the HSS, the MME/SGSN shall notify the HSS about the outcome of the interaction with the IWK-SCEF as specified in clause 5.2.5.1.2.

If the HSS indicates the support of Monitoring event feature to the MME/SGSN and the MME/SGSN supports Monitoring, the MME/SGSN shall include the Supported-Services AVP with Supported-Monitoring-Event included in the IDA command.

When receiving the Maximum-Response-Time in Monitoring-Event-Configuration in IDR, the MME shall use the Maximum-Response-Time as the Active Time for the usage of PSM in UE. If not, when the MME receives the Active-Time in subscription data, the MME shall use the Active-Time as the Active Time for the usage of PSM in UE.

When receiving AESE-Communication-Pattern AVP(s) within the Subscription-Data AVP with an SCEF Reference ID for which the MME has already stored data, it shall delete the stored data (CP set(s)) and store the received ones.

When receiving AESE-Communication-Pattern AVP(s) within the Subscription-Data AVP with one or more SCEF Reference ID for deletion the MME shall delete the data related to the indicated SCEF Reference ID.

If the MME and the UE support an Attach without PDN connection (i.e. EMM-REGISTERED without PDN connection) and the PDN-Connection-Restricted flag is set in the received Subscription-Data-Flags AVP, the MME shall not establish any non-emergency PDN connection and shall tear down any existing non-emergency PDN connection for this user.

If the subscription data received for the user includes the Preferred-Data-Mode AVP, for an IP APN configuration or for a non-IP APN configuration with SGi based delivery, then the MME should (if the subscriber is not roaming) or may (if the subscriber is roaming) take into account the subscription data, in addition to local policies and the UE's Preferred Network Behaviour, to determine whether to transmit the traffic associated with this APN over the User Plane and/or over the Control Plane. Otherwise, the MME shall make this determination based on local policies and the UE's Preferred Network Behaviour only.

If the MME subscription data received for the user includes the Emergency-Info AVP, the MME shall use the PDN-GW identity contained in such AVP as the PDN-GW used to establish emergency PDN connections with the emergency APN, for non-roaming authenticated UEs requesting the handover of an emergency PDN connection if the MME is configured to use a dynamic PDN-GW for emergency services for such user.

When receiving V2X-Subscription-Data in the IDR, the MME shall determine whether the UE is authorized to use V2X communication over PC5 according to V2X subscription data and UE provided network capability. If the UE is authorized to use V2X communication over PC5, the MME shall store the "V2X service authorized" indication together with the UE AMBR used for PC5 interface (i.e. UE-PC5-AMBR), and provide such information to the eNodeB when needed.

If the MME/SGSN receives from the HSS an Insert Subscriber Data request without the bit set for "NR as Secondary RAT" in the Feature-List AVP, the MME/SGSN, based on local policy, may restrict access for NR as secondary RAT when all relevant entities except HSS supports it.

If the MME receives from the HSS Insert Subscriber Data request containing in the subscription data the Core-Network-Restrictions AVP with the bit "5GC not allowed" set, the MME shall restrict mobility towards 5GC.

When receiving Paging-Time-Window AVPs within the Subscription-Data AVP, the MME or SGSN shall replace stored information (if any) with the received information rather than add the received information to the stored information.

\* \* \* End of Changes \* \* \* \*