**3GPP TSG CT WG4 Meeting #59C4-122552**

**New Orleans, US; 12th – 16th November 2012  *Revision of C4-122337***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v10* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
| ⌘ | **23.008** | **CR** | **0391** | ⌘ **rev** | **1** | ⌘ **Current version:** | **9.5.0** | ⌘ |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form look at the pop-up text over the ⌘ symbols. Comprehensive instructions on how to use this form 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:*** ⌘ | Trace info stored in SGW/PGW | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** ⌘ | Huawei | | | | | | | | | |
| ***Source to TSG:*** ⌘ | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** ⌘ | TEI8 | | | | |  | | ***Date:*** ⌘ | | 2012-11-14 |
|  |  | | | |  | | |  | |  |
| ***Category:*** ⌘ | **A** |  | | | | | | ***Release:*** ⌘ | | Rel-9 |
|  | *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-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6) Rel-7 (Release 7) Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** ⌘ | | According to the TS 32.422, in order to perform trace recording session in SGW and PGW, the SGW and PGW shall save the received trace control and configuration parameters. The corresponding description in TS 32.433 is as follows.  *When a MME, SGW or PGW receives Trace Session activation from the EM, it shall start a Trace Session. The following trace control and configuration parameters of the Trace Session are received in the Trace Session activation from the EM:*   * *IMSI or IMEISV* * *Trace Reference* * *Triggering events for this network element* * *Trace Depth* * *List of Interfaces for this network element* * *IP address of Trace Collection Entity*   *The MME, SGW or PGW shall not forward these trace control and configuration parameters to other nodes. The received trace control and configuration parameters shall be saved and used to determine when and how to start a Trace Recording Session.*  However, in the existing TS 23.008, there is no definition that the SGW and PGW should store the trace information, such as trace reference, trace depth, triggering events and so on. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** ⌘ | | Add the trace information to the SGW and PGW’s PS Storage (EPS 3GPP access)  Add the trace information to the PGW’s PS storage (EPS non 3GPP access)  Remove the trace information from the MME’s PS storage (EPS non 3GPP access) | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if*** ⌘ ***not approved:*** | | The trace recording function in SGW/PGW is also defined in SA2 specification from Rel8, but without saving the trace control and configuration parameters in SGW and PGW, there is no way for those entities to perform trace recording function. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** ⌘ | | 2.11.9，2.11.10，2.11.11，2.11.12，2.11.13，2.11.14，5.2A | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** ⌘ | |  | | | | | | | | |

**\*\*\*\*\*\*\***

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

### 2.11.9 Trace Reference 2

Trace reference 2 is defined in 3GPP TS 32.421 [65[ and in 3GPP TS 32.422 [64].

The Trace Reference 2 is permanent subscriber data and is conditionally stored in the HSS/HLR, VLR, SGSN, MME , SGW, PGW and 3GPP AAA Server.

### 2.11.10 Trace depth

The Trace depth is defined in 3GPP TS 32.422 [64].

The Trace depth is permanent subscriber data and is conditionally stored in the HSS/HLR, VLR, SGSN, MME, SGW, PGW and 3GPP AAA Server.

### 2.11.11 List of NE types to trace

The List of NE types to trace is deinfed in 3GPP TS 32.422 [64].

The List of NE types to trace is permanent subscriber data and is conditionally stored in the HSS/HLR, VLR, SGSN, MME and 3GPP AAA Server.

### 2.11.12 Triggering events

The Triggering event is defined in 3GPP TS 32.422 [64].

The Triggering event is permanent subscriber data and is conditionally stored in the HSS/HLR, VLR, SGSN, MME, SGW, PGW and 3GPP AAA Server.

### 2.11.13 List of interfaces to trace

The List of interfaces to trace is defined in 3GPP TS 32.422 [64].

The List of interfaces to trace is permanent subscriber data and is conditionally stored in the HSS/HLR, VLR, SGSN, MME, SGW, PGW and 3GPP AAA Server.

### 2.11.14 IP address of Trace Collection Entity

The IP address of Trace Collection Entity is defined in 3GPP TS 32.422 [64].

The IP address of Trace Collection Entity is permanent subscriber data and is conditionally stored in the HSS/HLR, VLR, SGSN, MME, SGW, PGW and 3GPP AAA Server

\* \* \* Next Change \* \* \* \*

## 5.2A PS Network Access Mode Storage (EPS)

Table 5.2A-1: Overview of data used for PS Network Access Mode (EPS 3GPP access)

| PARAMETER | Subclause | HSS | VLR  (see note3) | S4-SGSN | MME | S-GW | PDN-GW | TYPE |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IMSI | 2.1.1.1 | M | C | C | C | C | C | P |
| Network Access Mode | 2.1.1.2 | M | - | - | C (see note 1) | - | - | P |
| IMSI Unauthenticated indicator | 2.1.1.3 | - | - | C | C | C | C | T |
| International MS ISDN number | 2.1.2 | M | - | M | M | M | M | P |
| P-TMSI | 2.1.5 | - | - | C | - | - | - | T |
| TLLI | 2.1.6 | - | - | C | - | - | - | T |
| Random TLLI | 2.1.7 | - | - | C | - | - | - | T |
| IMEI | 2.1.9 | C | - | C | C | C | C | T |
| IMEISV | 2.2.3 | C | - | C | C | - | - | T |
| RAND/SRES and Kc | 2.3.1 |  | - | C | - | - | - | T |
| RAND, XRES, CK, IK, AUTN | 2.3.2 | M | - | C | C | - | - | T |
| RAND, XRES, KASME, AUTN | 2.3.2 | M | - |  | C | - | - | T |
| Ciphering Key Sequence Number | 2.3.3 | C | - | M | - | - | - | T |
| Key Set Identifier (KSI) | 2.3.4 | - | - | M | - | - | - | T |
| KSIASME | 2.3.4 | - | - |  | M | - | - | T |
| Selected Ciphering Algorithm | 2.3.5 | - | - | M | - | - | - | T |
| Current Kc | 2.3.6 | - | - | M | - | - | - | T |
| P-TMSI Signature | 2.3.7 | - | - | C | - | - | - | T |
| Routing Area Identity | 2.4.3 | - | - | M | - | - | - | T |
| IWF number | 2.4.8.3 | C | - | - | - | - | - | T |
| RSZI Lists | 2.4.11.1 | C | - |  | - | - | - | P |
| Zone Code List | 2.4.11.2 | - | - | C | C | - | - | P |
| SGSN area restricted Flag | 2.4.14 | M | - |  | - | - | - | T |
| RA not allowed flag | 2.4.14a | - | - | M | - | - | - | T |
| TA not allowed flag | 2.4.14b | - | - |  | M | - | - | T |
| Roaming Restricted in the SGSN due to unsupported feature | 2.4.15.3 | M | - | M | - | - | - | T |
| Roaming Restricted in the MME due to unsupported feature | 2.4.15.3a | M | - |  | M | - | - | T |
| Cell Global Identity | 2.4.16 | - | - | - | C | - | - | T |
| Access Restriction Data | 2.4.18 | C | - | C | C | - | - | T |
| Closed Subscriber Group Information | 2.4.22 | C | C | C | C | - | - | P |
| Subscriber Data Confirmed by HLR/HSS Indicator | 2.7.4.2 | - | - | M | M | - | - | T |
| Location Info Confirmed by HLR/HSS Indicator | 2.7.4.3 | - | - | M | M | - | - | T |
| MS purged for EPS flag | 2.7.6A | M | - |  | - | - | - | T |
| URRP-MME | 2.7.9.1 | C | - | - | C | - | - | T |
| URRP-SGSN | 2.7.9.2 | C | - | C | - | - | - | T |
| Subscriber Status | 2.8.1 | C | - | C | C | - | - | P |
| Barring of outgoing calls | 2.8.2.1 | C | - | C | - | - | - | P |
| Barring of roaming | 2.8.2.3 | C | - | - | - | - | - | P |
| Barring of Packet Oriented Services | 2.8.2.8 | C | - | C | C | - | - | P |
| ODB PLMN-specific data | 2.8.3 | C | - | C | - | - | - | P |
| Trace Activated in SGSN | 2.11.7 | C | - | C | - | - | - | P |
| Trace Reference 2 | 2.11.9 | C | C | C | C | C | C | P |
| Trace depth | 2.11.10 | C | C | C | C | C | C | P |
| List of NE types to trace | 2.11.11 | C | C | C | C | - | - | P |
| Triggering events | 2.11.12 | C | C | C | C | C | C | P |
| List of interfaces to trace | 2.11.13 | C | C | C | C | C | C | P |
| IP address of trace collection entity | 2.11.14 | C | C | C | C | C | C | P |
| Access Point Name (APN). | 2.13.6 | M | - | M | M | M | M | P |
| MME name | 2.13.26 | M | C | - | - | - | - | T |
| VLR name | 2.13.27 | - | - | - | C (see note 2) | - | - | T |
| NEAF | 2.13.28 | - | - | - | C (see note 2) | - | - | T |
| UE level APN-OI-Replacement | 2.13.29 | C | - |  | C | - | - | P |
| Subscribed UE-AMBR | 2.13.30 | M | - | M | M | - | - | P |
| Used UE-AMBR | 2.13.30A | - | - | C | C | - | - | T |
| APN-Configuration-Profile | 2.13.31 | M | - | M | M | - | - | P |
| Subscribed APN-AMBR | 2.13.32 | M | - | M | M | - | M | P |
| Used APN-AMBR | 2.13.32A | - | - | C | C | - | C | T |
| Subscribed-RFSP-ID | 2.13.33 | C | - | - | C | - | - | P |
| GUTI | 2.13.34 | - | - | - | C | - | - | T |
| ME identity (IMEISV) | 2.13.35 | C | - | C | C | - | - | T |
| Selected NAS Algorithm | 2.13.36 | - | - |  | M | - | - | T |
| Selected AS Algorithm | 2.13.37 | - | - |  | M | - | - | T |
| Context Identifier | 2.13.38 | M | - | M | M | M | M | P |
| PDN Address | 2.13.39 | C | - | C | C | C | C | P/T (see note4) |
| VPLMN Address Allowed | 2.13.40 | M | - | M | M | - | - | P |
| PDN GW identity | 2.13.41 | M | - | - | M | - | - | P/T  (see note4) |
| Tracking Area List | 2.13.42 | - | - | - | M | - | - | T |
| APN Restriction | 2.13.43 |  | - | C | C | C | C | P |
| APN in use | 2.13.44 | - | - | M | M | M | M | T |
| TAI of last TAU | 2.13.45 | - | - | - | M | - | - | T |
| Cell Identity Age | 2.13.46 | - | - | - | C | - | - | T |
| MME F-TEID for S11 | 2.13.47 | - | - | - | C | C | - | T |
| MME UE S1AP ID | 2.13.48 | - | - | - | C | - | - | T |
| S-GW F-TEID for S11 | 2.13.49 | - | - | - | C | C | - | T |
| S4-SGSN F-TEID for S4 (control plane) | 2.13.50 |  |  | C |  |  |  | T |
| S4-SGSN F-TEID for S4 (User plane) | 2.13.51 |  |  | C |  |  |  | T |
| S-GW F-TEID for S5/S8  (control plane) | 2.13.52 | - | - | - | C | C | C | T |
| S-GW F-TEID for S1-U | 2.13.53 | - | - | - | C | C | - | T |
| S-GW F-TEID for S5/S8  (user plane) | 2.13.54 | - | - | - | - | C | C | T |
| eNodeB Address | 2.13.55 | - | - | - | C | - | - | T |
| eNodeB UE S1AP ID | 2.13.56 | - | - | - | C | - | - | T |
| eNodeB F-TEID for S1-U | 2.13.57 | - | - | - | - | C | - | T |
| E-UTRAN/UTRAN Key Set flag | 2.13.58 | - |  | - | C | - | - | T |
| Selected CN operator id | 2.13.59 | - |  | - | C | - | - | T |
| UE Radio Access Capability | 2.13.60 | - | - | - | C | - | - | T |
| Location Change Report Required | 2.13.62 | - | - | C | C | - | - | T |
| UE specific DRX parameters | 2.13.63 | - |  | - | C | - | - | T |
| PDN GW F-TEID for S5/S8  (user plane) | 2.13.64 | - | - | C | C | C | C | T |
| PDN GW F-TEID for S5/S8 (control plane) | 2.13.65 | - | - | C | C | C | C | T |
| EPS Bearer ID | 2.13.66 | - | - | C | C | C | C | T |
| EPS Bearer QoS | 2.13.67 |  |  | C | C | C | C | T |
| UL TFT | 2.13.68 | - | - | - | C | C | C | T |
| DL TFT | 2.13.69 | - | - | - | C | C | C | T |
| Charging Id | 2.13.70 | - | - | C | - | C | C | T |
| EPS PDN Connection Charging Characteristics | 2.13.71 | C | - | C | C | C | C | P |
| Default bearer | 2.13.72 | - | - | - | C | C | C | T |
| URRP-MME | 2.13.73 | C | - | - | C |  |  | T |
| RAT Type (Access Type) | 2.13.75 | C | - | C | C | C | C | T |
| Diameter Server Identity of the HSS | 2.13.99 |  |  | C | C |  |  | T |
| SGSN name | 2.13.100 | M | - | - | - | - | - | T |
| S-GW F-TEID for S12 | 2.13.101 |  |  |  |  | C |  | T |
| RNC F-TEID for S12 | 2.13.102 |  |  |  |  | C |  | T |
| MME F-TEID for S3 | 2.13.103 |  |  | C | C |  |  | T |
| S4-SGSN F-TEID for S3 | 2.13.104 |  |  | C | C |  |  | T |
| PDN GW Allocation Type | 2.13.105 | M |  |  | M |  |  | P |
| S-GW F-TEID for S4 (control plane) | 2.13.106 |  |  | C |  | C |  | T |
| S-GW F-TEID for S4 (user plane) | 2.13.107 |  |  | C |  | C |  | T |
| RFSP-ID in Use | 2.13.108 | - | - | C | C | - | - | T |
| APN level APN-OI-Replacement | 2.13.109 | C | - | C | C | - | - | P |
| PDN Connection ID | 2.13.111 | - | - | - | - | C | C | T |
| MS Network Capability | 2.13.112 | - | - | C | C | - | - | T |
| Voice Domain Preference and UE's Usage Setting | 2.13.113 | - | - | C | C | - | - | T |
| Privacy Exception List | 2.16.1.1 | C | - | C | - | - | - | P |
| GMLC Numbers | 2.16.1.2 | C | - | C | - | - | - | P |
| MO-LR List | 2.16.1.3 | C | - | C | - | - | - | P |
| Service Types | 2.16.1.4 | C | - | C | - | - | - | P |
| Subscribed Charging Characteristics | 2.19.1 | C | - | C | C | - | - | P |
| ICS Indicator | 2.20.1 | C | C | C | C | - | - | P |
| STN-SR | 2.21.1 | C | - | C | C | - | - | P |
| NOTE 1: This parameter is relevant in the MME only when the SGs interface is installed.  NOTE 2: Only is applicable if SGs interface is installed. It only indicates EPS related data to be stored and is only relevant to EPS subscribers registered in VLR.  NOTE 3: The VLR column is applicable if SGs/Sv interface is installed. It only indicates EPS related data to be stored and is only relevant to EPS subscribers registered in VLR.  NOTE 4: If Static IP address allocation provisioned in the subscriber profile in the HSS is chosen, PDN address is permanent data. | | | | | | | | |

For special condition of storage see in clause 2. See clause 4 for explanation of M, C, T and P in table 5.2A-1.

Table 5.2A-2: Overview of data used for PS Network Access Mode (EPS non 3GPP access)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PARAMETER | Subclause | HSS | MME | S-GW | PDN-GW | ePDG | 3GPP AAA server | 3GPP AAA server  Proxy | TYPE |
| RAND, XRES, CK, IK, AUTN | 2.3.2 | M | - | - | - | - | M | - | T |
| RAND, XRES, KASME, AUTN | 2.3.2 | M | - | - | - | - | M | - | T |
| Access Network Identity | 2.3.8 | C | - | - | - | - | C | - | T |
| Trace Reference 2 | 2.11.9 | C | - | - | C | - | C | - | P |
| Trace depth | 2.11.10 | C | - | - | C | - | C | - | P |
| List of NE types to trace | 2.11.11 | C | - | - | - | - | C | - | P |
| Triggering events | 2.11.12 | C | - | - | C | - | C | - | P |
| List of interfaces to trace | 2.11.13 | C | - | - | C | - | C | - | P |
| IP address of Trace Collection Entity | 2.11.14 | C | - | - | C | - | C | - | P |
| APN-Configuration-Profile | 2.13.31 | M | - | - | C | C | C | - | T |
| PDN Address | 2.13.39 | C | - | C | C | - | - | - | T/P (see Note) |
| RAT Type (Access Type) | 2.13.75 | C | - | C | C | C | C | - | T |
| Permanent User Identity | 2.13.79 | M | - | M | M | M | M | - | P |
| Mobility Capabilities | 2.13.80 | - | - | - | M | C | C | - | T |
| MAG IP address | 2.13.81 |  | - |  |  | - | C | - | T |
| Visited Network Identifier | 2.13.82 | C | - | - | C | C | C | - | T |
| EAP payload | 2.13.83 | - | - | - | M | M | M | - | P |
| MIP Subscriber profile | 2.13.86 | M | - | - | M | - | - | - | P |
| Uplink S5 GRE Key | 2.13.87 | - | C | C | C | - | - | - | T |
| Downlink S5 GRE Key | 2.13.88 | - | - | C | C | - | - | - | T |
| Uplink S8 GRE Key | 2.13.89 | - | C | C | C | - | - | - | T |
| Downlink S8 GRE Key | 2.13.90 | - | - | C | C | - | - | - | T |
| S2a GRE Keys | 2.13.91 | - | - | C | C | C | - | - | T |
| S2b GRE Keys | 2.13.92 | - | - | C | C | C | - | - | T |
| Mobile Node Identifier | 2.13.93 | - | - | C | C | - | - | - | T |
| IPv4 Default Router Address | 2.13.94 | - | - | C | C | - | - | - | T |
| Link-local address | 2.13.95 | - | - | C | C | - | - | - | T |
| Non 3GPP User Data | 2.13.96 | - | - | - | - | - | - | - |  |
| 3GPP AAA Server Identity | 2.13.97 | C | - | - | C | C |  | - | T |
| Selected IP mobility mode | 2.13.98 | - | - | - | C | C | C | - | T |
| Diameter Server Identity of HSS | 2.13.99 | - | C | - | - | - | C | - | T |
| Unauthenticated IMSI | 2.13.110 | - | - | C | C | - | - | - | T |
| PDN Connection ID | 2.13.111 | - | - | C | C | C | - | - | T |
| Subscribed Charging Characteristics | 2.19.1 | M | - | - | - | - | C | - | P |
| Master session Key | 3B.3. 5 | - | - | - | C | C | C | - | T |
| NOTE: If Static IP address allocation provisioned in the subscriber profile in the HSS is chosen, PDN address is permanent data. | | | | | | | | | |

For special condition of storage see in clause 2. See clause 4 for explanation of M, C, T and P in table 5.2A-2.

Table 5.2.A-3 contains additional parameter to be hold when optimised handover to 3GPP2 is supported.

Table 5.2A-3: Overview of data used for PS Network Access Mode (optimized handover to 3GPP2)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PARAMETER | Subclause | HSS | MME | S-GW | PDN-GW | ePDG | 3GPP AAA server | 3GPP AAA server  Proxy | TYPE |
| Access Restriction Data | 2.4.18 | C | C | - | - | - | - | - | T |
| Barring of Packet Oriented Services | 2.8.2.8 | C | C | - | - | - | - | - | P |
| RAT Type | 2.13.75 | C | - | - | - | - | - | - | T |
| S101 HRPD access node IP address | 2.13.76 | - | C | - | - | - | - | - | T |
| S103 Forwarding Address | 2.13.77 | - | C | C | - | - | - | - | T |
| S103 GRE key(s) | 2.13.78 | - | C | C | - | - | - | - | T |

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