**3GPP TSG-CT WG1 Meeting #125-eC1-20xxxx**

**Electronic meeting, 20-28 August 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **24.007** | **CR** | **0130** | **rev** | **1** | **Current version:** | **16.1.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:*** | IEI assignment rule between TSN AF and TSN translator | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | Vertical\_LAN | | | | |  | ***Date:*** | | | 2020-08-23 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | There are several optional TLV-E IEs in TS 24.519. When the IEIs of those IEs were decided in the previous meeting, CT1 followed the rule for the 5GMM and 5GSM protocols. However, this is not specified anywhere. | | | | | | | | |
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| ***Summary of change:*** | | It is specified that the IEI assignment conforms the rule for the 5GMM and 5GSM protocols. | | | | | | | | |
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| ***Consequences if not approved:*** | | Decoding error | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 11.2.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

# 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.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] GSM 01.02(R97): "Digital cellular telecommunications system (Phase 2+); General description of a GSM Public Land Mobile Network (PLMN)".

[1a] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.101: "General UMTS Architecture".

[3] 3GPP TS 44.001: "Mobile Station ‑ Base Station System (MS ‑ BSS) interface; General aspects and principles".

[3a] 3GPP TS 23.060: "General Packet Radio Service (GPRS) description; Stage 2".

[3b] GSM 03.56(R98): "Digital cellular telecommunications system (Phase 2+); GSM Cordless Telephony System (CTS), Phase 1; CTS Architecture Description; Stage 2".

[3c] 3GPP TS 23.271: "Functional stage 2 description of location services".

[4] 3GPP TS 44.005: "Data Link (DL) layer; General aspects".

[5] 3GPP TS 44.006: "Mobile Station ‑ Base Station System (MS ‑ BSS) interface; Data Link (DL) layer specification".

[5a] 3GPP TS 44.014: "Individual equipment type requirements and interworking; Special conformance testing functions".

[6] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification Core Network Protocols-Stage 3".

[6a] 3GPP TS 23.108: "Mobile radio interface Layer 3 specification Core Network Protocols Stage 2 (structured procedures)".

[6b] 3GPP TS 44.018: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol".

[7] 3GPP TS 24.010: "Mobile radio interface Layer 3; Supplementary services specification; General aspects".

[8] 3GPP TS 24.011: "Point‑to‑Point (PP) Short Message Service (SMS) support on mobile radio interface".

[8a] 3GPP TS 44.071: "Location Services (LCS); Mobile radio interface layer 3 LCS specification".

[9] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary services specification; Formats and coding".

[10] 3GPP TS 24.081: "Line identification supplementary services; Stage 3".

[10a] 3GPP TS 44.060: "General Packet Radio Services (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control/Medium Access Control (RLC/MAC) protocol".

[10b] 3GPP TS 44.056: "GSM Cordless Telephony System (CTS), phase 1; CTS radio interface Layer 3 specification".

[11] 3GPP TS 24.082: "Call Forwarding (CF) supplementary services - Stage 3".

[11a] 3GPP TS 44.064: "General Packet Radio Service (GPRS); Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) layer specification".

[12] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services; Stage 3".

[12a] 3GPP TS 44.065: "General Packet Radio Service (GPRS); Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)".

[13] 3GPP TS 24.084: "MultiParty (MPTY) supplementary services; Stage 3".

[14] 3GPP TS 24.085: "Closed User Group (CUG) supplementary services; Stage 3".

[15] 3GPP TS 24.086: "Advice of Charge (AoC) supplementary services; Stage 3".

[16] 3GPP TS 24.088: "Call Barring (CB) supplementary services; Stage 3".

[17] 3GPP TS 24.090: "Unstructured Supplementary Service Data (USSD) - Stage 3".

[17a] 3GPP TS 34.109: "Terminal logical test interface; Special conformance testing functions".

[18] ITU-T Recommendation X.200: "Information technology - Open Systems Interconnection - Basic Reference Model: The basic model".

[19] 3GPP TS 44.068: "Group Call Control (GCC) Protocol".

[20] 3GPP TS 23.110: "UMTS Access Stratum Services and Functions".

[21] 3GPP TS 24.030: "Location Services (LCS); Supplementary service operations – Stage 3".

[22] 3GPP TS 23.251: "Network Sharing; Architecture and functional description".

[23] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[24] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".

[25] 3GPP TS 24.301: "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3".

[26] 3GPP TS 36.509: "Evolved Universal Terrestrial Radio Access (E-UTRA); Special conformance testing function for User Equipment (UE)".

[27] 3GPP TS 23.216: "Single Radio Voice Call Continuity (SRVCC); Stage 2".

[28] 3GPP TS 38.331: "NR Radio Resource Control (RRC) Protocol specification".

[29] 3GPP TS 38.509: "5GS; Special conformance testing functions for User Equipment (UE)".

[30] IETF RFC 7296: "Internet Key Exchange Protocol Version 2 (IKEv2)".

[31] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[32] 3GPP TS 24.502: "Access to the 3GPP 5G System (5GS) via non-3GPP access networks; Stage 3".

[x] 3GPP TS 24.519: "5G System (5GS); Time-Sensitive Networking (TSN) Application Function (AF) to Device-Side TSN Translator (DS-TT) and Network-Side TSN Translator (NW-TT) protocol aspects; Stage 3".

\*\*\*\*\* Next change \*\*\*\*\*

### 11.2.4 Non-imperative part of a standard L3 message

The imperative part of a standard L3 message is followed by the (possibly empty) non-imperative part. The relevant protocol specification defines where the imperative part of a standard L3 message ends. The non-imperative part of a standard L3 message is composed of (zero, one, or several) standard IEs having the format T, TV, TLV or TLV-E. The receiver of a standard L3 message shall analyse the non imperative part as a succession of standard IEs each containing an IEI, and shall be prepared for the non-imperative part of the message to contain standard IEs that are not specified in the relevant protocol specification.

An IEI may be known in a message or unknown in a message. Each protocol specification lists, for each message (i.e., according to the message type, the direction and the lower layer SAP), the known standard IEs in the non-imperative part.

An IEI that is known in a message designates the IE type of the IE the first part of which the IEI is, as well as the use of the information. Which IE type it designates is specified in the relevant protocol specification. Within a message, different IEIs may designate the same IE type if that is defined in the relevant protocol specification.

Whether the second part of an IE with IEI known in a message is the length or not (in other words, whether the IEI is the first part of an IE formatted as TLV, TLV-E or not) is specified in the relevant protocol specification.

Unless otherwise specified in the protocol specification, the receiver shall assume that IE with unknown IEI are TV formatted type 1, T formatted type 2, TLV formatted type 4 or TLV-E formatted type 6 standard IEs. The IEI of unknown IEs together with, when applicable, the length indicator, enable the receiver to determine the total length of the IE, and then to skip unknown IEs. The receiver shall assume the following rule for IEs with unknown IEI:

Bit 8 of the IEI octet is set to "1" indicates a TV formatted type 1 standard IE or a T formatted type 2 IEs. Hence, a 1 valued bit 8 indicates that the whole IE is one octet long.

Furthermore, for the EPS protocols EMM and ESM:

Bit 8 of the IEI octet set to "0" and bits 7 to 4 set to "1" indicates a TLV-E formatted type 6 IE, i.e. the following two octets are length octets. Bit 8 of the IEI octet set to "0" and bit 7 to 4 set to any other bit combination indicates a TLV formatted type 4 IE, i.e. the following octet is a length octet.

Furthermore, for the 5GS protocols 5GMM and 5GSM:

Bit 8 of the IEI octet set to "0" and bits 7 to 5 set to "1" indicates a TLV-E formatted type 6 IE, i.e. the following two octets are length octets. Bit 8 of the IEI octet set to "0" and bit 7 to 5 set to any other bit combination indicates a TLV formatted type 4 IE, i.e. the following octet is a length octet.

IEI assignment in 3GPP TS 24.519 [x] shall comply with the above rule for the 5GS protocols 5GMM and 5GSM.

For all other protocols:

Bit 8 of the IEI octet set to "0" indicates a TLV formatted type 4 IE. Hence, the following octet is a length octet.

As a design rule, it is recommended that IEIs of any TV formatted type 1, T formatted type 2, TLV formatted type 4 or TLV-E formatted type 6 IE follow the rule, even if assumed to be known by all potential receivers.

As a design rule, it is recommended that no new TV formatted type 3 IE is added to the non-imperative part of a standard L3 message except in the first release of a protocol specification which specifies the standard L3 message.

NOTE: For example, for the 5GS protocols 5GMM and 5GSM, Release 15 is the first release of a protocol specification for REGISTRATION REQUEST message.

A message may contain two or more IEs with equal IEI. Two IEs with the same IEI in a same message must have the same format, and, when of type 3, the same length. More generally, care should be taken not to introduce ambiguities by using an IEI for two purposes. Ambiguities appear in particular when two IEs potentially immediately successive have the same IEI but different meanings and when both are non-mandatory. As a recommended design rule, messages should contain a single IE of a given IEI.

Each protocol specification may put specific rules for the order of IEs in the non-imperative part. An IE known in the message, but at a position non compliant with these rules is said to be out of sequence. An out of sequence IE is decoded according to the format, and, when of type 3 the length, as defined in the message for its IEI.