



Assurance Solutions Division

# **acceSS7 Protocol Breakout Requirements**

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# 1 Revision History

Rev	Author	Approver	Change Description
0.01	H Garry	n/a	Initial Version containing Front end and ISUP section
0.02	H Garry	n/a	Added LAP, MTP, SNM, MTN and SCCP and Brazilian TUP sections.
0.03	H Garry	n/a	Updating version and change history cause it is a new document.
0.04	H Garry	n/a	Addition of TUP and TUP variant sections
1.00	H Garry	n/a	Addition of User Data Sections: IS41 SS ECO 7036, Sprint DINA ECO 7035
1.01	H Garry	n/a	Addition of User Data Sections: Generic TCAP, 800, CLASS, LIDB
1.02	H Garry	n/a	Addition of User Data Sections: BSSAP, BSSMAP, DTAP, MAP, IS41B
1.03	H Garry	n/a	Addition of User Data Sections: AIN, INAP, SCMG
2.00	H Garry	W Phillips	Addition of ECOs, 7037, 7038, 7043, 7044  Clarification: ECOs 7024, 7040 have been included in earlier versions of this document.
2.10	H Garry	n/a	Correction of errors introduced in version 02.00 of document  Addition of ECOs 7045, 7051, 7055, 7019
2.11	H Garry	n/a	Correction of errors introduced since version 02.00 of document
3.00	H Garry	n/a	Addition of B.07.00 ECOs 7026, 7029, 7030, 7047, 7048, 7049, 7050, 7052, 7056, 7057, 7059.
3.10	H Garry	n/a	Addition of B.06.00 ECOs 7058, 7063, 7064, 7067, 7068, 7069  Addition of B.07.00 ECOs 7066
4.00	H Garry	W Phillips	Addition of B.07.10 ECOs 7070, 7071
4.10	J Trask	R Warnock M Hamilton	Addition of B.07.10 ECOs 7072, 7074, 7075, 7076, 7077, 7078, 7079, 7080, 7081, 7082, 7084, 7085, 7086, 7087, 7088, 7103, 7107, 7109, 7111
4.20	J Trask	n/a	Addition of C.07.30 ECOs 7089, 7090, 7091, 7092, 7093, 7095, 7096, 7097, 7098, 7099, 7100, 7101, 7104, 7105, 7106, 7110, 7115, 7118 and B.07.10 ECOs 7112, 7113, 7114
4.30	Rui Tian	n/a	Addition of C.07.30 ECOs 7117, 7119, 7121, 7125, 7126, 7129, 7133, 7134, 7135, 7139, 7140, 7141, 7142, 7146, 7147, 7148, 7150, 7151, 7152, 7153, 7154 and B.07.10 ECOs 7116, 7122, 7123, 7127, 7128, 7130, 7131, 7132, 7137, 7138, 7144
4.40	Rui Tian	M Hamilton	Correction of errors introduced in version 04.30 of document Addition of ECOs 7149
4.41	Rui Tian	n/a	Addition of C.07.30 ECOs 7155, 7156, 7157 and B.07.10 ECOs 7158

Rev	Author	Approver	Change Description
4.42	Rui Tian	n/a	Addition of C.07.30 ECOs 7162 and B.07.10 ECOs 7161. Correction of errors in 7.10.3.60 -7.3.10.64
4.43	Rui Tian	n/a	Addition of C.07.30 ECOs 7160, 7164, 7165, 7168, 7169, 7171, 7173, 7174, 7175, 7177, 7178, 7180, 7182, 7183, 7185 and C.08.00 ECOs 7176, 7179, 7181, 7184
4.44	Rui Tian	n/a	Updated according to TSDB protocol team's review comments.
4.50	Rui Tian	Jeremy Trask	Formal release
4.51	Fujiao Peng	n/a	Addition of C.07.30 ECOs 7187, 7205, and C.08 ECOs 7186, 7189, 7190, 7191, 7192, 7193, 7194, 7195, 7196, 7197, 7198, 7199, 7204, 7206.
4.60	Fujiao Peng	Jeremy Trask	Addition of C.07.30 ECOs 7202, and C.08 ECOs 7200, 7201, 7203, 7208, 7209.
4.70	Fujiao Peng	Jeremy Trask	Addition of C.07.30 ECOs 7219, and C.08 ECOs 7207, 7210, 7211, 7212, 7213, 7215, 7216, 7217, 7218, 7220, 7221 on Jul 04, 2005.
4.80	Fujiao Peng	Jeremy Trask	Addition of C.08 ECOs 7214, 7222, 7224, 7225, 7226, 7227, and 7228 on Oct 26, 2005.
4.90	Fujiao Peng	Jeremy Trask	Addition of C.08 ECOs 7229, 7230, 7231, 7232, 7233, 7234, 7235, 7236, 7237, 7238, 7239 and 7240 on Apr 25, 2006.
5.00	Fujiao Peng	Dave Watson Xiang Zhou	Addition of ECOs 7245, 7230, 7246, 7247, 7248, 7249, 7250, 7251, 7252, 7254, and 7256 on Dec 26, 2006.
5.10	Fujiao Peng	Dave Watson Xiang Zhou	Addition of ECOs 7253, 7255, 7258, 7259, 7260, 7261, 7262, 7263, 7264, 7265, 7266, 7267, 7268, 7270, and 7272 on Jul 20, 2007.
5.20	Yu Yuanjiang	Xiang Zhou	Addition of ECOs 7273, 7274, 7275, 7276, 7277, 7278, 7279 7280 and 7281 on Jun 04, 2008.
5.21	Yuanliang Tang and Fujiao Peng	n/a	Converted this document from Adobe FrameMaker to MS Word format - IQ00195222
5.30	Xi Hong	n/a	Addition of ECOs 7282, 7283, 7384, 8285, 7286, 7287, 7288, 7289, 7290, 7291 and 7292 on Oct 10, 2009.
5.40	Yuanjiang	n/a	Fixed the incorrect DocCM check in by XH. No CR update.
5.50	Huangzhixiong	Pengfujiao	Merge IPCore Protocol Breakout ERS
5.60	WangYing	HuangZhixiong	Updated to GCP and SIP A7. cr7327,cr7326,cr7325,cr7324... on Jul 22, 2011
5.70	Liu Xiangrui	Peng Fujiao Yu Yanjiang	Addition of cr7328, cr7329, cr7330, cr7332, cr7312
5.80	Huang Zhixiong	Peng Fujiao	add missed Diameter Tag bearerQci
5.90	Huang Zhixiong		Add CR7335
5.91	Liu Xiangrui		Modify the definition of DTAPMMLUTYPE ( <b>7.13.1.9</b> )

## 2 Preface

### 2.1 Purpose of Document

This document defines what protocol breakout fields, capture buffer indices and call trace assistance information have been implemented for the acceSS7 product.

It serves as a basis for design, development and test. It is hoped that this document serves as a tool for application designers to determine what information is already broken out and what information needs to be broken out for their applications to run smoothly and efficiently.

This document also acts as a specification against which, the breakout functions can be implemented and tested.

### 2.2 Document Structure

The Breakout Specifications have been divided into four main sections, namely:

- (1) LAP Layer Breakout Routines
- (2) MTP Layer Breakout Routines
- (3) Service Layer Breakout Routines
- (4) User Data Layer Breakout Routines

Within each of these sections are sub-sections which describe different protocol types or protocol variants. For example, the Service Layer contains sub-sections for SCCP, ISUP, TUP etc and the User Data Layer contains sub-sections for LIDB, CLASS, AIN etc.

Each of these sub-sections, are divided under three headings, namely:

- (1) Fields
- (2) Capture Buffer Indices
- (3) Call Trace Assistance

which describe in detail what fields are broken out to feed the application and what values are set and used for Capture Buffer Indices and Call Trace Assistance. All this information has been presented in tabular form for clarity.

#### 2.2.1 Fields

Each field broken out for a protocol will be described in the data tables, in the following manner:

- Field: the breakout field as it appears in the gg59 structure. Bold font is used to highlight the name for clarity.

- Specification reference: Where a field occurs in multiple specifications, a single, representative specification reference is given. However, where a field is specific to a particular protocol variant, an explicit reference is given to that specification.
- Definition - This defines exactly what is broken out into the field mentioned above, that is, it defines the name of the field/parameter that is broken out and what that particular field/parameter is used for within the protocol.
- Details - Contains all other information relating to the breakout field in question. This section will contain information under the following headings:

**Implementation Information:** Information pertaining to special manipulation in extracting the field (from the message to the gg59 structure) is included here. Otherwise it will be extracted in the same form as it is in the message.

**Implementation Reason:** This contains information on why this field has been broken out, ie. what application it will be used for.

**Wrapper Information:** This contains information on any non-standard wrapper functions associated with the field, that is, anything that isn't a straight extraction of the value from the gg59 structure.

In addition all related fields will be grouped together. For example, Calling Party Nature Of Address, Calling Party Numbering Plan and Calling Party Address, will all be grouped together.

All fields referenced within this document have an explicit specification reference. ANSI T1.111 .. T1.114 is referenced for generic MTP, SCCP, TCAP and ISUP. There are, of course, other variants of these protocols, which have their own specification reference.

## 2.2.2 Capture Buffer Indices

For each message listed, the table defines what indices should be created. As explained in Section 3.2, an index may be set in two ways using the routines I7526\_hashAddCpctTelno() and I7524\_hashAddVal(). The table uses these functions as column headings. If applicable, values are entered under these column headings for each message that wants to create a capture buffer index.

## 2.2.3 Call Trace Assistance

For each message or group of messages listed, the table defines what call trace assistance should be set. See Section 3.3 for a description of all the fields that can be set.

For each message or group of messages, the call trace assistance area is divided up into four areas as follows: CTFlags, Time Outs, Cross Trigger Settings and State of Call.

**CTFlags:** Information for the setting of CT flags has been presented in a matrix form. The ‘ticks’ indicate what critter values have been set. The Critter values have been listed down the left-hand side of the table and the CT Call Matching Flags have been listed across the top.

*IMPORTANT: Please note, to make the tables easy to read and less cluttered a shortened version of the critter value names and CT call matching flags have been listed in the Call Trace assistance Area of the table. Their equivalent GG59 names are obtained by adding ‘K\_GG59\_’ in front, eg. K\_GG59\_OPCDPCCIC.*

**Time Outs:** The four possible time outs that can be set for call trace are listed in the table. If a particular timeout is not set, then ‘n/a’ appears in the box, else the value that the timer has to be set to is inserted.

*Note: CTFinalTimeout\_b is an array, hence in addition to the value of the timer, the value in the array will also appear, eg. OPCDPCCIC.*

**Cross Triggers:** Cross triggers can only have two possible values, local or global, so the appropriate box will be ticked.

Table Value	Equivalent GG59 Value
Local	K_GG59_CTLOCALGROUP
Global	K_GG59_CTGLOBALGROUP

State of Call: There are two possible call states, CTState and CTEnhState. If data (eg. Routing) appears in under the column for CTState, the CTState.set\_b is set to K\_GF04\_CTSTATE\_SET and CTState.number\_u is set to ‘Message number of Routing’ and a similar logic applies to CTEnhState.

## 2.3 References

Reference	Description
<b>2.3.1</b>	E4260-90100 Access7 External Reference Specification Revision 01.06
<b>2.3.2</b>	Protocol Developers Kit, Vol 6
<b>2.3.3</b>	Bellcore specification of Signaling System No 7 TR-NWT-000246, Issue 2, Revision 2, December 1992
<b>2.3.4</b>	ANSI 1992 SS7 Standards - T1.111 .. T1.114
<b>2.3.5</b>	Class Feature : Calling Name Delivery TR-NWT-001188 Issue 1, December 1991
<b>2.3.6</b>	Class Feature : Automatic Callback TR-NWT-000215 Issue 3, June 1993
<b>2.3.7</b>	Class Feature : Automatic Recall TR-NWT-000227 Issue 3, June 1993
<b>2.3.8</b>	Database Services Service Switching Points TR-NWT-000533 Issue 3, January 1994
<b>2.3.9</b>	AIN 0.1 Switch - SCP API Generic Requirements TR-NWT-001285 Issue 1, August 1992
<b>2.3.10</b>	Procedural interface to I75 'superhash' routines - ip75.h
<b>2.3.11</b>	Additional Service Switching Point and Related End Office Capabilities (Including Private Virtual Networks) TR-TSY-000402 Issue 2, July 1989
<b>2.3.12</b>	CCITT Blue Book Recommendation Q.723
<b>2.3.13</b>	CCS Network Interface Specification Supporting Alternate Billing Services (ABS) TR-NWT-000954, Issue 2, November 1992
<b>2.3.14</b>	ETSI/GSM; Mobile radio interface layer 3 specification (GSM 04.08 version 3.11.0)
<b>2.3.15</b>	prETS 300 557 (Phase 2) - Mobile radio interface layer 3 specification (GSM 04.08 version 4.10.0)
<b>2.3.16</b>	ETSI/GSM; Signalling transport mechanisms between Base Station Subsystem (BSS) and Mobile Switching Center (MSC) (GSM 08.06 version 3.5.1)
<b>2.3.17</b>	prETS 300 589 (Phase 2) - Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS-MSC) interface (GSM 08.06 version 4.5.0)
<b>2.3.18</b>	ETSI/GSM; Mobile Switching Centre (MSC) to Base Station System (BSS) interface layer 3 specification (GSM 08.08 vsersion 3.9.2)
<b>2.3.19</b>	prETS 300 590 (Phase 2) - Mobile-services Switching Centre - Base Station System (MSS-BSS) interface layer 3 specification (GSM 08.08 version 4.8.0)
<b>2.3.20</b>	ETSI/GSM; Mobile Application Part specification (GSM 09.02 version 3.8.0)
<b>2.3.21</b>	prETS 300 599 (Phase 2) - Mobile Application Part (MAP) specification (GSM 09.02 version 4.9.0)
<b>2.3.22</b>	FTZ 163 TR 75 (April 1993)
<b>2.3.23</b>	ETS 300 374-1 (September 94)
<b>2.3.24</b>	FTZ 163 TR 78 (April 94)
<b>2.3.25</b>	ITU-T Q.773 (03/93) - Signalling System No. 7 - Transaction Capabilities Formats and Encoding

Reference	Description
<b>2.3.26</b>	PNO-ISC/SPEC/006 - C7 Interconnect User Part (IUP) Requirements, Section 2 (draft 2 issue 1, July 1994)
<b>2.3.27</b>	Decoded Fields Definitions - gg59.h
<b>2.3.28</b>	Telephone Number Structures - gg61.h
<b>2.3.29</b>	National Common Channel Signalling System - Telephone User Part TUP - Helsinki 1988
<b>2.3.30</b>	EIA/TIA/IS-41.5-B Cellular Radio - Telecommunications Intersystem Operation, December 1991
<b>2.3.31</b>	AOTC TO 00846S: CCS telephone user part for interconnect: Issue 1, June 1992
<b>2.3.32</b>	GR-954-CORE CCS Network Interface Specification Supporting Line Information Database (LIDB) Service Issue 1, June 1994 Revision 1, October 1995
<b>2.3.33</b>	ITU-T Q.763 Formats and Codes of the ISDN User Part of Signalling System No. 7 (03/93)
<b>2.3.34</b>	ERS HP acceSS7 Platform E4260-90107-17
<b>2.3.35</b>	GR-2936-CORE Draft May 1996, Local Number Portability Capability Specification
<b>2.3.36</b>	PY INAP Version 1.3B (1.2.1995)
<b>2.3.37</b>	PY INAP Version 2.2 (May 1994)
<b>2.3.38</b>	ITU-T Q.713 Signalling System No. 7 - SCCP Formats and Codes (03/93)
<b>2.3.39</b>	Feature Planning Specification for Application of CCS7 to: DMS-250 IMTs and DCP access for TCN validation and N00 translation, Issue 2.0, 26th August 1987
<b>2.3.40</b>	ST/PAA/CER/SCS/2600: Specification of SSUTR2 [Telephone User Part R2] Issue 2 - May 1990
<b>2.3.41</b>	DE/PAA/CER/SCS/1675: Impact of Introduction of NV5 of TUP-R2 Issue 3 (29 May 1995)
<b>2.3.42</b>	DE/PAA/CER/SCS/1698: Impact of Introduction of NV6 of TUP-R2 Issue 1 (30 May 1995)
<b>2.3.43</b>	Telebras 210-110-724, Issue 01, Aug 1987
<b>2.3.44</b>	TIA/EIA IS41.5-A, December 1990
<b>2.3.45</b>	TIA/EIA/IS-41.5-C, Rev C, Feb 1996
<b>2.3.46</b>	SSR07:AD5454: DINA- TCAP Specification, AF06
<b>2.3.47</b>	SSR07:AD5454: DINA- TCAP Specification, AH03
<b>2.3.48</b>	Technical Specification of SS7 for the National Telephone Network of China GF001 - 9001 (Aug. 90)
<b>2.3.49</b>	SSP SASCN S-1265/5 rev5.0.3 (21st March 1996).
<b>2.3.50</b>	AIN 0.2 Switch - SCP/Adjunct Interface Generic Requirements GR-1299-CORE, Issue 4A, Dec 1997
<b>2.3.51</b>	GR-246-CORE, Issue 01, Rev 02, Dec 1996
<b>2.3.52</b>	ANSI T1.645-1995
<b>2.3.53</b>	ITU Q.713 SCCP Formats and Codes, July 1997

Reference	Description
<b>2.3.54</b>	ANSI T1.112 1996
<b>2.3.55</b>	ITU Q.1218 Interface Recommendation for IN CS-1, March 1993
<b>2.3.56</b>	INAP of China Phase 1, Ministry of Post And Telecommunications P.R.C 1997
<b>2.3.57</b>	ETSI EN 301 140-1 V1.3.4 IN CS2 Protocol Specification, June 1999
<b>2.3.58</b>	ITU Q.1228 Interface Recommendation for IN CS-2, September 1997
<b>2.3.59</b>	ANSI T1.113, 1995
<b>2.3.60</b>	ANSI/TIA/EIA-41-D-1997, November 1997
<b>2.3.61</b>	TIA/EIA/IS-751, TIA/EIA-41-D Modifications to Support IMSI, February 1998
<b>2.3.62</b>	ETSI TS 129 078 V3.4.1 (3G TS 29.078), Version 3.4.1, Release 1999
<b>2.3.63</b>	GSM MAP 09.02 V7.0.0, Release 1998
<b>2.3.64</b>	JT-Q.711-714 (Japan HS SCCP)
<b>2.3.65</b>	NTS CAU 28955/4.2-4 en, Issue: 4.2-4, Date: 20 April 1999
<b>2.3.66</b>	SASCN S-3062/1, "Intelligent Network Application Protocol (INAP) - ASN.1 of the CS2", Rev 0.0.3, 3 Feb 1999
<b>2.3.67</b>	IEEE 802.3, February 1998
<b>2.3.68</b>	IETF RFC 791, "Internet Protocol", Sep-01-1981
<b>2.3.69</b>	IETF RFC 790, "Assigned Numbers", Sep-01-1981 (Obsolete)
<b>2.3.70</b>	IETF RFC 793, "Transmission Control Protocol", Sep-01-1981
<b>2.3.71</b>	IETF RFC 768, "User Datagram Protocol", Aug-28-1980
<b>2.3.72</b>	IETF RFC 2960, "Stream Control Transmission Protocol", October 2000
<b>2.3.73</b>	IETF RFC 3332, "SS7 MTP3-User Adaptation Layer (M3UA)", Sep 2002
<b>2.3.74</b>	tali2_0_060100, "Transport Adapter Layer Interface 2.0", Tekelec
<b>2.3.75</b>	<draft-ietf-sigtran-m2pa-01.txt>, "SS7 MTP2-User Peer-to-Peer Adaptation Layer"
<b>2.3.76</b>	<draft-ietf-sigtran-m2ua-06.txt>, "SS7 MTP2-User Adaptation Layer"
<b>2.3.77</b>	ETSI EN 301 347, "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface (GSM 09.60 version 7.3.1 Release 1998), V7.3.1 (2000-06)
<b>2.3.78</b>	TR-4159, "AT&T Network Integrated Services Digital Network (ISDN) Primary Rate Interface and Special Application Specification User-Network Interface Description", June 1999
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<b>2.3.80</b>	ETSI TS 101 346, "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification (GSM 09.18 version 7.3.0 Release 1998)", V7.3.0 (2000-06)
<b>2.3.81</b>	3CL 02322 TATT SPZZQ, "SCP - Network T_Server Interface Alcatel Requirements for GENESYS", V3.1, 5 August 1999
<b>2.3.82</b>	SASSN IP-1010/1, "Interface & Protocols New Public Telecommunications Architecture - Services Protocol", Rev 0.0.3, 24 July 1998
<b>2.3.83</b>	SASSN IP-1030/1, "Interface & Protocols New Public Telecommunications Architecture - Protocol for supplying the Store and Forward Service", Rev 0.0.3, 24 July 1998
<b>2.3.84</b>	ETSI TS 101 297, "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP) (GSM 04.65 version 6.4.0 Release 1997)", V6.4.0 (1999-08)
<b>2.3.85</b>	IETF RFC 1700, "Assigned Numbers", October 1994
<b>2.3.86</b>	IETF RFC 1661, "The Point-to-Point Protocol (PPP)", July 1994
<b>2.3.87</b>	IETF RFC 2068, "Hypertext Transfer Protocol - HTTP/1.1", January 1997
<b>2.3.88</b>	ETSI TS 101 351, "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) layer specification (GSM 04.64 version 7.0.0 Release 1998)", 7.0.0 (1999-08)
<b>2.3.89</b>	ETSI TS 101 343, "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Base Station Subsystem (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS Protocol (BSSGP) (GSM 08.18 version 6.6.0 Release 1997)", V6.6.0 (1999-12)
<b>2.3.90</b>	Draft ETSI EN 300 940, "Digital cellular communications system (Phase 2+); Mobile radio interface layer 3 specification (GSM 04.08 version 7.4.0 Release 1998)", V7.4.0 (2000-01)
<b>2.3.91</b>	ETSI TS 129 002, "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 3.7.1 Release 1999)", V3.7.1 (2000-12)
<b>2.3.92</b>	ETSI TS 123 093, "Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2 (3GPP TS 23.093 version 3.2.0 Release 1999)", V3.2.0 (2000-09)
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<b>2.3.94</b>	GR-954-CORE, "Common Channel Signalling (CCS) Network Interface Specification (CCSNIS) Supporting Line Information Database (LIDB) Service", Issue 3, Dec 2000
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<b>2.3.97</b>	TTC JJ-90.10, "Inter Carrier Interface based on ISUP", Second Edition, 1999.04.22
<b>2.3.98</b>	RFC2865, RADIUS (June 2000, IETF)

Reference	Description
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<b>2.3.100</b>	ETSI TS 101 348 V7.4.0 (2001-09)
<b>2.3.101</b>	IS-J-STD-038 Revision A, Jan 2002
<b>2.3.102</b>	ITU-T Q.765.1 SS7, APM, Support of VPN applications with PSS1 information flows.
<b>2.3.103</b>	Ericsson 129/155 17-CRT 249 12 Uen (2000-01-27, Rev A)
<b>2.3.104</b>	Ericsson Function Specification, Ericsson Variant MAP v3, Revision A/B/C (1998 -- 2001)
<b>2.3.105</b>	Ericsson 129/155 17-CRT 249 12 Uen (2000-01-27, Rev A)
<b>2.3.106</b>	Ericsson's protocol for IN-Format and Codes 2/155 17-CRT 249 01 Uen (1995-05-04 Rev:D)
<b>2.3.107</b>	Ericsson's protocol for IN-Details on 'Update' and 'Retrieve' 3/155 17-CRT 249 01 Uen (1994-07-05 Rev:C)
<b>2.3.108</b>	NTS CAU 28955/4.2-4 en, Issue: 4.2-4, Date: 20 April 1999
<b>2.3.109</b>	Short Message Peer to Peer Protocol Specification v3.4 Document Version:- 12-Oct-1999 Issue 1.2
<b>2.3.110</b>	3GPP TS 29.060 V5.2.0 (2002-06) Release 5
<b>2.3.111</b>	Vodafone Application Part (VAP) Interface Specification, Document No.: ED/EENGTC/MLR/001001, Version 2, Issue 11, Jan 2001
<b>2.3.112</b>	1/155 17-FAM 511 25 Uen, Protocol Specification SCP/SDP, PrePaid System 3.1, Rev B, Sep 2000
<b>2.3.113</b>	The Number and Dialling Procedure for Freephone, Account Card Calling and Virtual Private Network Service, 1998.3.10
<b>2.3.114</b>	The Service Definition and Flow for Freephone, Account Card Calling and Virtual Private Network Service, 1998.3.10
<b>2.3.115</b>	Extensible Gateway Control Protocol (EGCP) 030-EGCP-101, V06, March 2003
<b>2.3.116</b>	ETSI TS 101 299 "Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) interface; Network Service (GSM 08.16 version 7.1.0 Release 1998)", V7.1.0 (1999-07)
<b>2.3.117</b>	ETS 300 754-1 July 1997 ISDN; SS7; TC; ASE for Message Waiting Indication (MWI) supplementary service
<b>2.3.118</b>	Q.765.1 (09-1997), EN 301 062-1 V1.2.2 (07-1998)
<b>2.3.119</b>	IETF RFC 3868, "Signalling Connection Control Part User Adaptation Layer (SUA)", October 2004
<b>2.3.120</b>	3GPP TS 25.413, V4.12.0, "Technical Specification Group Radio Access Network; UTRAN Iu interface RANAP signalling", Release 4, 2004-03
<b>2.3.121</b>	3GPP TS 24.008, V4.14.0, "Technical Specification Group Core Network; Mobile radio interface layer 3 specification; Core Network Protocols; Stage 3", Release 4, 2004-06

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<b>2.3.123</b>	3GPP TS 23.040, V4.9.0, "Technical Specification Group Terminals; Technical realization of the Short Message Service (SMS) ", Release 4, 2004-09
<b>2.3.124</b>	3GPP TS 44.018, V4.19.0, "Technical Specification Group GSM/EDGE Radio Access Network; Mobile radio interface layer 3 specification, Radio Resource Control (RRC) protocol", Release 4, 2004-09
<b>2.3.125</b>	ITU-T H.248.1, Gateway control protocol: Version 2 (05/2002)
<b>2.3.126</b>	3GPP TS 29.018 V5.5.0 (2003-09) "Technical Specification Group Core Network; General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR) Gs interface layer 3 specification", (Release 5)
<b>2.3.127</b>	TIM acceSS7 Network Call Reference, Code: OSS/TIM/acceSS7-NCR/TS02, Version: 1.0, 31.03.2006
<b>2.3.128</b>	Protocol ERS, Ref: e4260-92014-003.
<b>2.3.129</b>	Protocol Field Registry (PFR) ERS, Ref: e4260-90180-195.
<b>2.3.130</b>	RFC1035, "DOMAIN NAMES - IMPLEMENTATION AND SPECIFICATION", Nov 1987.
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## 2.4 Web Pages

The following web pages lists all the indispensable and important compositions of acceSS7 Protocol Breakout ERS:

<http://csdc-097.bei.ds.jdsu.net/project/acceSS7/prot/ERS/BRKOUT/>

It includes the following parts:

Reference	Description
<b>2.4.1</b>	<b>Breakout ERS document</b> Explanation: It records the details about what protocol breakout fields, capture buffer indices and call trace assistance information have been implemented for the acceSS7 product.

Reference	Description
<b>2.4.2</b>	<b>C.08.00 and C.08.10 TsdBreakout Field API Definition Spreadsheet (Ref: e4260-90107-272).</b> Explanation: It records the list of TsdBreakout fields and their API interfaces. It is used to create gg59 source codes.
<b>2.4.3</b>	<b>TsdBreakout Fields and Applications Spreadsheet.</b> Explanation: It records the direct usage status of TsdBreakout fields by acceSS7 applications. It is created from application source codes by script.
<b>2.4.4</b>	<b>TsdBreakout Fields and Protocols Web Page.</b> Explanation: It records (1) the list of TsdBreakout fields every protocol populates; and (2) the list of protocol names populating every TsdBreakout field. It is created from protocol source codes by script.
<b>2.4.5</b>	<b>Breakout Change Request Web Page.</b> Explanation: It records all the Breakout Change Requests (CR) which are under review or approved but not timely added into this document ([2.4.1]).

## 3 Introduction

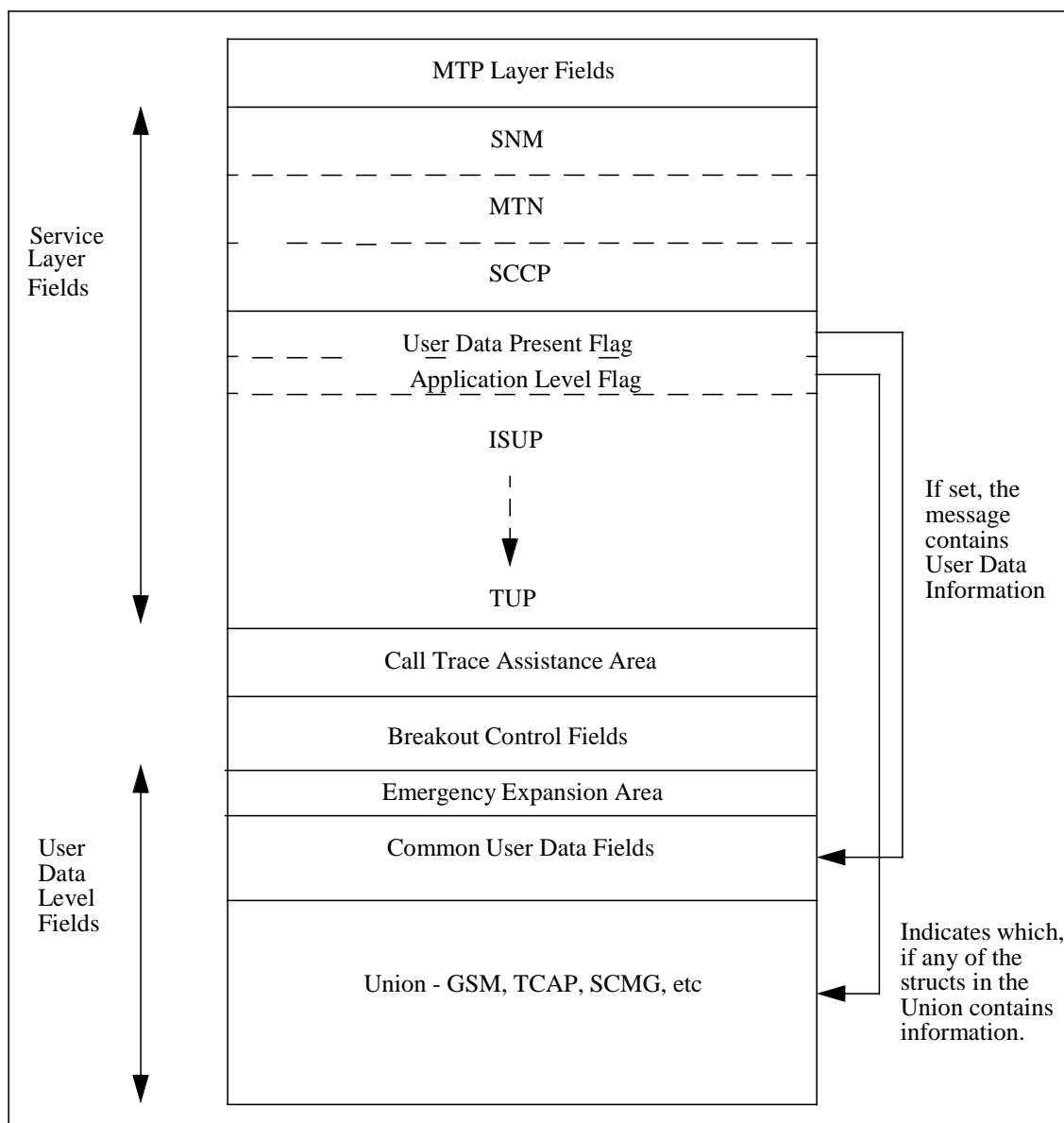
The term ‘Breakout’ is used to denote the extraction of data from an SS7 message field and the mapping of that data to a field in the breakout data structure, which is defined in gg59.h.

A protocol breakout function partially parses incoming messages to extract key fields. Key fields are those which are required by acceSS7 applications. This ensures that the applications do not need to be updated everytime a new protocol is added to the system.

### 3.1 gg59.h Fields

The independence of the protocol data is achieved by extracting specific values from a message and mapping that value to a field in a C structure which is accessible to all acceSS7 applications. The rules used for mapping ensures that the data extracted from different protocols appears the same to an application taking a value from the gg59 structure.

Figure 1 shows the structure of gg59 in pre-C.08, the breakout data structure.

**Figure 1. gg59 Breakout Structure**

Fields within the gg59 structure are initialised to zero between messages. This value zero can be used to determine the presence or absence of this field within the message.

The following bullets contain information relating to the implementation of the breakout fields:

- In the case where zero is a valid value for this field, a ‘present’ flag is implemented to determine whether the field is present in that message or not. Also the field length can be used to determine the presence or absence of that field in the message.

- The breakout implementor must ensure that fields are mapped to the defined ‘protocol independant’ value (if necessary), in the case of protocol variants.
- If the field in the message is longer than the gg59.h field it should be truncated to the required length. (This should not be a regular occurrence since most fields are sized at the maximum size, and if not, have explicit rules regarding truncation in the definition).
- The fields to be broken out should be broken out if present, irrespective of whether the actual value of the field is currently defined in the appropriate proto- col specification.
- If the value of a field is used to determine the structure of the rest of the message and the field value is invalid, the breakout should terminate after extracting the field and return FALSE.
- The only fields that should not adhere to the above rule are the fields to be ‘mapped’ to protocol-independant values. These fields should set the gg59.h field to K\_GG59\_PROT\_IND\_INVALID\_VALUE if an invalid value is detected.

## 3.2 Capture Buffer Indices

In order to support cross-triggering by applications such as Call Trace and CDR Builder, the breakout routines must establish fast indices into the IFPC capture buffer. The key information for these indices is specified. The indices are created by calls to:

- (1) I7525\_hashAddLongTelno()<sup>1</sup>, I7526\_hashAddCpctTelno() - for telephone numbers
- (2) I7524\_hashAdd3Val() - for sets of 3 32-bit numbers

For further details on the above refer to 2.3.10.

Some additional information on capture buffer indices:

- Breakouts also run on site, server and workstation at B.06.00 for PA and CT EAI
- Since the breakout routines run on both IFPC and Server ( for post-capture call trace ), the above calls must be surrounded by #ifdef P7\_IFPC and #endif, and the IFPC versions of the breakouts (.sl960) must be compiled with the - DP7\_IFPC flag (see gbd/Makefile for examples).
- The capture buffer indices should be set if the required parameters are present in

- 
1. I7525\_hashAddLongTelno() is not used in current release.

the message, regardless of the validity of any other parameters in the message. For example, an index should be created for any ISUP message as long as it contains opc, dpc and cic even if the Message Type value is not valid.

## 3.3 Call Trace Assistance

Call Trace Assistance fields are used by the call trace application to provide a protocol independent interface to allow the tracing of calls. These fields are grouped into the call trace assistance area in the gg59 structure.

The call trace assistance area can be used to define the call model for a particular protocol. It can detail what messages may be matched against a particular configuration, what frames are part of each stage of a call and how to link separate stages of a call together.

The matching, linking and so on are achieved by setting the structure fields in the Call Trace Assistance Area for each different call-related message in a protocol. The structure fields may have flags set to indicate which message fields, broken out into the gg59 structure need to be used to create the call model.

The Call Trace Assistance Fields can be split up into the following:

- (1) ‘What’ and ‘How’ fields - CTFlag\_m[]
- (2) Timeouts associated with the call model - CTFinalUseTimeOut\_b[], CTPANSTimeout\_u, CTMaxCallAge\_u, trawlBackTime\_u
- (3) Text that shows what stage a call has reached - CTEnhState, CTState
- (4) Other IFPCs that are interested in this frame - CTXtrigGrp\_b

For more information on the above fields and information on settings used for the above fields refer to 2.3.2.

Some additional implementation information on Call Trace Assistance:

- The call trace assistance flags should be set if the required parameters are present in the message, regardless of the validity of any other parameters in the message. For example, ISUP IAM messages containing Calling Party Address Signals should set CTFlags\_m[K\_GG59\_CALLING] regardless of whether any invalid parameters follow. **The CT Flags for dataset must NEVER be set unless the dataset is present. There is one exception for FIRSTUSERELATED flag. If FIRSTUSERELATED flag is required to be set, the flag should always be set regardless whether the parameter is present in the message or not.** Call Trace handles CT Flags being set on s\_gg61\_addr telnos which aren't present since it checks the length != 0.
- CTState and CTEnhState are structures. CT[Enh]State.set\_b is a NLS message set containing the message and CT[Enh]State.number\_b is the actual NLS message number. Both fields must be set to work. Also, you need to explicitly set the ‘number’ field to ‘no change’ if there is no explicit message for a particular state.

## 3.4 Protocol Independent

### 3.4.1 Protocol Independent Fields

In the gg59 structure there exists two fields, namely, messageType\_b and protIndMsgType\_b. Both refer to message type however, the difference lies in the fact that one contains the actual message type whereas the other contains a protocol independent view of the message type. To do this we make one standard the base, in the case of acceSS7, the base will be one of the generic specifications, ITU, ANSI or Bellcore.

Take, for example, two variants of the ISUP protocol. One is the ANSI based ISUP and the other is a national variant. The initial message for a call, in ANSI is IAM whereas in this national variant it could be called something different. Therefore to make this protocol independent the national variant message type will be mapped onto the base ANSI ISUP.

### 3.4.2 Protocol Independent NLS Strings

Some of the field values map onto NLS strings which are displayed by the various applications. When adding new values, the breakout implementor must ensure the related file is kept up-to-date. Unless otherwise stated, TSD has ownership of the specified file. The fields and related header files are as follows:

Field	Header File
releaseCode_u	a7longRel.h (8) & a7shortrel.h (20)
CTState.number_u	a7CTState.h (11)
CTEnhState.number_u	a7CTEnhState.h (10)
TMServiceAssFailCode_u	a7TMSAfail.h (12)
returnCause_b	a7trafmon.h or a7UDTSCause.h (17)
H0H1_b	a7pindSNM.h (9)
bssmapCauseValue_u	a7BSSMAPCause.h (14)
dtapccCauseValue_u	a7DTAPCause.h (15)
IS41Reason_u, smsCauseCode_u	a7IS41Cause.h (18)
tcapErrorCode_b	a7MAPCause.h (19)
gtpCauseValue_u	a7GTPCause.h (21) and a7GTPlongCause.h (22)
acctTerminateCause_m	a7RadiusCause.h (23) and a7RadiusLongCause.h (24)

Field	Header File
bssapPlusCauseValue_b, bssapPlusRejectCauseValue_b	a7BSSAPplsCause.h (25) and a7BSSAPplsLongCause.h (26)
gprsmmCause_b	a7GPRSMMCause.h (27) and a7GPRSMMlongCause.h (28)
gprssmCause_b	a7GPRSSMCause.h (29) and a7GPRSSMlongCause.h (30)
egcpReasonCode_u	a7EGCPCause.h (31) and a7EGCPLongCause.h (32)
ranapCause_u	a7RANAPCause.h (33) and a7RANAPLongCause.h (34)
gcpErrorCode_m, serviceChangeReasonCode_m	a7GCPCause.h (35) and a7GCPLongCause.h (36)

## 3.5 Coding of pointcodes

- To ensure uniqueness where multiple logical networks are monitored, from A.05.40 onwards, the system combines pointcodes with the Network Indicator bits from the Sub service field of the SIO, to give a single 32 bit integer value. Detailed instructions are included in the relevant part of sections 5 and 6.
- File gg90.h contains macros to set, test, extract and unset the NI bits. These macros must be used to guard against future changes.

## 3.6 Emergency Expansion Area

The Emergency Expansion Area field is used to allow new fields to be added without changing the size of the gg59 structure and therefore without having to recompile the platform, applications and breakouts. The resource breakoutExpansionSize determines how much of the expansionArea is being used and used to clear the used part before use.

For details on using the expansion area see the gg59.h header file.

## 3.7 Decision Logs

There are many discussions on some special issues or topics during Breakout ERS maintenance and Breakout CR review. For most of the issues, we reached agreements and/ or found proper solutions finally.

All the generic agreements, solutions and decisions should be recorded in this section explicitly. The main purpose is to: (1) guide future Breakout development; and (2) avoid unnecessary discussions.

## 3.7.1 gg59 Field Reusing

Generally speaking, gg59 is protocol independent data structure. The gg59 fields should be reusable in different protocols for majority cases.

Reusing means that the definitions or scopes of the gg59 fields were changed. The following 3 kinds of typical reusing could be found at present:

- (1) The gg59 field was originally populated from 1 protocol type. Now it will be populated from another protocol type. For example, fwdCallInds\_ba was originally populated only from ISUP, now we plan to populate it from INAP protocols.
- (2) The definitions of gg59 fields have minor changes. For example, ISUP fields will be populated from BICC or new version ISUP protocols; SCCP fields will also be populated from SUA. This kind of reusing should have low impacts and low risks.
- (3) The limitations of gg59 fields are changed or removed. For example, original requirement "redirectInfo\_ba should be populated from INAP InitialDP but not Connect" was changed to "this field should be populated from any INAP message that contains it".

The following rules should be used to guide gg59 field reusing:

Reference	Description
3.7.1.1	<p><b>Every gg59 field should be classified into "Generic" or "Non-Generic" according to its scope and recorded in [2.4.2]. See also "Scope" column of [2.4.2].</b></p> <p>Explanation:          "Generic" means that the field could be reused by other different protocols, e.g., callingParty, txNum[] could be reused by any different protocols.          "Non-Generic" means that the field could only be reused within its defined scope, e.g., isupParamList_b could be reused by BICC or new version ISUP protocols; TMServiceId_b could be reused or redefined only by TM.</p>
3.7.1.2	<p><b>When we plan to reuse the existing fields, the applications which already access the existing fields should be identified according to [2.4.3]. The impact on these applications should be evaluated. If there is a visible impact, we will deal it case by case.</b></p> <p>Explanation:          For most of reused fields, the review efforts and risks should be low.</p>
3.7.1.3	<p><b>Same as item 3.7.2.4.</b></p> <p>Explanation:          n/a.</p>
3.7.1.4	<p><b>Most of applications could support gg59 field reusing well. KFF is a little different from other applications. It needs to distinguish protocol type in some cases. It is agreed that KFF will resolve the special requirement in KFF internal design, not in common Breakouts.</b></p> <p>Explanation:          n/a.</p>

## 3.7.2 New gg59 Field Naming Conventions

The naming conventions should not impact the existing gg59 field names. All the new gg59 fields should be compliant with the following naming rules.

Reference	Description
<b>3.7.2.1</b>	<p><b>For generic new field, we should only use the field name without a prefix.</b></p> <p>Explanation: e.g., callingParty, layer3Info.</p>
<b>3.7.2.2</b>	<p><b>For non-generic new field, we should add an prefix before the field name. The prefix is used to indicate the non-generic scope.</b></p> <p>Explanation: For protocol or protocol type specific new field, we should add a protocol or protocol type name as prefix, e.g., isupParamList_b, ranapTypeOfMsg_b. Protocol means single acceSS7 protocol, such as Nokia INAP, China TUP. Protocol Type means a series of someone kind of protocols, such as ISUP, TCAP, and RANAP. For acceSS7 application specific new field, we should add an application name as prefix, e.g., TMServiceId_b, CTXtrigGrp_b. For global control or acceSS7 system wide new field, we should add "a7" as prefix.</p>
<b>3.7.2.3</b>	<p><b>Applications should get the gg59 field scope from [2.4.2], NOT from the gg59 field name, even the items 3.7.2.1 and 3.7.2.2 are present and valid.</b></p> <p>Explanation: The original gg59 field names (tag value &lt;=401) are not fully compliant with items 3.7.2.1 and 3.7.2.2.</p>
<b>3.7.2.4</b>	<p><b>When we reuse an existing gg59 field which has a non-generic scope prefix, we should change the field name to generic name (refer to item 3.7.2.1) and add the original field name as Synonyms in [2.4.2].</b></p> <p>Explanation: The gg59 Synonyms (or alias) is only a workaround to avoid the impact on compiling of the existing protocols and applications. It's not recommended to use the gg59 Synonyms. The original field will recorded as "<i>genericFieldName</i> (<i>Synonym: originalFieldName</i>)" in ERS ([2.4.1]) for easy index or search (see 8.17.1.35 for example). The new field will be just recorded as "<i>genericFieldName</i>" (see 8.16.1.17 for example).</p>

## 3.7.3 New gg59 Field Type

Reference	Description
<b>3.7.3.1</b>	<p><b>For new simple field (size &lt;= 32 bits), we should define the field type as m. We should not define the simple field type as b, or u, unless there is a special reason.</b></p> <p>Explanation: n/a.</p>

### 3.7.4 Protocol Independent

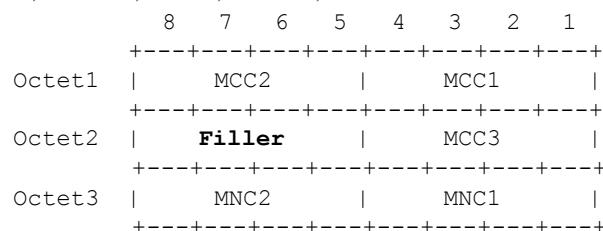
Reference	Description
3.7.4.1	<p><b>Protocol independent fields and protocol independent NLS strings are always a valid requirement for Breakouts.</b></p> <p>Explanation:</p> <p>If any application still requires the actual field in raw messages when protocol independent (or mapped) field is available, both the protocol independent (or mapped) field and the actual field will be provided by Breakouts, e.g., eleaseCode_u (protocol independent field) and causeIndicators_ba (actual field).</p> <p>See also 3.4 for more details.</p>

### 3.7.5 Single Value and Multiple Values

Reference	Description
3.7.5.1	<p><b>The TsdBreakout infrastructure and APIs could support the mixed usage between the single value and multiple values.</b></p> <p>Explanation:</p> <p>(1) When the field is defined as signle value, the multiple value get_xxx APIs could be used to access the field; vice versa, When the field is defined as multiple value, the signle value get_xxx APIs could be used to access the field. Take field type int32 as an example, the get_xxx API behaviors are as the following:</p> <pre>+-----+-----+-----+               Get_int32()    Get_mvalInt32()  Get_nextInt32()   +-----+-----+-----+  Def_int32()  Return the   Return the     Return the                   single value   single value   single value   +-----+-----+-----+  Def_mvalInt32()  Return the   Return the     Return the                       first value   last value     multiple values   +-----+-----+-----+</pre> <p>(2) It's recommended to use TsdBreakout single APIs to access the single value fields.</p> <p>(3) It's recommended to use TsdBreakout multiple APIs to access the multiple value fields.</p>
3.7.5.2	<p><b>It's acceptable to change TsdBreakout fields from single value to multiple values.</b></p> <p>Explanation:</p> <p>The following 2 typical cases will require to change TsdBreakout fields from single value to multiple values:</p> <p>(1) The Breakout was originally designed to support the single instance for the first applications. But the multiple instances are required by other applications or new customers in a later time.</p> <p>(2) The field was originally defined as single instance in the protocol specification. But it's changed from single instances to multiple instances in the later version specification.</p>

## 3.8 RANAP 3-Digit MNC Mapping

The coding format of 2-digit MNC in some parameters (including LAI and RAI) of protocol specifications 24.008, MAP, GTP, BSSMAP, BSSGP, BSSAP+, and RANAP is as the following:



## acceSS7 Protocol Breakout Requirements

The coding format of 3-digit MNC in some parameters (including LAI and RAI) of protocol specifications 24.008, MAP, GTP, BSSMAP, BSSGP, and BSSAP+ is as the following:

	8	7	6	5	4	3	2	1
Octet1		MCC2		MCC1				
Octet2		<b>MNC3</b>		MCC3				
Octet3		MNC2		MNC1				
	+---+---+---+---+---+---+---+---+							

However, the coding format of 3-digit MNC in some parameters of RANAP is as the following (got confirmation from 3GPP RAN3 Group):

	8	7	6	5	4	3	2	1
Octet1		MCC2		MCC1				
Octet2		<b>MNC1</b>		MCC3				
Octet3		<b>MNC3</b>		<b>MNC2</b>				
	+---+---+---+---+---+---+---+---+							

The coding format of 2-digit MNC in RANAP is same as other protocols. **The coding format of 3-digit MNC in RANAP is incompatible and misaligned with other protocols!**

Breakout will map the format of MNC in RANAP to other protocols and ensure to provide the unitive format of MNC in all the acceSS7 protocols.

The unitive format of 3-digit MNC in acceSS7 Breakout is as the following:

	8	7	6	5	4	3	2	1
Octet1		MCC2		MCC1				
Octet2		<b>MNC3</b>		MCC3				
Octet3		<b>MNC2</b>		<b>MNC1</b>				
	+---+---+---+---+---+---+---+---+							

The unitive format of 2-digit MNC in acceSS7 Breakout is as the following:

	8	7	6	5	4	3	2	1
Octet1		MCC2		MCC1				
Octet2		<b>1</b>		<b>1</b>		<b>1</b>		<b>1</b>
Octet3		MNC2		MNC1				
	+---+---+---+---+---+---+---+---+							

## 3.9 Non-Protocol Specific Fields

### 3.9.1 System, Control and Derived Fields

MSU Breakout Fields							
	Field	Spec Ref	N/A				
3.9.1.1	Definition	This field is a pointer to the start of the current frame. It's required in calls to the "Super Hash" routines to create Capture Buffer Indices.					
	Details	Implementation Info: This field should be set by Platform (I75) or xxx before the frame is parsed by Protocols.					
3.9.1.2	Field	<b>currentOctet_pb</b>	Spec Ref	N/A			
	Definition	This field is a pointer to current octet in the MSU to be parsed.					
3.9.1.3	Details	Implementation Info: This field should be for Protocol internal use only.					
	Field	<b>startOfSU_pb</b>	Spec Ref	N/A			
3.9.1.4	Definition	This field is a pointer to the start of the MSU to be parsed.					
	Details	Implementation Info: This field should be set by Platform (I75) or xxx before the frame is parsed by Protocols.					
3.9.1.4	Field	<b>unParsedOctets_m</b>	Spec Ref	N/A			
	Definition	This field is the Number of octets remaining to be parsed.					
	Details	Implementation Info: This field should be for Protocol internal use only.					

<b>3.9.1.5</b>	<b>Field</b>	<b>protocolStack</b>	Spec Ref	N/A
	<b>Definition</b>	This field is to indicate the protocol stack information of the parsed MSU.		
	<b>Details</b>	<p>Implementation Info:</p> <p>(1) This field should be set by Protocols after the MSU is parsed. <b>Note:</b> This field is set ONLY in C.10.30 (C.08.26) or later versions.</p> <p>(2) The subfield curPEI_b is for TsdBreakout and Protocol internal use. It indicates the current Protocol Entry Index. When a protocol is entered regardless the 1st, 2nd or 3rd time, it should be increased by 1. It should be set to zero (means "N/A") in the following cases: (1) Before the MSU is parsed by Protocols; (2) After the MSU is parsed by Protocols; or (3) The max entry limitation is reached (its max valid value is (K_GG59_MAX_PROTENTRY_NUM - 1)).</p> <p>(3) The subfield numOfEntry_b is to indicate the Total number of extracted Protocol Entries. The valid range of protEntry[] is between 1 to numOfEntry_b. protEntry[0] is not used since curPEI_b value zero means "N/A".</p> <p>(4) The subfield lastTagOfProt_m is for TsdBreakout and Protocol internal use. It indicates the last field tag extracted by the last protocol.</p> <p>(5) The subfield startOfMsg_pb is to indicate the pointer to the start of current message. And the subfield lengthOfMsg_m is to indicate the total length in octet of current message.</p> <p>(6) The subfield protEntry[].protName_ba is to indicate the Protocol Name in null-terminated string, such as "ITU.99.ISUP".</p> <p>(7) The subfield protEntry[].protId_m is to indicate the Protocol Id, such as integer 142 for protocol ITU.99.ISUP ("00142"). See also Protocol ERS (2.3.128) Appendix 1 for Protocol Id assignment.</p> <p>(8) The subfield protEntry[].layerId_m is to indicate the Protocol Layer Id in personality (not the default execution layer in Protocol Registry). One of:</p> <ul style="list-style-type: none"> <li>K_GG59_PROT_LAYER_LAP (1)</li> <li>K_GG59_PROT_LAYER_MTP (2)</li> <li>K_GG59_PROT_LAYER_SERVICE (3)</li> <li>K_GG59_PROT_LAYER_USER (4)</li> <li>K_GG59_PROT_LAYER_GASLo (5) /* Gb Access Stratum Lower Layer */</li> <li>K_GG59_PROT_LAYER_GASMId (6) /* Gb Access Stratum Middle Layer */</li> <li>K_GG59_PROT_LAYER_GASHi (7) /* Gb Access Stratum High Layer */</li> <li>K_GG59_PROT_LAYER_AASHi (8) /* A if Access Stratum High Layer */</li> <li>K_GG59_PROT_LAYER_NASLo (9) /* Non-Access Stratum Lower Layer */</li> <li>K_GG59_PROT_LAYER_NETWORK (10)</li> <li>K_GG59_PROT_LAYER_TRANSPORT (11)</li> <li>K_GG59_PROT_LAYER_PAYLOAD (12)</li> </ul> <p>(9) The subfield protEntry[].startOffset_m is to indicate the start offset (in octet) of current protocol entry against start of message (startOfMsg_pb). The first protocol entry has offset zero.</p> <p>(10) The subfield protEntry[].lastTagOfPreEntry_m is for TsdBreakout and Protocol internal use. It indicates the last extracted field tag of the previous protocol entry.</p> <p>(11) The subfield protEntry[].pfrIds is to indicate the related PFR Id List of the current protocol entry. It's for KFF or other PFR users only. See also PFR ERS (2.3.129) for PFR Id assignment and mapping from Protocol Id to PFR Ids.</p>		

<b>3.9.1.6</b>	<b>Field</b>	<b>messageLength_m</b>	Spec Ref	N/A
	<b>Definition</b>	This field is the total Number of octets of the MSU.		
	<b>Details</b>	<p>Implementation Info: This field should be set by Protocols before the MSU is parsed. <b>Notes:</b> The tag of this field is defined as 600 by workaround method, which is ONLY visible for Protocols.</p>		
<b>3.9.1.7</b>	<b>Field</b>	<b>appLevel_b</b>	Spec Ref	N/A
	<b>Definition</b>	<p>This field was originally used to indicate which struct in the appDetails (user expansion area) union contains valid information. After C.08, the field is set by the breakouts and indicates what type of information has been broken out.</p>		
	<b>Details</b>	<p>Implementation Info: See specific requirements for various Protocols. One of: K_GG59_USTCAP_INFO (1) K_GG59_IS41MAP_INFO (2) K_GG59_BSSAP_INFO (3) K_GG59_GSMMAP_INFO (4) K_GG59_INAP_INFO (5) K_GG59_BSSAP_PLUS_INFO (6) K_GG59_SNDCP_INFO (7)</p>		
<b>3.9.1.8</b>	<b>Field</b>	<b>CTappLevel_b (expansionArea.appLevel_b)</b>	Spec Ref	N/A
	<b>Definition</b>	<p>This field was originally used to indicate which struct in the expansionArea.appDetails (gg59 expansion area) union contains valid information. After C.08, the field is set by the breakouts and indicates what type of information has been broken out.</p>		
	<b>Details</b>	<p>Implementation Info: See specific requirements for various Protocols. One of: K_GG59_GB_EXPINFO (1) /* For Gb or GTP messages */ K_GG59_JPNISUP_EXPINFO (2) K_GG59_GTP_EXPINFO (3) /* Not used */ K_GG59_MAP_EXPINFO (4) K_GG59_RADIUS_EXPINFO (5) K_GG59_MGCP_EXPINFO (6) K_GG59_SMPP_EXPINFO (7) K_GG59_EGCP_EXPINFO (8) K_GG59_CAP_EXPINFO (9)</p>		
<b>3.9.1.9</b>	<b>Field</b>	<b>monSPUniqueID_m</b>	Spec Ref	N/A
	<b>Definition</b>	This field is the unique ID of the Signalling Point at the monitored end of the link.		
	<b>Details</b>	<p>Implementation Info: This field should be set by the platform using the unique database key for the monitored node.</p>		

<b>3.9.1.10</b>	Field	<b>derivedIMSI.telno</b>	Spec Ref	N/A	
	Definition	This is the IMSI field populated via ITF for certain Gb messages which don't contain an IMSI. It was ONLY populated on the PAP.			
	Details	Implementation Info: See also 8.17.1.43.			
<b>3.9.1.11</b>	Field	<b>derivedMgwAddress_m</b>	Spec Ref	N/A	
	Definition	This is the derived MGW Address field that can be populated through a mapping table or function based on information contained within an ISUP message.			
	Details	Implementation Info: See also 6.4.1.31.			
<b>3.9.1.12</b>	Field	<b>derivedTerminationId</b>	Spec Ref	N/A	
	Definition	This is the derived Termination Id field that can be populated through a mapping table or function based on information contained within an ISUP message.			
	Details	Implementation Info: See also 6.4.1.32.			
<b>3.9.1.13</b>	Field	<b>a7_msu_ba</b>	Spec Ref	N/A	
	Definition	The MSU octets.			
	Details	Implementation Info: This field may be extracted by Call Trace to feed Session Trace GUI. It's dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet.			
<b>3.9.1.14</b>	Field	<b>a7_time</b>	Spec Ref	N/A	
	Definition	The MSU timestamp.			
	Details	Implementation Info: This field may be extracted by Call Trace to feed Session Trace GUI.			
<b>3.9.1.15</b>	Field	<b>a7_linkId_ba</b>	Spec Ref	N/A	
	Definition	The null-terminated string for Link Id on which the MSU was monitored.			
	Details	Implementation Info: This field may be extracted by Call Trace to feed Session Trace GUI. It's dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet.			

<b>3.9.1.16</b>	Field	<b>a7c_protocolId_m</b>	Spec Ref	N/A
	Definition	The a7common Protocol Id. It's a unique ID assigned by the Feed (VOIP6, CDR, SUR, SDB, CT) to identify the "protocol" (basically the top layer).		
	Details	<p>Implementation Info:</p> <p>This field may be extracted by Call Trace to feed Session Trace GUI.</p> <p>Some example values and their constants of this field are as the following:</p> <ul style="list-style-type: none"> <li>2 CB_DTAP_RR</li> <li>3 CB_DTAP_CC</li> <li>102 MSUInterpreterSUR::SERVICE_UNKNOWN</li> <li>103 MSUInterpreterSUR::HTTP</li> <li>1006 SURDATA_RADIUS_PROTOCOL</li> </ul>		
<b>3.9.1.17</b>	Field	<b>a7_feed_protocolName_ba</b>	Spec Ref	N/A
	Definition	The null-terminated string for the Protocol Name.		
	Details	<p>Implementation Info:</p> <p>This field may be extracted by Call Trace to feed Session Trace GUI.</p> <p>It's dynamic variable octet array. The function strlen(pString) should be used to get the actual size of null-terminated string.</p> <p>Notes: The gg59 API dataLen(tag) can ONLY return the pre-defined size. It may be not equal to the actual extracted size.</p>		
<b>3.9.1.18</b>	Field	<b>a7_feed_tdrName_ba</b>	Spec Ref	N/A
	Definition	The null-terminated string for the TDR Name.		
	Details	<p>Implementation Info:</p> <p>This field may be extracted by Call Trace to feed Session Trace GUI.</p> <p>It's dynamic variable octet array. The function strlen(pString) should be used to get the actual size of null-terminated string.</p> <p>Notes: The gg59 API dataLen(tag) can ONLY return the pre-defined size. It may be not equal to the actual extracted size.</p>		
<b>3.9.1.19</b>	Field	<b>a7_feed_msgTypeName_ba</b>	Spec Ref	N/A
	Definition	The null-terminated string for the Message Type Name.		
	Details	<p>Implementation Info:</p> <p>This field may be extracted by Call Trace to feed Session Trace GUI.</p> <p>It's dynamic variable octet array. The function strlen(pString) should be used to get the actual size of null-terminated string.</p> <p>Notes: The gg59 API dataLen(tag) can ONLY return the pre-defined size. It may be not equal to the actual extracted size.</p>		
<b>3.9.1.20</b>	Field	<b>a7_feed_sourceName_ba</b>	Spec Ref	N/A
	Definition	The null-terminated string for the Source Node Name.		
	Details	<p>Implementation Info:</p> <p>This field may be extracted by Call Trace to feed Session Trace GUI.</p> <p>It's dynamic variable octet array. The function strlen(pString) should be used to get the actual size of null-terminated string.</p> <p>Notes: The gg59 API dataLen(tag) can ONLY return the pre-defined size. It may be not equal to the actual extracted size.</p>		

<b>3.9.1.21</b>	Field	<b>a7_feed_destName_ba</b>	Spec Ref	N/A
	Definition	The null-terminated string for the Destination Node Name.		
	Details	<p>Implementation Info:            This field may be extracted by Call Trace to feed Session Trace GUI.            It's dynamic variable octet array. The function strlen(pString) should be used to get the actual size of null-terminated string.            Notes: The gg59 API dataLen(tag) can ONLY return the pre-defined size. It may be not equal to the actual extracted size.</p>		
<b>3.9.1.22</b>	Field	<b>a7_feed_causeValueStr_ba</b>	Spec Ref	N/A
	Definition	The null-terminated string for the Cause Value.		
	Details	<p>Implementation Info:            This field may be extracted by Call Trace to feed Session Trace GUI.            It's dynamic variable octet array. The function strlen(pString) should be used to get the actual size of null-terminated string.            Notes: The gg59 API dataLen(tag) can ONLY return the pre-defined size. It may be not equal to the actual extracted size.</p>		
<b>3.9.1.23</b>	Field	<b>a7_callId_m</b>	Spec Ref	N/A
	Definition	The Call Trace Call Id.		
	Details	<p>Implementation Info:            This field may be extracted by Call Trace to feed Session Trace GUI.</p>		
<b>3.9.1.24</b>	Field	<b>a7_legId_m</b>	Spec Ref	N/A
	Definition	The Call Trace Leg Id.		
	Details	<p>Implementation Info:            This field may be extracted by Call Trace to feed Session Trace GUI.</p>		
<b>3.9.1.25</b>	Field	<b>fieldBitLength_m</b>	Spec Ref	N/A
	Definition	This field is the total number of bits of the current field.		
	Details	<p>Implementation Info:            This field should be set by PALTools while parsing each breakout field.             We will update CURRENTOCTET macro in pal breakout wrapper:  <code>#define CURRENTOCTET c_u_breakout_p-&gt;Val_array(K_GG59_TAG_CURRENTOCTET)\n= (decode_ptr-&gt;safeBitStream+(((int)(decode_ptr-&gt;currentBit-1))&gt;&gt;3)); \\\nc_u_breakout_p-&gt;Val_int32(K_GG59_TAG_FIELDBITLENGTH) = \\\ndecode_ptr-&gt;currentField.textLength;</code> </p>		

### 3.9.2 Application Specific Fields

MSU Breakout Fields					
3.9.2.1	Field	PAsigInfoLength_u	Spec Ref	N/A	
	Definition	The length (in octets) of the signaling information in a data message that is to be truncated in PA, from the first octet of the message to the first data octet at the point of truncation, given by the pointer PAttruncationPoint_pb.			
	Details	Implementation Info: See specific requirements for various Protocols.			
3.9.2.2	Field	PAttruncationPoint_pb	Spec Ref	N/A	
	Definition	Pointer to the data octet in a message where PA will truncate the message.			
	Details	Implementation Info: See specific requirements for various Protocols.			
3.9.2.3	Field	TMServiceAssFailCode_u	Spec Ref	N/A	
	Definition	This field is an internal field used by Traffic Monitor to count a number of different "Service Assurance" failures.			
	Details	Implementation Info: See specific requirements for various Protocols.			
3.9.2.4	Field	TMServiceId_b	Spec Ref	N/A	
	Definition	This field is an internal field used by Traffic Monitor to identify a "Service" ID.			
	Details	Implementation Info: See specific requirements for various Protocols.			
3.9.2.5	Field	CTState	Spec Ref	N/A	
	Definition	This field is Call Trace call state. It's s_gg67_messageId struct field to set a text for the PANS stage of the call. e.g. "Querying Database".			
	Details	Implementation Info: The subfield CTState.set_b MUST be set to K_GF04_CTSTATE_SET (11). The subfield CTState.number_u should be set according to the specific requirements for various Protocols.			
3.9.2.6	Field	CTEnhState	Spec Ref	N/A	
	Definition	This field is Call Trace enhanced call state. It's s_gg67_messageId struct field to set a text for the POTS state of the call. e.g. "Dialling".			
	Details	Implementation Info: The subfield CTEnhState.set_b MUST be set to K_GF04_CTENHSTATE_SET (10). The subfield CTEnhState.number_u should be set according to the specific requirements for various Protocols.			

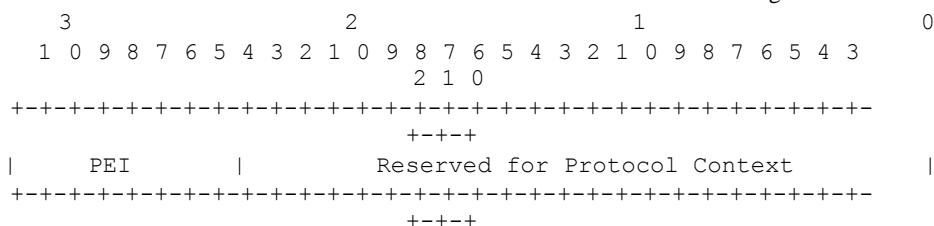
<b>3.9.2.7</b>	<b>Field</b>	<b>CTXtrigGrp_b</b>	<b>Spec Ref</b>	N/A
	<b>Definition</b>	This field is Call Trace Cross Trigger Group. It identifies whom should be informed of new first use and final use information. It determines which PAPs will be told ("cross-triggered") with the information in the message so that they may look for the rest of the call.		
	<b>Details</b>	<p>Implementation Info:</p> <p>See specific requirements for various Protocols. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_CTLOCALGROUP (0: local group)</li> <li>K_GG59_CTTGLOBALGROUP (1: global group)</li> </ul>		
<b>3.9.2.8</b>	<b>Field</b>	<b>CTFlags_ma[]</b>	<b>Spec Ref</b>	N/A
	<b>Definition</b>	This field is an array of Call Trace Flags. It's an array of bit flags. Each entry corresponds to a specific "ID" and the value has flags set to indicate what to do with that "ID", i.e. how to tie the messages together into calls.		
	<b>Details</b>	<p>Implementation Info:</p> <p>The CT Flags for dataset must NEVER be set unless the dataset is present. See specific requirements for various Protocols.</p>		
<b>3.9.2.9</b>	<b>Field</b>	<b>CTFinalUseTimeout_ba[]</b>	<b>Spec Ref</b>	N/A
	<b>Definition</b>	This field is an array of Call Trace Final Use Timeouts (in seconds). If the FINALUSE flag is set for a dataset then the dataset in the CTFinalUseTimeout[] array must also be set. That value gives the number of seconds after which the dataset should not be used to match further messages. This time-out period is used so that any messages still in the network can be captured.		
	<b>Details</b>	<p>Implementation Info:</p> <p>See specific requirements for various Protocols.</p>		
<b>3.9.2.10</b>	<b>Field</b>	<b>CTMaxCallAge_u</b>	<b>Spec Ref</b>	N/A
	<b>Definition</b>	This field is Call Trace Maximum age of call that can matched on the running call list (in seconds).		
	<b>Details</b>	<p>Implementation Info:</p> <p>See specific requirements for various Protocols.</p> <p><b>Note:</b> If set to 0 then there is no limit on the age of the calls.</p>		
<b>3.9.2.11</b>	<b>Field</b>	<b>CTPANSTimeOut_u</b>	<b>Spec Ref</b>	N/A
	<b>Definition</b>	This field is Call Trace PANS Timeout (in seconds), after which the associated transaction will be terminated. It's used to time-out two PANS messages e.g. a Query and a Response or a PANS transaction and a follow-on POTS call.		
	<b>Details</b>	<p>Implementation Info:</p> <p>See specific requirements for various Protocols.</p>		
<b>3.9.2.12</b>	<b>Field</b>	<b>trawlBackTime_u</b>	<b>Spec Ref</b>	N/A
	<b>Definition</b>	This field is Call Trace Trawl Back Time (in milliseconds) to look backwards for when processing the FIRSTUSEBACK flag. For example, when a trace starts on the Response CT trawls back for the Query.		
	<b>Details</b>	<p>Implementation Info:</p> <p>See specific requirements for various Protocols.</p>		

<b>3.9.2.13</b>	Field	<b>CTFlagMask_m</b>	Spec Ref	N/A	
	Definition	This field is Call Trace Flag Mask, a bitwise OR of all the CT Flags.			
	Details	Implementation Info: This field is populated by Call Trace.			
<b>3.9.2.14</b>	Field	<b>CTcic_m</b>	Spec Ref	N/A	
	Definition	This field is Call Trace local copy of CIC_m field.			
	Details	Implementation Info: This field is populated by Call Trace.			
<b>3.9.2.15</b>	Field	<b>ctExternalHashData1_m</b> <b>ctExternalHashData2_m</b> <b>ctExternalHashData3_m</b>	Spec Ref	N/A	
	Definition	These 3 fields are generic fields added for NgNAS MGCP/SS7 integration.			
	Details	Implementation Info: These 3 fields are populated by Call Trace (X).			

## 3.10 TsdBreakout Context Usages

In TsdBreakout, every field (TsdBreakoutField) in main table (ptBreakoutTable) has a 32-bit field (tContext) to indicate the context. And every multi-value instance(TsdMultiValuePoolEntry) in multi-value pool (ptMultiValuePool) also has a 32-bit field (tContext) to indicate the context.

The 32-bit context of TsdBreakout field and multi-value instance is defined as the following:



Bit 31 - 24 (the first 8 bits): Protocol Entry Index (PEI). See 3.10.1.

Bit 23 - 0 (the rest 24 bits): Reserved for Protocol Context. See 3.10.2.

### 3.10.1 Protocol Entry Index (PEI)

Protocol Entry Index (PEI) is the first 8 bits of context for TsdBreakout field or multi-value instance. In protocol stack (see 3.9.1.5 for protocolStack field), the PEI value is also the array subscript of protEntry[] which extracted this field or multi-value instance. So, PEI can build up a quick mapping from field or multi-value instance to the Protocol which extracts the field or instance.

After C.10.30 (SWP C.08.26), if the TsdBreakout field or multi-value instance is extracted by Protocols, its PEI will be set automatically.

Notes:

1. The Protocols for SWP C.08.00, C.08.10, or C.08.20 will not set PEI.
2. If the TsdBreakout field or multi-value instance is not extracted by Protocols (such as by Platform or CT), PEI will be set zero (zero means "N/A").

## 3.10.2 The Rest 24-Bit Protocol Context

The rest 24 bits of context for TsdBreakout field or multi-value instance are reserved for Protocols. Different Protocols can have different definitions for the 24 bits. For example,

- (1) The context in RANAP Protocols is defined as the following:

3	2	1	0
1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0			
+-----+			
PEI   RABList   RABNum   Reserved			
+-----+			

Bit 31 - 24 (the first 8 bits): PEI: Protocol Entry Index.

Bit 23 - 16: RABList: RANAP RAB List enumerated type value.

Bit 15 - 8: RABNum: RANAP RAB number within same RAB List.

Bit 7 - 0: Reserved: Reserved for future RANAP context definitions.

See 8.35.4 for more details about RANAP context definitions.

- (2) The context in GCP Protocols is defined as the following:

3	2	1	0
1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0			
+-----+			
PEI   L1   L2   L3   L4   Reserved			
+-----+			

Bit 31 - 24 (the first 8 bits): Protocol Entry Index (PEI).

Bit 23 - 20: L1: GCP Level 1 (Transaction Level).

Bit 19 - 16: L2: GCP Level 2 (Action Level).

Bit 15 - 12: L3: GCP Level 3 (Command Level).

Bit 11 - 8: L4: GCP Level 4 (Descriptor Level).

Bit 7 - 0: Reserved: Reserved for future GCP context definitions.

See 8.28.4 for more details about GCP context definitions.

See "Context Assistance" sections for specific definitions for various Protocols.

## 3.11 Mapping between Protocols and Fields

### 3.11.1 Mapping from Fields to Protocols

Introduction for the implementation mechanism and code examples for Mapping from TsdBreakout Fields to Protocols. TBD.

### 3.11.2 Mapping from Protocols to Fields.

Introduction for the implementation mechanism and code examples for Mapping from Protocols to TsdBreakout Fields. TBD.

## 3.12 Breakout Field Template

Table template:

<b>5.x.y</b>	<Empty cell. Unique and stable section number for convenient reference.>		
Field	<Parameter name in protocol spec>	Spec Ref	<Protocol spec and section number>

TsdBreakout	<TsdBreakout field name or tag>	Format	<TsdBreakout data format>
Details	<If any TsdBreakout implementation detail or special requirements.>		

Notes:

1. TsdBreakout, Format and its Details can be used for protocols which are implemented in personality and TsdBreakout. The 2 rows can be removed if the protocol Breakouts are not implemented via TsdBreakout.

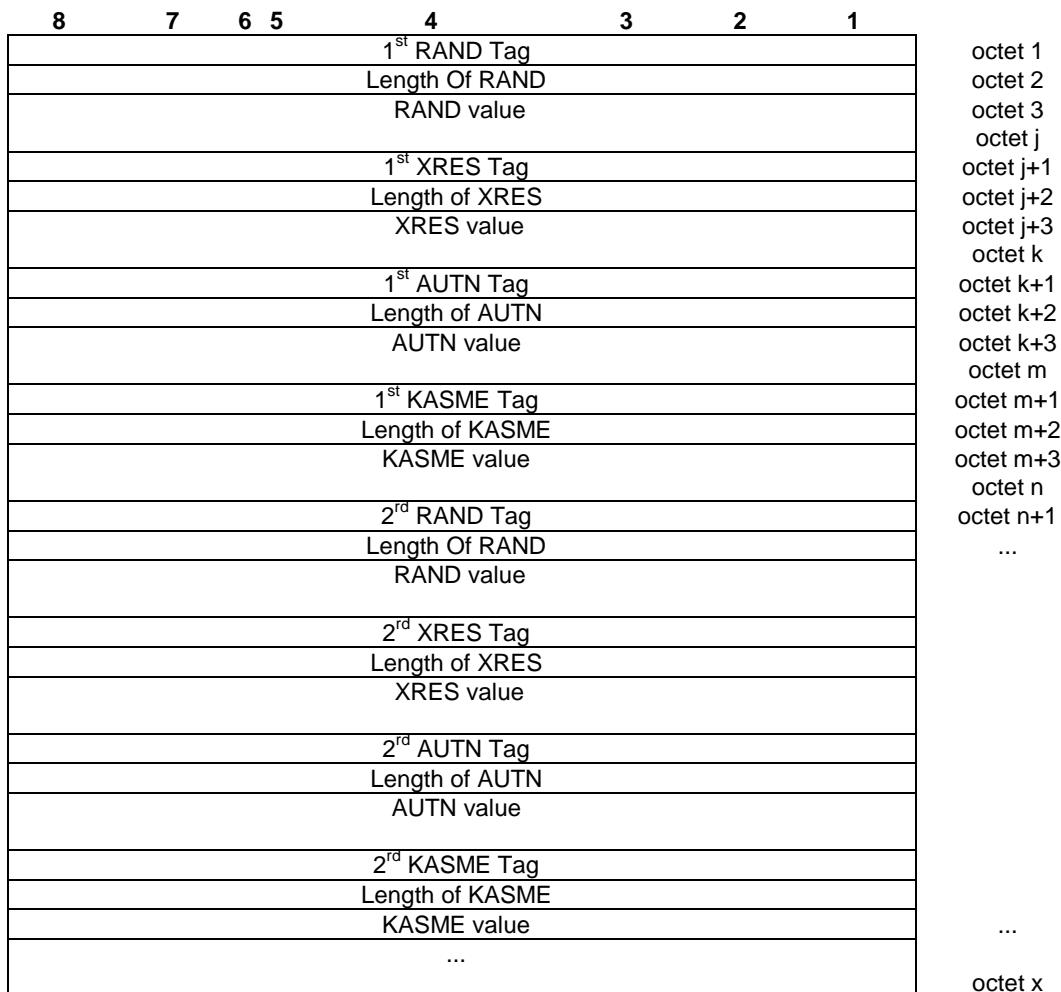
## 3.13 DataModel (obsoleted)

### 3.13.1 Field Structure for Authentication Vectors

The Authentication-Info AVP is of type Grouped and contains Authentication Vectors.  
Please refer to 3GPP specifications 29.272, section 7.3.17 Authentication-Info for details.

Since Data Modal only supports multiple values for simple type we need to add additional information to tackle multiple instances of grouped vectors and their sub parameters.

We define the internal format for vectors as below: (taking E-UTRAN-Vector as an example)



For each DRDATA\_EUTRAN\_AUTH\_VECTOR\_TAG octet string it will consists of:

1<sup>st</sup> RAND tag + 1<sup>st</sup> RAND length + 1<sup>st</sup> RAND value +  
 1<sup>st</sup> XRES tag + 1<sup>st</sup> XRES length + 1<sup>st</sup> XRES value +  
 1<sup>st</sup> AUTN tag + 1<sup>st</sup> AUTN length + 1<sup>st</sup> AUTN value +  
 1<sup>st</sup> KASME tag + 1<sup>st</sup> KASME length + 1<sup>st</sup> KASME value +  
 (..... More Tag Length and Value for future)

2nd .....  
 3rd.....  
 (..... More)

We define the rule for using the field:

1. Assign the tag for each subfield:
 

```
#define K_GG59_AUTH_VECTOR_RAND 0x01
#define K_GG59_AUTH_VECTOR_XRES 0x02
#define K_GG59_AUTH_VECTOR_AUTN 0x03
#define K_GG59_AUTH_VECTOR_CK 0x04
#define K_GG59_AUTH_VECTOR_IK 0x05
#define K_GG59_AUTH_VECTOR_KASME 0x06
```
2. The length field will indicate the actual length in octets of sub parameter's value.  
 E.g. "Length Of RAND" will be set with the length of RAND value part.
3. Protocol will ONLY extract and set the vector field when all its sub parameters are present. We will NOT set the vector field if any sub parameter is missed.
4. The sub parameters will be extracted according to the order defined in the Diameter spec. Copied as the following:  
 For EUTRAN: RAND, XRES, AUTN, KASME;  
 For UTRAN: RAND, XRES, AUTN, CK, IK;  
 For GERAN: RAND, XRES, CK;  
 5. In future, Protocols may append new TLV field at the end of above sub parameters if required.  
 6. App should be able to jump over any new/unknown TLV field as protocol may upgrade the interface.

The same rule is applicable for UTRAN-Vector and GERAN-Vector.

### 3.13.2 F-TEID Coding Format

The F-TEID field structure in DataModel will be same as octets 5 - (N+4) of F-TEID in GTPv2-C protocol, not including octets 1-4 for Type, Length, Spare and Instance, copied as the following:

Octets	Bits											
	8	7	6	5	4	3	2	1				
1	Type = 87 (decimal)											
2to 3	Length = n											
4	Spare				Instance							
5	V4	V6	Spare		Interface type							
6 to 9	TEID / GRE Key											
m to (m+3)	IPv4 address											
p to (p+15)	IPv6 address											
k to (n+4)	These octet(s) is/are present only if explicitly specified											

See also 3GPP TS 29.274 Section 8.22 Fully Qualified TEID (F-TEID) for more details.

### 3.13.3 APN Coding Format

The APN (Access Point Name) field in DataModel will be octets with "LV" format, rather than TerminatedString.

The APN consists of one or more labels. Each label is coded as a one octet length field followed by that number of octets coded as ASCII characters.

For example:

Given Access Point Name is: vzw3gv4.com

In DataModel with "LV", it will be 0x07767A773367763403636F6D.

### 3.13.4 VLAN ID Coding Format

The ubit64 type will be used for vlan id both in DrData and TsdBreakout.

The innermost vlan id will be stored in the LSB 12 bits.

Taking 1 vlan id as an example, we'll set its value in the lowest (rightmost) 12 bits.

When 2 vlan ids are found, the first (outer) one is service vlan id and second one is customer vlan id. We just perform a 12-bit left shift on the first vlan id then combine two 12-bit to a single-value 24-bit field – see details below:

6	...	4	3	2	1
		8	7	6	5
		4	3	2	1
		...	+	+	+
			service vlan id	customer vlan id	
			+	+	+

Bit 64 - 25: reserved (for future use)

Bit 24 - 13: service vlan id

Bit 12 - 1: customer vlan id

E.g. service vlan id: 0x10, customer vlan id: 0x11

The DRDATA\_VLAN\_ID\_TAG will be set to 0x010011 (dec: 65553)

The same rule will be followed even if there're 3 or more vlan ids found.

## 3.14 TsdBrekout Coding Format

### 3.14.1 S1AP ENB-ID Coding Format

In S1AP (3GPP TS 36.413), ENB-ID coding format is: 1) a choice; 2) not fixed length; and 3) not octet aligned. The ASN.1 PER aligned syntax is as the following:

```
ENB-ID ::= CHOICE {
    macroENB-ID  BIT STRING (SIZE(20)),
    homeENB-ID   BIT STRING (SIZE(28)),
    ...
}
```

The ENB-ID coding format is not convenient for Protocol Breakout or applications. Protocol Breakout will use the fixed 4-octet coding format for ENB-ID. It can be formulated as the following:

enbId = 4-bit idType + idBitString + filler (optional).

4-bit idType will be one of:

K\_GG59\_ENBID\_MACROENBID (0)

K\_GG59\_ENBID\_HOMEENBID (1)

The 20-bit macroENB-ID will be converted into the 4-octet enbId as the following:

	8	7	6	5	4	3	2	1				
Octet 1	0	0	0	0	macroENB-ID							
Octet 2	macroENB-ID											
Octet 3	macroENB-ID											
Octet 4	0	0	0	0	0	0	0	0				

The 28-bit homeENB-ID will be converted into the 4-octet enbId as the following:

	8	7	6	5	4	3	2	1				
Octet 1	0	0	0	1	homeENB-ID							
Octet 2	homeENB-ID											
Octet 3	homeENB-ID											
Octet 4	homeENB-ID											

### 3.14.2 s\_gg59\_cellId Coding Format

(1) If s\_gg59\_cellId.discriminator\_b is one of the following:

- K\_GG59\_CIDISC\_CGI (0)
- K\_GG59\_CIDISC\_LAC\_CI (1)
- K\_GG59\_CIDISC\_CI (2)
- K\_GG59\_CIDISC\_NONE (3)
- K\_GG59\_CIDISC\_PLMNID\_LAC\_RNCID (8)
- K\_GG59\_CIDISC\_RNCID (9)

K\_GG59\_CIDISC\_LAC\_RNCID (10)

K\_GG59\_CIDISC\_SAI (11)

K\_GG59\_CIDISC\_LAC\_RNCID\_CI (12)

the coding format of s\_gg59\_cellId.value should refer to 3GPP TS 48.008 Section 3.2.2.17.

(2) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_LAI (4), the coding format of s\_gg59\_cellId.value should refer to 3GPP TS 24.008 Section 10.5.1.3 Location Area Identification.

(3) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_LAC (5), the coding format of s\_gg59\_cellId.value should be TBD.

(4) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_ALLCELLSONBSIDED (6), the coding format of s\_gg59\_cellId.value should be TBD.

(5) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_CGI\_RAC(16), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2				MCC dig 1				octet 1
MNC dig 3				MCC dig 3				octet 2
MNC dig 2				MNC dig 1				octet 3
LAC								octet 4
LAC cont.								octet 5
CI value								octet 6
CI value cont								octet 7
RAC								octet 8

(6) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_TARGETRNCID (17), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2				MCC dig 1				octet 1
MNC dig 3				MCC dig 3				octet 2
MNC dig 2				MNC dig 1				octet 3
LAC								octet 4
LAC cont.								octet 5
RNC-ID (or Extended RNC-ID)								octet 6
RNC-ID (or Extended RNC-ID) cont.								octet 7

(7) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_TARGETRNCID\_RAC (18), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2				MCC dig 1				octet 1
MNC dig 3				MCC dig 3				octet 2
MNC dig 2				MNC dig 1				octet 3
LAC								octet 4
LAC cont.								octet 5
RAC								octet 6
RNC-ID (or Extended RNC-ID)								octet 7
RNC-ID (or Extended RNC-ID) cont.								octet 8

(8) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_TARGETENBID (19), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
Global-ENB-ID								octet 1
Global-ENB-ID cont.								octet 2
Global-ENB-ID cont.								octet 3
Global-ENB-ID cont.								octet 4
Global-ENB-ID cont.								octet 5
Global-ENB-ID cont.								octet 6
Global-ENB-ID cont.								octet 7
TAI								octet 8
TAI cont.								octet 9
TAI cont.								octet 10
TAI cont.								octet 11
TAI cont.								octet 12

The coding format of Global-ENB-ID is as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2								octet 1
MNC dig 3								octet 2
MNC dig 2								octet 3
ENB-ID								octet 4
ENB-ID cont.								octet 5
ENB-ID cont.								octet 6
ENB-ID cont.								octet 7

See also section 3.4.2 for the fixed 4-octet coding format for ENB-ID.

See also section 3.4.3 (10) for the coding format of TAI.

(9) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_EUTRANCGI (20), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2								octet 1
MNC dig 3								octet 2
MNC dig 2								octet 3
cell-ID								octet 4
cell-ID cont.								octet 5
cell-ID cont.								octet 6
cell-ID cont.								octet 7

The coding format of cell-ID is the same as 28-bit homeENB-ID. See also section 3.4.2.

(10) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_TAI (21), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2								octet 1
MNC dig 3								octet 2
MNC dig 2								octet 3
TAC								octet 4
TAC cont.								octet 5

(11) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_CI (2), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
cell-ID								octet 1
cell-ID cont.								octet 2
cell-ID cont.								octet 3
cell-ID cont.								octet 4

(12) If s\_gg59\_cellId.discriminator\_b is K\_GG59\_CIDISC\_PLMNID (23), the coding format of s\_gg59\_cellId.value should be as the following table:

8	7	6	5	4	3	2	1	
MCC dig 2								octet 1
MNC dig 3(or filler)								octet 2
MNC dig 2								octet 3

### 3.14.3 s\_gg61\_addr Coding Format

(1) s\_gg61\_addr is designed to restore TBCD digits. The order of TBCD digits should be extracted to s\_gg61\_addr.telno.digits\_ba as the following:

8	7	6	5	4	3	2	1
Digit 2				Digit 1			octet 1
Digit 4				Digit 3			octet 2
Digit 6				Digit 5			octet 3
.....				.....			octet N-1
Digit 2N (or Filler)				Digit 2N-1			octet N

(2) If the number of digits is odd (2N-1), the digit 2N should be clear to zero. And s\_gg61\_addr.telno.length\_b will be set to (2N-1).

(3) If s\_gg61\_addr is used for non-TBCD digits (for example, TMSI, PTMSI, MTMSI, etc.), the order of non-TBCD digits in s\_gg61\_addr.telno.digits\_ba should be swapped into same order of TBCD digits. See also 3.4.3 (1).

(4) If s\_gg61\_addr is used for IA5/ASCII characters, UTF8String etc, these characters should be converted to standard compact TBCD digit telno format, as the following:

(4a) The characters "0" - "9" should be mapped to 0x00-0x09, i.e. subtract 0x30 from these characters and nibble-swap, e.g. "1", "2", "3", "4", "5" = 12345 =>0x21, 0x43, 0x05.

(4b) The characters "a" - "e", "A" - "E" should be mapped to 0xa0-0xe0.

(4c) Other characters out of the range "0" - "9", "a" - "e", "A" - "E" should be mapped to 0x0f (filler), e.g. "1", "A", "2", "X" => 0xa1, 0xf2.

(4d) The order of digits in s\_gg61\_addr.telno.digits\_ba should be swapped into same order of TBCD digits. See also 3.4.3 (1).

### 3.14.4 GUTI Coding Format

See also 3GPP TS 24.301 Section 9.9.3.12 for EMM GUTI and 3GPP TS 29.274 Section 8.47 for GTPv2-C GUTI. We assume GUTI parameter in the raw message is as the following:

8      7      6      5      4      3      2      1

MCC digit 2		MCC digit 1	
MNC digit 3		MCC digit 3	
MNC digit 2		MNC digit 1	
MME Group ID a		MME Group ID b	
MME Group ID c		MME Group ID d	
MME Code a		MME Code b	
M-TMSI a		M-TMSI b	
M-TMSI c		M-TMSI d	
M-TMSI e		M-TMSI f	
M-TMSI g		M-TMSI h	

The digit order in TsdBreakout (s\_gg61\_addr tempUeId) should be the reversed “logical order”, as the following:

8      7      6      5      4      3      2      1

MCC digit 2		MCC digit 1	
MNC digit 1		MCC digit 3	
MNC digit 3		MNC digit 2	
MME Group ID b		MME Group ID a	
MME Group ID d		MME Group ID c	
MME Code b		MME Code a	
M-TMSI b		M-TMSI a	
M-TMSI d		M-TMSI c	
M-TMSI f		M-TMSI e	
M-TMSI h		M-TMSI g	

The char order in DataModel (CB\_TELNO) should be in “logical order”, as the following:

MCC digit 1
MCC digit 2
MCC digit 3
MNC digit 1
MNC digit 2
MNC digit 3 (or Filler)
MME Group ID a
MME Group ID b
MME Group ID c
MME Group ID d
MME Code a
MME Code b
M-TMSI a
M-TMSI b
M-TMSI c
M-TMSI d
M-TMSI e
M-TMSI f
M-TMSI g
M-TMSI h

### 3.14.5 MIPv6 Header Flag Format

MIPv6 header flag field is a 32-bit flag. Currently it provides following MIPv6 header flags, which may be useful to upper layer applications.

Any new indicator will be added in the lowest reserved bit.

Its format should be:

		Reserved	
			A   P   U   R

Flag Meaning:

A: Acknowledge

Set to 1 to indicate the sending mobile node is requesting a Binding Acknowledgement be returned upon receipt of the Binding Update.

P: Proxy Flag

Set to 1 to indicate that the message is a corresponding PMIPv6 message.

It is used in Binding Update/ Acknowledgement Message to indicate a proxy registration, and is used in Binding Revocation Indication/ Acknowledgement message to indicate a PMIPv6 binding.

U: Unsolicited Response

Set to 1 to indicate it is an Unsolicited Heartbeat Response. Otherwise, set to 0.

R: Response Indication

Set to 1 to indicate whether a Heartbeat message is a request or a response.

## 4 LAP Layer Breakout Requirements

### 4.1 SS7 Based LAP

This breakout function is based on GR-246-CORE, Issue 01, Rev 02, Dec 1996. Breakouts must be implemented for both High Speed and Low Speed links.

#### 4.1.1 Fields

The following fields must be broken out for MSUs, LSSUs and FISUs.

MSU Breakout Fields				
	Field		Spec Ref	
<b>4.1.1.1</b>	Field	<b>FIB_b</b>	Spec Ref	GR-246-CORE, T1.111.3 Figures 3A, 3B
	Definition	The Forward Indicator Bit from Q.703 MSUs, LSSUs and FISUs.		
	Details	n/a		
<b>4.1.1.2</b>	Field	<b>BIB_b</b>	Spec Ref	GR-246-CORE, T1.111.3 Figures 3A, 3B
	Definition	The Backward Indicator Bit from Q.703 MSUs, LSSUs and FISUs		
	Details	n/a		
<b>4.1.1.3</b>	Field	<b>LSSUstatus_b</b>	Spec Ref	GR-246-CORE, T1.111.3 Figures 3A, 3B
	Definition	The status value from LSSUs		
	Details	n/a		

#### 4.1.2 Capture Buffer indices

N/A

#### 4.1.3 Call Trace Assistance

N/A

## 4.2 ATM-based HS-SS7

This breakout function is based on ANSI T1.645-1995.

### 4.2.1 Fields

The following fields must be broken out for SSCF\_PDUs.

MSU Breakout Fields					
4.2.1.1	Field	SSCFstatus_b	Spec Ref	ANSI T1.645-1995 Section 10	
4.2.1.1	Definition	The status value from ATM SSCF PDUs			
	Details	n/a			

### 4.2.2 Capture Buffer indices

N/A

### 4.2.3 Call Trace Assistance

N/A

# 5 MTP Layer Breakout Requirements

## 5.1 Standard MTP

### 5.1.1 Fields

MSU Breakout Fields				
<b>5.1.1.1</b>	Field	<b>sifLength_u</b>	Spec Ref	ANSI T1.111.3-1992, Figure 3
	Definition	This is the length of the MSU from the start of the Signalling Information Field.		
	Details	Implementation Info: This should be calculated using unparsedOctets_u.		
<b>5.1.1.2</b>	Field	<b>sio_b</b>	Spec Ref	ANSI T1.111.4-1992, Figure 13
	Definition	The Service Information Octet. This contains the Service Indicator (SI) and the Sub-Service Field (SSF).		
	Details	n/a		
<b>5.1.1.3</b>	Field	<b>serviceInd_b</b>	Spec Ref	ANSI T1.111.4-1992, Figure 13
	Definition	The Service Indicator sub-field. This sub-field is used by signalling handling functions to perform message distribution and message routing.		
	Details	Implementation Info: <b>This is set to the SI of the Service Information Octet.</b> <b>NOTE:</b> Only when TSD is aware of the customer running a protocol on a different SI will this value be overwritten with the mapped K_GG59 SI #defines. The only case we are aware of is China SNM. For example running SNM on a SI of 13 will result in this field first being set to 13 and then being set to K_GG59_SNM by the SNM breakout (see section 6.1.2).		
<b>5.1.1.4</b>	Field	<b>ssf_b</b>	Spec Ref	ANSI T1.111.4-1992, Figure 13
	Definition	The Sub-Service Field. This sub-field contains the Network Indicator (NI) and two spare bits. The Network Indicator is used by message handling functions to determine the relevant version of a user part, for instance national and international ISUP		
	Details	n/a		
<b>5.1.1.5</b>	Field	<b>dpc_m</b>	Spec Ref	ANSI T1.111.4-1992, Figure 3A
	Definition	The Destination Point Code. This indicates the destination point of a MSU.		
	Details	Implementation Info: The Network Indicator bits of the Sub-Service Field should then be OR-ed into the appropriate bits of dpc_m using the P7SET_NI macro (see 3.5).		
<b>5.1.1.6</b>	Field	<b>opc_m</b>	Spec Ref	ANSI T1.111.4-1992, Figure 3A
	Definition	The Origination Point Code. This indicates the origination point of a MSU.		
	Details	Implementation Info: The Network Indicator bits of the Sub-Service Field should then be OR-ed into the appropriate bits of opc_m using the P7SET_NI macro (see 3.5).		

<b>5.1.1.7</b>	Field	<b>slc_b</b>	Spec Ref	ANSI T1.111.4-1992, Figure 3A
	Definition	kout Requirements	The Signalling Link Selection. This is used when appropriate in performing load sharing. This field exists in all message types and always in the same position.	
	Details	n/a		

## 5.1.2 Capture Buffer indices

N/A

## 5.1.3 Call Trace Assistance

N/A

# 6 Service Layer Breakout Requirements

## 6.1 SNM

### 6.1.1 Standard SNM

#### 6.1.1.1 Fields

MSU Breakout Fields				
	Field		Spec Ref	
<b>6.1.1.1.1</b>	Field	<b>H0_b</b>	Spec Ref	TR-NWT-000246 T1.111.4, 15.3 & Fig 15
	Definition	The Heading Code, H0. This is a 4-bit field following the label which identifies the message group.		
	Details	Implementation Info: This should be mapped onto the ANSI SNM H0 values if different. If the value is not valid for the particular SNM variant, then the actual value of H0 should be assigned.		
<b>6.1.1.1.2</b>	Field	<b>H0H1_b</b>	Spec Ref	TR-NWT-000246 T1.111.4, Figure 15
	Definition	The complete Heading Code, H0 and H1. Both values together identify a particular message code.		
	Details	Implementation Info: This should be mapped onto the generic K_GG59 #defines if different. The H1 mnemonic should also be added to the protocol independant mnemonic file a7pindSNM.h (see 3.4). If the value is not valid for the particular SNM variant, then the actual value of H0H1 should be assigned.		
<b>6.1.1.1.3</b>	Field	<b>destinationPC_m</b>	Spec Ref	TR-NWT-000246 T1.111.4, Section 15
	Definition	The Destination Point Code. This indicates the destination point of a MSU		
	Details	Implementation Info: This should be extracted from any SNM messages in which this field is present. The Network Indicator bits of the Sub-Service Field should then be extracted from opc_m (see 5.1.1.6) using the P7GET_NIBITS macro and then OR-ed into the appropriate bits of destinationPC_m using the P7SET_NI macro (see 3.5).		
<b>6.1.1.1.4</b>	Field	<b>changeOver_b</b>	Spec Ref	TR-NWT-000246 T1.111.4, S 15.4, 15.6
	Definition	This flag should be set to TRUE if the current message is a Changeover or Emergency Changeover message.		
	Details	n/a		
<b>6.1.1.1.5</b>	Field	<b>changeOverSlc_b</b>	Spec Ref	TR-NWT-000246 T1.111.4, S 15.4.2, 15.6.2
	Definition	The Signalling Link Code of the SNM message. This indicates the identity of the unavailable signalling link.		
	Details	Implementation Info: (1) This should be extracted from Changeover (and Emergency Changeover) messages. (2) If a variant of the SNM protocol does not contain an SLC field, the value of the slc_b field should be copied here.		

<b>6.1.1.6</b>	Field	<b>userPartId_b</b>	Spec Ref	TR-NWT-000246 T1.111.4, S 15.17
	Definition	The MTP User Identity. This is sub-field is contained within the User Part Unavailable Message and identifies what User Part is being used.		
	Details	Note: This field may be called User Part Identity in some protocols.		

**6.1.1.2 Capture Buffer Indices**

N/A

**6.1.1.3 Call Trace Assistance**

N/A

## 6.1.2 Chinese SNM

**6.1.2.1 Fields**

MSU Breakout Fields				
<b>6.1.2.2</b>	Field	<b>serviceInd_b</b>	Spec Ref	<a href="#">GF 001-9001, Aug 1990, Fig 2-2</a>
	Definition	The Service Indicator sub-field. This sub-field is used by signalling handling functions to perform message distribution and message routing.		
	Details	Implementation Info: Chinese SNM runs on a SI of 13, therefore NI and TM measurements for SNM do not function as expected. To allow correct operation, this should be mapped to K_GG59_SNM for CHINA.90.SNM only.		

**6.1.2.3 Capture Buffer Indices**

N/A

**6.1.2.4 Call Trace Assistance**

N/A

## 6.2 MTN

### 6.2.1 Fields

MSU Breakout Fields				
6.2.1.1	Field	H0H1_b	Spec Ref	ANSI T1.111.7-1992,
	Definition	The complete Heading Code, H0 and H1. Both values together identify a particular message code.		
	Details	Implementation Info: This should be mapped onto the generic K_GG59 #defines if different.		
6.2.1.2	Field	slc_b	Spec Ref	ANSI T1.111.7-1992,
	Definition	The signalling Link Code. This identifies the signalling link to which the test applies.		
	Details	Implementation Info: This will overwrite the SLS extracted from the Routing Label by the MTP breakout if present in the variant of the MTN protocol being implemented.		

### 6.2.2 Capture Buffer Indices

N/A

### 6.2.3 Call Trace Assistance

N/A

## 6.3 SCCP

### 6.3.1 Fields

The following fields should be extracted from both connection-oriented and connectionless SCCP messages which contain them.

MSU Breakout Fields				
<b>6.3.1.1</b>	Field	<b>messageType_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 1.2
	Definition	The Message Type Code parameter. This uniquely defines the function and format of each SCCP message.		
	Details	n/a		
	Field	<b>protIndMsgType_b</b>	Spec Ref	n/a
	Definition	This is a ‘protocol independent’ [3.4.1] message type code.		
<b>6.3.1.2</b>	Details	Implementation Info: (1) All values should be mapped onto the ANSI SCCP values (2) This should be mapped onto the generic K_GG59_SCCP #defines if different from ANSI defined SCCP. (3) Invalid values should be mapped to K_GG59_PROT_IND_INVALID_VALUE.		
	Field	<b>sourceLocalRef_m</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.3
	Definition	The Source Local Reference parameter. This contains a reference number which is included in the message to allow the node receiving the message to determine the Destination Local Reference for the message it sends in the reverse direction. It may also be used for verification of connection status.		
<b>6.3.1.3</b>	Details	n/a		
	Field	<b>destLocalRef_m</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.2
	Definition	The Destination Local Reference parameter. This contains a reference number which is included in the message to allow the node receiving the message to identify the message with a particular connection section.		
<b>6.3.1.4 (1)</b>  <b>sccpCalling</b> <b>sccpCalled<sup>a</sup></b>	Details	n/a		
	Field	<b>addrInd_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5
	Definition	The Address Indicator. This indicates the type of address information contained in the address field of the called/calling party parameter.		
	Details			

(2)	Field	<b>SSN_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The Subsystem Number. This identifies a SCCP user function, eg. ISUP OMAP, MAP etc.			
	Details	Note 1: Beware of the different ordering of the address indicator bits for these fields between ITU & Bellcore/ANSI. Note also that the order of the fields matches that of the address indicator bits. Bellcore/ANSI address indicators with bit 8 = 0 follow the ITU ordering in both the address indicator bits and the order of fields [ANSI T1.112, 1996 Section 3.4 and Figure 4]. Pointcodes in Bellcore/ANSI addresses with address indicators with bit 8 = 0 are assumed to occupy 14 bits.			
(3)	Field	<b>pc_m</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The Signalling Point Code. When provided as an address element (eg. called party address or global title), it is represented as three octets and is transmitted in the following order; Network Cluster Member, Network cluster and Network identifier. It is contained within the address field of the calling/called party parameter.			
	Details	Implementation Info: (1) The Network Indicator bits of the Sub-Service Field should then be extracted from opc_m (see 5.1.1.6) using the P7GET_NIBITS macro and then OR-ed into the appropriate bits of pc_m using the P7SET_NI macro (see 3.5). (2) Important: Refer to 6.3.1.4 (2)			
(4)	Field	<b>translationType_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The Translation Type field. This is a sub-field of the address field contained within the calling/called party parameter. It is used to direct the message to the appropriate global title translation function.			
	Details	n/a			
(5)	Field	<b>addressInfo.natOfAddr_b</b>	Spec Ref	ITU Q.713, Section 3.4.2.3.1	
	Definition	The Nature Of Address field. This is a sub-field of the address field contained within the calling/called party parameter.			
	Details	Implementation Info: (1) Note, the reference is to the ITU Q.713 and the values are similar to ANSI ISUP values (2) <b>IMPORTANT:</b> For ANSI and BELL SCCP there is no Nature of Address field. Instead the National/International Indicator of the Address indicator bit [ANSI T1.112.3-1992, Section 3.4.1] is mapped as per the ANSI ISUP Nature of Address values for National (significant) Number and International Number using the #defines K_GG59_NSIGNATOADDR and K_GG59_INTLNATOADDR respectively. For CCITT and ITU SCCP the Nature of Address field is present and has values equivalent to the ANSI ISUP values.			
(6)	Field	<b>addressInfo.numberingPlan_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The Numbering Plan field. This is a sub-field of the address field contained within the calling/called party parameter.			
	Details	n/a			

(7)	Field	<b>addressInfo.encodingScheme_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The Encoding Scheme field. This is a sub-field of the address field contained within the calling/called party parameter			
	Details	n/a			
(8)	Field	<b>addressInfo.telno.length_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The Length of Address field. This contains the number of digits in Address information field of the calling/called party parameter.			
	Details	Implementation Info: This must take account of the ‘odd/even’ indicator, which is sometimes found in the same octet as ‘Nature of address’ indicator and sometimes deduced from the ‘Encoding scheme’ and for Japanese SCCP, sometimes found within the address signals. If the ‘odd/even’ indicator is found within the address signals then addressInfo.telno.length_b must be decremented by the number of nibbles which are not part of the address signals (i.e. the ‘odd/even’ indicator and any padding).			
(9)	Field	<b>addressInfo.telno.digits_ba</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.5	
	Definition	The digits contained in the Address information field of the calling/called party parameter..			
	Details	Implementation Info: This should be coded in standard gg61_telno digit ordering, with the unused nibble = 0 if an odd number of digits are present. For Japanese SCCP, if the ‘odd/even’ indicator is found within the address signals then addressInfo.telno.digits_ba must not be populated with nibbles which are not part of the address signals (i.e. the ‘odd/even’ indicator and any padding). Also, for Japanese SCCP, there are various address signal formats that must be catered for (see 2.3.64).			
(10)	Field	<b>mappedGT_m</b>	Spec Ref	N/A	
	Definition	This is a internal variable used by AppSupp kgb library. It's GT group number, which is used by global title matching functionality. The global title matching functionality is contained in AppSupp kgb library, and is used by Traffic Monitor and Network Investigator etc.			
	Details	Implementation Info: This field should be initialized as 0 by Breakouts. Otherwise, AppSupp kgb library will not calculate the correct GT group number.			
<b>6.3.1.5</b>	Field	<b>returnCause_b</b>	Spec Ref	ANSI T1.112.3-1992, Section 3.12	
	Definition	In the Unitdata Service, Extended Unitdata Service and Long Unitdata Servie messages the Return Cause field contains the reason for the message return.			
	Details	n/a			
<b>6.3.1.6</b>	Field	<b>TMSERVICEASSFAILCODE_u</b>	Spec Ref	n/a	
	Definition	This is a generic failure code used to count a number of different ‘Service Assurance’ failures.			
	Details	Implementation Info: (1) If the Return Cause parameter is present, this should be set to: K_GG59_BASESCCP_RETURNCAUSE + returnCause_b. (2) New failure codes should be added to the NLS catalog (see 3.4)			

<b>6.3.1.7</b>	<b>Field</b>	<b>SCCPRoutingFailure_u</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	This is a generic routing failure code used to count a number of different SCCP ‘routing failure’ parameters.		
	<b>Details</b>	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) If Release Cause parameter [3.11] is present in the SCCP message, then the value should be set to Release Cause value + K_GG59_SCCP_ROUTING_RELCAUSE</li> <li>(2) If Return Cause parameter [3.12] is present in the SCCP message, then the value should be set to Return Cause value + K_GG59_SCCP_ROUTING_RETCAUSE</li> <li>(3) If Reset Cause parameter [3.13] is present in the SCCP message, then the value should be set to Reset Cause value + K_GG59_SCCP_ROUTING_RESCAUSE</li> <li>(4) If Refusal Cause parameter [3.15] is present in the SCCP message, then the value should be set to Refusal Cause value + K_GG59_SCCP_ROUTING_REFCAUSE</li> </ol>		
<b>6.3.1.8</b>	<b>Field</b>	<b>userData_b</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	This is a flag which is set to TRUE for all messages (connectionless and connection-oriented), when a Data parameter is present in the message, except for messages which contain a Segmentation parameter [see 1.3.38] with bit 8 of octet 1 (ie. sccpSegctl_b, 6.3.1.13) set to 0.		
	<b>Details</b>	n/a		
<b>6.3.1.9 (1)</b>	<b>Field</b>	<b>userDataStart_pb</b>	<b>Spec Ref</b>	ANSI T1.112.3-1992, Section 3.16 ITU-T Q.713, Section 3.16 & 3.20
	<b>Definition</b>	The pointer to the SCCP user Data.		
	<b>Details</b>	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This is a pointer field which is set to the first SCCP user Data octet in frame buffer.</li> <li>(2) This field should be set when a Data or Long Data parameter is present in the message.</li> </ol> <p><b>Limitation:</b> For the implementation effort considerations, only part of protocols (TDC related SCCP protocols, TDK.2001.SCCP, ITU.96.SCCP, ANSI.96.SCCP) set the pointer for the non-first segmented messages and Long Data. See actual source codes for the latest implementation status.</p>		
	<b>Field</b>	<b>sccpDataParmLen_m</b>	<b>Spec Ref</b>	ANSI T1.112.3-1992, Section 3.16 ITU-T Q.713, Section 3.16 & 3.20
	<b>Definition</b>	The user Data parameter field length.		
<b>(2)</b>	<b>Details</b>	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This is a length field which indicates the length of user Data in octets.</li> <li>(2) This field should be set when a Data or Long Data parameter is present in the message.</li> <li>(3) This field is extended from int8 in C.07.30 to int32. According to ITU-T Q.713 Section 3.20, the theoretical maximal length could be up to 3952 octets.</li> </ol> <p>See also Limitation in 6.3.1.9 (1).</p>		
	<b>Field</b>	<b>sccpHopCounter_b</b>	<b>Spec Ref</b>	ANSI T1.112.3-1992, Section 3.17
<b>6.3.1.10</b>	<b>Definition</b>	The SCCP Hop Counter parameter. This parameter contains a counter which is decremented each time the message is processed by an SCCP relay point.		
	<b>Details</b>	n/a		

<b>6.3.1.11</b>	Field	<b>sccpClessSegmentedMsg_b</b>	Spec Ref	n/a	
	Definition	This is a flag which should be set to TRUE if the optional Segmentation parameter is present.			
	Details	n/a			
<b>6.3.1.12</b>	Field	<b>sccpSegCntl_b</b>	Spec Ref	ITU Q.713, Section 3.17	
	Definition	This is the first octet of the Segmentation parameter.			
	Details	n/a			
<b>6.3.1.13</b>	Field	<b>sccpSegLocalRef_m</b>	Spec Ref	ITU Q.713, Section 3.17	
	Definition	This is octets 2-4 of the Segmentation parameter			
	Details	n/a			
<b>6.3.1.14</b>	Field	<b>sccpMoreData_b</b>	Spec Ref	ITU Q.713, Section 3.7, 3.9	
	Definition	The More Data Indication fields of the ‘Segmenting/reassembling’ and the ‘Sequencing/segmenting’ parameters.			
	Details	<u>Implementation Info:</u> (1) This should be set to More Data Indication field of the Segmenting/reassembling parameter OR (2) This should be set to the More Data Indication field of the Sequencing/segmenting parameter [see 1.3.38 3.9] for the DT2 message and the IT message (but only if the Protocol Class parameter indicates a class 3 in the IT message).			
<b>6.3.1.15</b>	Field	<b>sccpSendSeqNum_b</b>	Spec Ref	ITU Q.713, Section 3.9	
	Definition	The Send Sequence Number of the Sequencing/segmenting parameter.			
	Details	<u>Implementation Info:</u> This should be set to the contents of the P(S) octet from the Sequencing/Segmenting parameter [see 1.3.38 3.9] for the DT2 message and the IT message (but only if the Protocol Class parameter indicates a class 3 in the IT message).			
<b>6.3.1.16</b>	Field	<b>lengthOffsetList_m</b>	Spec Ref	N/A	
	Definition	This is a list of offset to length indicator fields in low layer protocol stacks. The lengths should be recalculated			
	Details	<u>Implementation Info:</u> (1) This is a list which saves offsets of all lengths impacted by Platform reassemble function. (2) Each sub-field contains the offset of the impacted length octet (calculated from the beginning of the messsge). The context mask K_GG59_CTXTMASK_SCCP_LENGTHOFFSETLIST (0x000000ff) bits will be used to indicate context id. One of: K_GG59_SCCP_LENGTHOFFSETLIST_IP_TOTALLENGTH K_GG59_SCCP_LENGTHOFFSETLIST_SCTP_CHUNKLENGTH K_GG59_SCCP_LENGTHOFFSETLIST_M3UA_MESSAGELENGTH K_GG59_SCCP_LENGTHOFFSETLIST_M3UA_PROTOCOLDATALENGTH K_GG59_SCCP_LENGTHOFFSETLIST_M2PA_MESSAGELENGTH K_GG59_SCCP_LENGTHOFFSETLIST_M2UA_MESSAGELENGTH K_GG59_SCCP_LENGTHOFFSETLIST_M2UA_PARAMETERLENGTH Note: these fields should only be extracted in PAP breakout (even only in the first XUDT segment message) to reduce performance impact.			

a.sccpCalling and sccpCalled are structures.

## acceSS7 Protocol Breakout Requirements

## 6.3.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>6.3.2.1</b>	Messages which contain a SLR	n/a	SCCPCallingPc_m <sup>a</sup> , sourceLocalRef_m, 0
<b>6.3.2.2</b>	Messages which contain a DLR	n/a	dpc_m, destLocalRef_m, 0

a.If 0, then use opc\_m

### 6.3.3 Call Trace Assistance

Call Trace Assistance														
6.3.3.1	Connection Request (CR)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		OPCSLR	X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local			Global								
			n/a			n/a								
		State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE							
6.3.3.2	Connection Confirmed (CC)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		OPCSLR	X											
		DPCDLR		X	X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		5000					
		Cross Triggers	Local			Global								
			n/a			n/a								
		State of Call	CTState			CTEnhState								
			K_ANLS_NOCHANGE			K_ANLS_NOCHANGE								

Call Trace Assistance														
6.3.3.3	Connection Refused (CREF)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			DPCDLR	X		X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE							
6.3.3.4	Released (RLSD)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		OPCSLR		X		X								
	Release Complete (RLC)	DPCDLR		X		X								
	Reset Request (RSR)	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE							

Call Trace Assistance											
6.3.3.5	All other messages containing a SLR and DLR	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		OPCSLR		X							
		DPCDLR		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a		n/a		n/a		n/a		
		Cross Triggers	Local				Global				
			n/a				n/a				
		State of Call	CTState				CTEnhState				
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE				
6.3.3.6	All other messages containing a DLR only	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCDLR		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a		n/a		n/a		n/a		
		Cross Triggers	Local				Global				
			n/a				n/a				
		State of Call	CTState				CTEnhState				
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE				

## 6.3.4 Additional Access Routines

	Access Routine	Definition
6.3.4.1	sccpAddrContainsPc <sup>a</sup>	Returns TRUE if the SCCP address indicator (addrInd_b) indicates the address contains a pointcode.
6.3.4.2	sccpAddrContainsSSN <sup>b</sup>	Returns TRUE if the SCCP address indicator (addrInd_b) indicates the address contains a subsystem number.
6.3.4.3	sccpAddrGTIValue	Returns Global Title Indicator value (bits 3-6 of addrInd_b) of the given address.

	Access Routine	Definition
<b>6.3.4.4</b>	<b>sccpAddrRouteOnSSN</b>	Returns TRUE if the SCCP address indicator (Routing Indicator bit of addrInd_b) indicates routing is based on DPC and Called Party SSN.
<b>6.3.4.5</b>	<b>sccpFirstSegInd</b>	Returns TRUE if bit F (bit 8) of sccpSegCtl_b indicates ‘First Segment’.
<b>6.3.4.6</b>	<b>sccpInSeqDelivery</b>	Returns TRUE if bit C (bit 7) of sccpSegCtl_b indicates ‘In Sequence Delivery Required’.
<b>6.3.4.7</b>	<b>sccpRemainingSegs</b>	Returns the number of remaining segments, ie. bits 1-4 of sccpSegCtl_b.

a.If bit 8 of the address indicator = 1, then the address indicator format should be assumed to be ANSI/Bellcore, ie bit 1= 1 => SSN, bit 2 = 1 => SPC.

If bit 8 of the address indicator = 0, then the address indicator format should be assumed to be ITU, ie bit 1= 1 => SPC, bit 2 = 1 => SSN.

b.As above

## 6.4 ISUP

This section describes the Breakout Requirements for ISUP. This forms the basis for the definition of other ISUP based protocols.

*Note: The TUP-based breakouts are mapped onto the ISUP fields. As a result, any changes made to this section must also be reflected in the sections relevant to TUP-based breakouts.*

### 6.4.1 Fields

ISUP MSU Breakout Fields				
6.4.1.1	Field	cic_m	Spec Ref	ANSI T1.113.3-1992 - Section 1.2
	Definition	The Circuit Identification Code. The Circuit Identification Code information identifies the physical path between a pair of exchanges.		
	Details	n/a		
6.4.1.2	Field	cicRange_u	Spec Ref	ANSI T1.113.3-1992 - Section 3.27
	Definition	The Range sub-field of the Range and Status Parameter. Information sent in a circuit group supervision message (eg. Circuit Group Blocking) to indicate the range of circuits affected by the action in the message.		
	Details	Implementation Info: cicRange_u should indicate the number of CICs in the range, i.e. it should be set to the Range Parameter +1.		

<b>ISUP MSU Breakout Fields</b>						
<b>6.4.1.3</b>	<b>(1)</b>	<b>Field</b>	<b>messageType_b</b>	Spec Ref		
		Definition	The Message Type Code parameter. It uniquely defines the function and format of each ISDN User Part message.			
		Details	Implementation Info: If the message is a Pass Along Message (PAM), this should be set to the code of the message contained within the PAM.			
	<b>(2)</b>	<b>Field</b>	<b>protIndMsgType</b>	Spec Ref		
		Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.			
		Details	Implementation Info: If the message is a Pass Along Message (PAM), this should be the ‘protocol independent’ message type code of the message contained within the PAM. Invalid values should be mapped to K_GG59_PROT_IND_INVALID_VALUE.			
	<b>(3)</b>	<b>Field</b>	<b>typeOfMessage_b</b>	Spec Ref		
		Definition	The ‘protocol independant’ indication of the type of a call control message.			
		Details	Implementation Info: There are four possible values: (1) K_GG59_INITIAL indicates a call initiating message which contains at least a called party number (usually just an IAM). (2) K_GG59_FINAL indicates any message which terminates a call (usually RLC and GRA or a COT message with Continuity Indicators indicating continuity test failure). (3) K_GG59_REL indicates a call release message (REL, RSC and GRS). (4) K_GG59_CALLCTL indicates any other call control message (ie. that has a CIC), this will always be any other ISUP variants Implementation Reason: CallTrace, CDR Builder			
<b>6.4.1.4</b>		<b>Field</b>	<b>callingPtyCt_b</b>	Spec Ref		
		Definition	The Calling Party Category Parameter. This contains information sent in the forward direction indicating the category of the calling party, eg. ordinary subscriber, payphone etc.			
		Details	n/a			
<b>6.4.1.5</b>		<b>Field</b>	<b>continuityIndctrs_b</b>	Spec Ref		
		Definition	The Continuity Indicators Parameter. This contains a continuity check indicator bit which is sent in the forward direction to indicate whether or not a continuity check will be performed on the circuit(s) involved or is being (has been) performed on a previous circuit in the connection.			
		Details	n/a			
<b>6.4.1.6</b>		<b>Field</b>	<b>fwdCallInds_ba</b>	Spec Ref		
		Definition	The Forward Call Indicators Parameter. This is information sent in the forward direction containing; incoming international indicator, end-to-end method indicator, interworking indicator, end-to-end information indicator, ISDN User Part indicator, ISDN User Part preference indicator, ISDN access indicator, and SCCP method indicator.			
		Details	n/a			

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.7</b>	Field	<b>bckwdCallIndctr_ba</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.3
	Definition	The Backward Call Indicators Parameter. This is information sent in the backward direction containing; charge indicator, called party's status indicator, called party's category indicator, end-to-end method indicator, interworking indicator, end-to-end information indicator, ISDN User Part indicator, holding indicator, ISDN access indicator, echo control device indicator and SCCP method indicator		
	Details	n/a		
<b>6.4.1.8 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.7
	Definition	The Nature of Address Indicator subfield of the Calling Party Number parameter field.		
	Details	n/a		
<b>(2)</b>	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.7
	Definition	The Numbering Plan Indicator subfield from the Calling Party Number parameter.		
	Details	n/a		
<b>(3)</b>	Field	<b>callingParty.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.7
	Definition	The Address Signal subfield of the Calling Party Number parameter.		
	Details	<p>Implementation Info: This should be extracted into callingParty.telno in the same format as stored in the message. Note:</p> <ol style="list-style-type: none"> <li>(1) If the extracted number has an odd number of digits, the last nibble should be set to decimal 0.</li> <li>(2) If the extracted number ends with the ST character, ie. decimal 15, this character should be removed by decrementing the length by 1 and replacing the ST character with decimal 0.</li> <li>(3) If the extracted number will exceed the maximum length allowable (see gg61.h) it should be truncated.</li> </ol>		

<b>ISUP MSU Breakout Fields</b>									
<b>6.4.1.9 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.6					
	Definition	The Nature of Address Indicator subfield of the Called Party Number parameter.							
	Details	<p>Implementation Info: For Local Number Portability (see [1.3.35] Section 6.1.6), if bit M of the Forward Call Indicators field is 1, and the IAM includes a Generic Address Parameter with Type of Address = ‘Ported Dialled Number’, then calledParty.natOfAddr_b should be set to the Nature of Address indicator subfield from the Generic Address parameter.</p> <p>Note that the IAM can contain multiple Generic Address parameters. The first one with Type of Address = ‘Ported Dialled Number’ should be used.</p>							
<b>(2)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.6					
	Definition	The Numbering Plan Indicator subfield from the Called Party Number parameter.							
	Details	n/a							
<b>(3)</b>	Field	<b>calledParty.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.6					
	Definition	The Address Signal subfield of the Called Party Number parameter.							
	Details	<p>Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 5.4.1.4 (3)). In addition the following rules will be used:</p> <ol style="list-style-type: none"> <li>(1) For LNP (see [1.3.35] Section 6.1.6), if bit M of the Forward Call Indicators field is 1, and the IAM includes a Generic Address Parameter with Type of Address = ‘Ported Dialled Number’, then calledParty.telno should be set to the address digits from the Generic Address parameter. Note that the IAM can contain multiple Generic Address parameters. The first one with Type of Address = ‘Ported Dialled Number’ should be used.</li> <li>(2) From the Address Signal subfield of the Subsequent Number parameter field in a SAM.</li> </ol>							
<b>(4)</b>	Field	<b>calledParty.telnoType_b</b>	Spec Ref	See 6.4.1.9 (3)					
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.							
	Details	<p>Implementation Info: See 6.4.1.9(3).</p> <p>The telnoType_b subfield should be set as the following:</p> <table style="margin-left: 20px; border: none;"> <tr> <td>K_GG59_TELNOTYPE_CALLEDPARTYNUM</td> <td>(for Called Party Number)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_SUBNUM</td> <td>(for Subsequent Number)</td> </tr> </table>				K_GG59_TELNOTYPE_CALLEDPARTYNUM	(for Called Party Number)	K_GG59_TELNOTYPE_SUBNUM	(for Subsequent Number)
K_GG59_TELNOTYPE_CALLEDPARTYNUM	(for Called Party Number)								
K_GG59_TELNOTYPE_SUBNUM	(for Subsequent Number)								

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.10 (1)</b>	Field	<b>ocn.natOfAddr_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.26
	Definition	The Nature of Address Indicator subfield of the Original Called Number parameter.		
	Details	n/a		
<b>(2)</b>	Field	<b>ocn.numberingPlan_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.26
	Definition	The Numbering Plan Indicator subfield from the Original Called Number parameter.		
	Details	n/a		
<b>(3)</b>	Field	<b>ocn.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.26
	Definition	The Address Signal subfield of the Original Called Number parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 6.4.1.8 (3)).		
<b>6.4.1.11 (1)</b>	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.10
	Definition	The Nature of Address Indicator subfield of the Charge Number parameter.		
	Details	n/a		
<b>(2)</b>	Field	<b>chargeNum.numberingPlan_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.10
	Definition	The Numbering Plan Indicator subfield from the Charge Number parameter.		
	Details	n/a		
<b>(3)</b>	Field	<b>chargeNum.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.10
	Definition	The Address Signal subfield of the Charge Number parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 6.4.1.8 (3)).		
<b>6.4.1.12 (1)</b>	Field	<b>redirectingNum.natOfAddr_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.27A
	Definition	The Nature of Address Indicator subfield of the Redirecting Number parameter.		
	Details	n/a		
<b>(2)</b>	Field	<b>redirectingNum.numberingPlan_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.27A
	Definition	The Numbering Plan Indicator subfield from the Redirecting Number parameter.		
	Details	n/a		
<b>(3)</b>	Field	<b>redirectingNum.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.27A
	Definition	The Address Signal subfield of the Redirecting Number parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 5.4.1.4 (3)).		

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.13</b>	Field	<b>redirectInfo_ba</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.29
	Definition	The Redirection Information parameter. This parameter contains the redirection Indicator, original redirecting reason, redirection indicator and the current redirecting reason.		
	Details	Implementation Info: This should be extracted into a 2-byte array in the same format as which it is stored in the message.		
<b>6.4.1.14 (1)</b>	Field	<b>genericAddress.natOfAddr_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.20A
	Definition	The Nature of Address Indicator subfield of the Generic Address parameter.		
	Details	Implementation Info: There can be multiple instances of the Generic Address Parameter therefore only the first Generic Address parameter in a message should be extracted.		
<b>(2)</b>	Field	<b>genericAddress.numberingPlan_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.20A
	Definition	The Numbering Plan Indicator subfield from the Generic Address parameter.		
	Details	Implementation Info: There can be multiple instances of the Generic Address Parameter therefore only the first Generic Address parameter in a message should be extracted		
<b>(3)</b>	Field	<b>genericTypeOfAddress_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.20A
	Definition	The Type of Address subfield of the Generic Address parameter. For ITU ISUP protocols the parameter is Generic Number Parameter and the subfield is called Number Qualifier Indicator.		
	Details	Implementation Info: There can be multiple instances of the Generic Address Parameter therefore only the first Generic Address parameter in a message should be extracted This should be extracted using the same rules as defined for callingParty.telno (see 5.4.1.4 (3)).		
<b>(4)</b>	Field	<b>genericAddress.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.20A
	Definition	The Address Signal subfield of the Generic Address parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for callingParty.telno (see 5.4.1.4 (3)). There can be multiple instances of the Generic Address Parameter therefore only the first Generic Address parameter in a message should be extracted		

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.15 (1)</b>	Field	<b>lrn.natOfAddr_b</b>	Spec Ref	GR-2936-CORE, 1996, Section 6.1.6
	Definition	The Nature of Address Indicator subfield of the Location Routing Number parameter.		
	Details	Implementation Info: For LNP, if bit M of the Forward Call Indicators field is 1 (see [1.3.35] Section 6.1.6.2) and the IAM includes a Generic Address Parameter with Type of Address = ‘Ported Dialled Number’, then lrn.natOfAddr_b should be set to the Nature of Address indicator subfield from the Called Party Number parameter.		
<b>(2)</b>	Field	<b>lrn.telno</b>	Spec Ref	GR-2936-CORE, 1996, Section 6.1.6
	Definition	The Address Signal subfield of the Location Routing Number parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 5.4.1.4 (3)). For LNP, if bit M of the Forward Call Indicators field is 1 (see [1.3.35] Section 6.1.6.2), and the IAM includes a Generic Address Parameter with Type of Address = ‘Ported Dialled Number’, then lrn.telno should be set to the address signals from the Called Party Number field, in the same form as stored in the message.		
<b>6.4.1.16 (1)</b>	Field	<b>userServiceInfoLen_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.33
	Definition	The length field of the User Service Information parameter.		
	Details	n/a		
<b>(2)</b>	Field	<b>userServiceInfo_pb</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.33
	Definition	The pointer to the start of the User Service Information parameter data. User Service Information is sent in the forward direction indicating the bearer capability requested by the Calling Party and including as a minimum the coding standard, information transfer capability, transfer mode and information transfer rate.		
	Details	n/a		
<b>6.4.1.17 (1)</b>	Field	<b>transMedReq_b</b>	Spec Ref	ITU-T Q.763 - Section 3.54
	Definition	The Transmission Medium Requirement parameter field.		
	Details	n/a		
<b>(2)</b>	Field	<b>transMedPrime_b</b>	Spec Ref	ITU-T Q.763 - Section 3.55
	Definition	The Transmission Medium Requirement Prime parameter field.		
	Details	n/a		
<b>(3)</b>	Field	<b>transMedUsed_b</b>	Spec Ref	ITU-T Q.763 - Section 3.56
	Definition	The Transmission Medium Used parameter field.		
	Details	n/a		

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.18 (1)</b>	Field	<b>tnsNwkType_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.31C (1)
	Definition	The ‘Type of Network Identification’ and ‘Network Identification Plan’ subfields of the Transit Network Selection Parameter. As the name implies this is information sent in the forward direction indicating the format of the transit network identification. The Transit Network Selection Parameter indicates the transit network(s) requested for the routing of a call.		
	Details	Implementation Info: These two subfields are contained within the one octet with bit 8 defined as spare or odd/even indicator. This bit 8 should be masked off.		
<b>(2)</b>	Field	<b>compTNSNetworkId</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.31 (3)
	Definition	The ‘Digits’ or ‘Network Identification’ subfield of the Transit Network Selection Parameter.		
	Details	Implementation Info: Digits of size K_GG59_MAXTNSDIGITS, should be extracted into a byte array in the same format as stored in the message. This should only contain the Digits and not the Circuit Code. The length field should also be set to indicate the number of digits present.		
<b>(3)</b>	Field	<b>tnsCircuitCode_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.31 (4)
	Definition	The ‘Circuit Code’ subfield of the Transit Network Selection Parameter.		
	Details	Implementation Info: The top bit of the field should be set to 1 if Transit Network selection parameter contains a Circuit Code. The lower nibble should contain the value of the Circuit Code		
<b>6.4.1.19 (1)</b>	Field	<b>callRefIdentity_m</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.5 (1)
	Definition	The Call Identity subfield of the Call Reference parameter. This is information sent indicating the identity of a call in a signalling point.		
	Details	n/a		
<b>(2)</b>	Field	<b>callRefPointcode_m</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.5(2)
	Definition	The Point Code subfield of the Call Reference parameter. This information indicates the code of the signalling point in which the call identity allocated to the call reference is relevant.		
	Details	n/a		

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.20 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.9
	Definition	This is the "protocol independent" [3.4] Release Cause Value. It is mapped onto a NLS catalogs in files a7longRel.h and a7shortrel.h. The values are based on ANSI ISUP values, new values can be added assuming they don't clash with existing values.		
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This field should be extracted from any message that contains Cause Indicator field.</li> </ol> <p><b>Exceptions:</b> It's not required to extract when Cause Indicator is present as a sub-parameter of Network Transport Parameter in ANSI ISUP protocols.</p> <ol style="list-style-type: none"> <li>(2) Undefined or spare cause values should be mapped to 255 (unless otherwise specified by the relevant specification), however the actual value should be used when classifying as NORMAL or ABNORMAL</li> <li>(3) NOTE: This does not apply to ANSI ISUP (see [1.3.4] Section T1.113.3-11) which states that spare values in the ANSI standard domain of values (ie. coding standard = ANSI standard) are interpreted as value 127 in the CCITT domain of values (ie. coding standard = CCITT standard).</li> </ol> <p><b>Limitation:</b> The field is extracted (where applicable) from REL message for all ISUP protocols. The field is extracted (where present and applicable) from all ISUP messages for a subset of ISUP protocols; initially this shall be ITU.99.ISUP ACM (and later versions thereof) although it may be expanded to include further protocols.</p>		
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	n/a
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.		
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This should be set to TRUE if releaseCode_u considered ABNORMAL. Unless otherwise stated below, the only Cause values that are considered NORMAL are those in Classes 000, 001 (normal event) and 111 (interworking).</li> <li>(2) The only exception to the above is, LNP Cause Value 26 "misrouted call to ported number" [see 1.3.35 6.1.6.5] should be classified as ABNORMAL.</li> <li>(3) See 6.4.1.20 (1) Item (1).</li> </ol> <p><b>Limitation:</b> See limitation in 6.4.1.20 (1).</p>		
<b>(3)</b>	Field	<b>relCauseLocn_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.9
	Definition	The Location subfield of the Cause Indicators Parameter. This is information sent in either direction which identifies the network in which it originated.		
	Details	<p>Implementation Info:</p> <p>See 6.4.1.20 (1) Item (1).</p>		
<b>(4)</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.9
	Definition	The value of the first two octets of the Cause Indicators Parameter (excluding the identifier and length).		
	Details	<p>Implementation Info:</p> <p>See 6.4.1.20 (1) Item (1).</p>		

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.21</b>	Field	<b>olip_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.26A
	Definition	olip_b is the breakout field for the Originating Line Information Parameter. This is information sent in the forward direction indicating a toll class of service for the call.		
	Details	Implementation Info: n/a.		
<b>6.4.1.22</b>	Field	<b>carrierId_ba</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.8A
	Definition	The Carrier Identification Parameter. This is information sent in the forward direction to the transit network indicating the transit network selected by the originating subscriber.		
	Details	n/a		
<b>6.4.1.23</b>	Field	<b>carrierSelection_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.8B
	Definition	The Carrier Selection Parameter. This is information sent in the forward direction to indicate whether the calling user selected the transit network by presubscription or dialled input and if presubscribed whether or not the carrier identification code was also dialled.		
	Details	n/a		
<b>6.4.1.24</b>	Field	<b>outTrunkNum.telno</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.26B
	Definition	The Outgoing Trunk Group Number parameter. Information sent in the backward direction indicating the trunk group selected at an outgoing gateway. For intra-network use only.		
	Details	n/aThe length field should also be set to indicate the length of the fieldttt		
<b>6.4.1.25</b>	Field	<b>jurisdiction_ba</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.23A
	Definition	The Jurisdiction Information Parameter. This is information sent in the forward direction indicating the originating geographic location of the call.		
	Details	n/a		
<b>6.4.1.26</b>	Field	<b>serviceCode_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.29C
	Definition	The Service Code Parameter. This contains information sent in the forward direction indicating a service code provided by the calling party.		
	Details	n/a		

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.27 (1)</b>	Field	<b>isupParamList_b</b>	Spec Ref	n/a
	Definition	The list of the parameter name codes of all the optional parameters present in the ISUP MSU.		
	Details	n/a		
<b>(2)</b>	Field	<b>isupParamCount_b</b>	Spec Ref	n/a
	Definition	The number of optional parameter identifiers contained in isupParamList_b.		
	Details	n/a		
<b>(3)</b>	Field	<b>startOfISUPOptnl_pb</b>	Spec Ref	n/a
	Definition	This is a pointer to the start of the optional parameters (if present) in an ISUP message. The pointer should point to the parameter identifier of the first optional parameter in the message.		
	Details	n/a		
<b>6.4.1.28 (1)</b>	Field	<b>locationNumAddress.telno</b>	Spec Ref	ITU-T Q.763 1999, Section 3.30
	Definition	The Address Signal subfield of the Location Number parameter.		
	Details	<p>Implementation Info: This field should be extracted from any ISUP message that contains it.</p> <p><b>Limitation:</b> For the implementation effort considerations, only part of protocols (ITU.99.ISUP, ANSI.2000.ISUP, UK.2000.ISUP, and TDK.2000.ISUP) extracted the field. See 2.4.4 for the latest implementation status.</p>		
<b>(2)</b>	Field	<b>locationNumAddress.natOfAddr_b</b>	Spec Ref	ITU-T Q.763 1999, Section 3.30
	Definition	The nature of address subfield of the Location Number parameter.		
	Details	n/a		
<b>(3)</b>	Field	<b>locationNumAddress.numberingPlan_b</b>	Spec Ref	ITU-T Q.763 1999, Section 3.30
	Definition	The numbering plan subfield of the Location Number parameter.		
	Details	n/a		
<b>6.4.1.29</b>	Field	<b>callingPtyAddPresRestrInd_m</b>	Spec Ref	ITU-T Q.763, Section 3.10 ANSI T1.113.3, Section 3.7
	Definition	This is the Address Presentation Restricted Indicator field of Calling Party Number parameter.		
	Details	<p>Implementation Info: This field should be extracted from any ISUP message that contains it.</p> <p><b>Limitation:</b> For the implementation effort considerations, only part of protocols (ITU.99.ISUP, ANSI.2000.ISUP, and BELL.96.ISUP) extracted the field. See 2.4.4 for the latest implementation status.</p>		

<b>ISUP MSU Breakout Fields</b>					
<b>6.4.1.30</b>	Field	<b>callingPtyScreeningInd_m</b>	Spec Ref	ITU-T Q.763, Section 3.10 ANSI T1.113.3, Section 3.7	
	Definition	This is the Screening Indicator field of Calling Party Number parameter.			
	Details	<p>Implementation Info: This field should be extracted from any ISUP message that contains it.</p> <p><b>Limitation:</b> For the implementation effort considerations, only part of protocols (ITU.99.ISUP, ANSI.2000.ISUP, and BELL.96.ISUP) extracted the field. See 2.4.4 for the latest implementation status.</p>			
<b>6.4.1.31</b>	Field	<b>derivedMgwAddress_m</b>	Spec Ref	n/a	
	Definition	This is the derived MGW Address field that can be populated through a mapping table or function based on information contained within an ISUP message.			
	Details	<p>Implementation Info: <b>Call Trace:</b> CT should populate the field for ISUP messages in the following condition: 1) ISUP IAM or INF message is matched in CT; and 2) It's successful when CT does lookup in GCP Trunkmap table which maps the ISUP information to (preferably) a Point Code or otherwise an IPv4 format address.</p> <p>Note1: The GCP Trunkmap table is a mapping table from configuration of MGW or MGC. The table entry is like "<code>{ {opc_m, dpc_m, cic_m}, {derivedMgwAddress_m, derivedTerminationId} }</code>".</p> <p>Note2: The field is populated in PAP or Center Server via CT.</p> <p>Note3: If fields derivedMgwAddress_m and derivedTerminationId are populated, CT will set CT Flags on PCTERMINID as FIRSTUSERRELATED at the same time. They will be used to correlate GCP (or EGCP) messages with ISUP.</p> <p>Note4: See also GCP Call Trace HLD (e4260-90130-110) for more details.</p>			
<b>6.4.1.32</b>	Field	<b>derivedTerminationId</b>	Spec Ref	n/a	
	Definition	This is the derived Termination Id field that can be populated through a mapping table or function based on information contained within an ISUP message.			
	Details	<p>Implementation Info: <b>Call Trace:</b> CT should populate the field for ISUP messages in the same condition as 6.4.1.31. The subfield a7PresentInd_b should always be set to K_GG59_TERMINID_BINGCP as default when the mapping table doesn't contain the type indicator of Termination Id. The subfield pair terminId.binGcp.idValue.length_m and terminId.binGcp.idValue.string_ba is to indicate the TerminationId Id field.</p>			

<b>ISUP MSU Breakout Fields</b>				
<b>6.4.1.33 (1)</b>	Field	<b>txNum[].telno</b>	Spec Ref	ITU-T Q.763 1999, section 3.73(3.39)
	Definition	The Address Signal subfield of the Called IN Number parameter.		
	Details	<p>Implementation Info:            This field should be extracted from any ISUP message that contains it.            This should be extracted using the same rules as defined for callingParty.telno (see 6.4.1.8 (3)).</p>		
<b>(2)</b>	Field	<b>txNum[].natOfAddr_b</b>	Spec Ref	ITU-T Q.763 1999, section 3.73(3.39)
	Definition	The nature of address subfield of the Called IN Number parameter.		
	Details	<p>Implementation Info:            See 6.4.1.33 (1).</p>		
<b>(3)</b>	Field	<b>txNum[].numberingPlan_b</b>	Spec Ref	ITU-T Q.763 1999, section 3.73(3.39)
	Definition	The numbering plan subfield of the Called IN Number parameter		
	Details	<p>Implementation Info:            See 6.4.1.33 (1).</p>		
<b>6.4.1.34</b>	Field	<b>cgsMsgType_m</b>	Spec Ref	ITU-T Q.763, Section 3.13 ANSI T1.113.3, Section 3.11
	Definition	Circuit group supervision message type parameter.		
	Details	<p>Implementation Info:            The bits 1-2 of the field should be extracted from any message of ITU.99.ISUP/ITU.ISUP/ US.ISUP that contains it.</p> <p>In ITU.99.ISUP and ITU.ISUP the value should be set one of:            K_GG59_CGSMSGTYPE_MSTORIENTED            K_GG59_CGSMSGTYPE_HWFFAILURE</p> <p>In US.ISUP the value should be set one of:            K_GG59_CGSMSGTYPE_BLOCKWITHOUTRELEASE            K_GG59_CGSMSGTYPE_BLOCKWITHRELEASE</p> <p>It will NOT be extracted from other ISUP protocols.</p>		

## 6.4.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.4.2.1</b>	IAM	calledParty.telno callingParty.telno lrn.telno	[Default] dpc_m, opc_m, cic_m [BELL 92 [2.3.3] BELL 95 [2.3.51] ANSI 92 [2.3.4] ANSI 96 [2.3.59]] n/a <sup>a</sup>
<b>6.4.2.2</b>	GRS GRA	n/a	dpc_m, opc_m, cic_m <sup>b</sup>
<b>6.4.2.3</b>	Other	n/a	dpc_m, opc_m, cic_m

a. Releases of these protocols within Pci-BASE releases B.03.00-B.04.13 used the “Default” setting. However, this impacted CDR based system performance for NA customers and the requirement for NA ISUPs to initiate a trace on INF and trawlback was not considered justifiable (or proven) in balance against the improvement in CDR performance.

b. for each value of CIC defined in the Range Parameter (ANSI T1.113.3-1992-Section 3.27)

### 6.4.3 Call Trace Assistance

Call Trace Assistance																	
6.4.3.1	IAM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
			CALLED	X				X	X	X							
			CALLING	X				X	X	X							
			OPCDPCCIC	X													
			CHARGING	X				X	X	X							
			OCN					X									
			RN					X		X							
			LRN					X		X							
			TX	X				X	X	X							
			MATCHRULE	AND													
Time Outs			CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u									
			n/a	n/a		7		n/a									
Cross Triggers			Local				Global										
			X														
State of Call			CTState				CTEnhState										
			Routing				n/a										

Call Trace Assistance																	
6.4.3.2	SAM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		CALLED									X						
		OPCDPCCIC		X													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u								
			n/a		n/a		n/a		n/a								
		Cross Triggers	Local				Global										
			X														
		State of Call	CTState				CTEnhState										
			Routing				n/a										
6.4.3.3	RLC	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		OPCDPCCIC		X		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u								
			2 (OPCDPCCIC)		5		n/a		n/a								
		Cross Triggers	Local				Global										
			X														
		State of Call	CTState				CTEnhState										
			Cleared (RLC) Circuit Group Reset (GRA)				n/a										
6.4.3.4	(Sucessful) COT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		OPCDPCCIC		X													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u								
			n/a		n/a		n/a		n/a								
		Cross Triggers	Local				Global										
			n/a				n/a										
		State of Call	CTState				CTEnhState										
			K_ANLS_NOCHANGE				n/a										

Call Trace Assistance																
6.4.3.5	COT (Failure)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		OPCDPCCIC		X		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			2 (OPCDPCCIC)		n/a		n/a		n/a							
		Cross Triggers	Local				Global									
			X													
		State of Call	CTState				CTEnhState									
			Continuity Test Failed				n/a									
6.4.3.6	ACM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
	ANM	OPCDPCCIC		X												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
	RES		n/a		n/a		n/a		n/a							
		Cross Triggers	Local				Global									
	REL		n/a				n/a									
		RSC	CTState				CTEnhState									
	GRS		Ringing (ACM) Answered (ANM RES) Suspended (SUS) Cleared (REL) Circuit Reset (RSC) Circuit Group Reset (GRS) Connected (CON)				n/a									
	CON															

Call Trace Assistance																
6.4.3.7	INF	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLING	X				X									
		OPCDPCCIC		X	X											
		CHARGING	X				X									
		OCN	X				X									
		RN	X				X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			n/a		n/a		n/a	5000 (mSec)								
		Cross Triggers	Local				Global									
			n/a				n/a									
6.4.3.8	Other	State of Call	CTState				CTEnhState									
			K_ANLS_NOCHANGE				n/a									
		CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		OPCDPCCIC		X												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			n/a		n/a		n/a	n/a								
		Cross Triggers	Local				Global									
			n/a				n/a									
		State of Call	CTState				CTEnhState									
			Appropriate Call State msg <b>OR</b> K_ANLS_NOCHANGE				n/a									

## 6.5 TUP

### 6.5.1 Fields

The following fields are based on those specified in the ISUP definition. Those fields which are not available or cannot be sensibly mapped in TUP are marked as ‘Not Applicable to Protocol’ in the Spec ref text box.

TUP MSU Breakout Fields					
	Field	cic_m	Spec Ref	Q.723 Bluebook, Section 2.2	
6.5.1.1	Definition	The Circuit Identification Code. The Circuit Identification Code information identifies the physical path between a pair of exchanges.			
6.5.1.1	Details	n/a			
	Field	cicRange_u	Spec Ref	Q.723 Bluebook, Section 3.10	
6.5.1.2	Definition	The Range sub-field of the Range and Status Parameter. Information sent in a circuit group supervision message (eg. Circuit Group Blocking) to indicate the range of circuits affected by the action in the message.			
6.5.1.2	Details	n/a			

<b>TUP MSU Breakout Fields</b>																							
<b>6.5.1.3 (1)</b>	Field	<b>protIndMsgType</b>	Spec Ref	Q.723 Bluebook, Table 3																			
	Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.																					
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) The H0, H1 values for TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ul>																					
		<table border="0"> <tr> <td>FAM:</td> <td>IAM, IAI -&gt; IAM; SAM, SAO -&gt; SAM</td> </tr> <tr> <td>FSM:</td> <td>GSM -&gt; INF; COT, CCF -&gt; COT</td> </tr> <tr> <td>BSM:</td> <td>GRQ -&gt; INR</td> </tr> <tr> <td>SBM:</td> <td>ACM -&gt; ACM; CHG -&gt; CHG</td> </tr> <tr> <td>UBM:</td> <td>SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, MPR, EUM -&gt; REL</td> </tr> <tr> <td>CSM:</td> <td>ANU, ANC, ANN -&gt; ANM; CBK -&gt; SUS; CLF -&gt; REL; RAN -&gt; RES; FOT -&gt; FOT</td> </tr> <tr> <td>CCM:</td> <td>RLG -&gt; RLC; BLO -&gt; BLO; BLA -&gt; BLA; UBL -&gt; UBL; UBA -&gt; UBA; CCR -&gt; CCR; RSC -&gt; RSC</td> </tr> <tr> <td>GRM:</td> <td>MGB, HGB, SGB -&gt; CGB; MBA, HBA, SBA -&gt; CGBA; MGU, HGU, SGU -&gt; CGU; MUA, HUA, SUA -&gt; CGUA; GRS -&gt; GRS; GRA -&gt; GRA</td> </tr> <tr> <td>CNM:</td> <td>ACC -&gt; OLM</td> </tr> </table>				FAM:	IAM, IAI -> IAM; SAM, SAO -> SAM	FSM:	GSM -> INF; COT, CCF -> COT	BSM:	GRQ -> INR	SBM:	ACM -> ACM; CHG -> CHG	UBM:	SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, MPR, EUM -> REL	CSM:	ANU, ANC, ANN -> ANM; CBK -> SUS; CLF -> REL; RAN -> RES; FOT -> FOT	CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; CCR -> CCR; RSC -> RSC	GRM:	MGB, HGB, SGB -> CGB; MBA, HBA, SBA -> CGBA; MGU, HGU, SGU -> CGU; MUA, HUA, SUA -> CGUA; GRS -> GRS; GRA -> GRA	CNM:	ACC -> OLM
FAM:	IAM, IAI -> IAM; SAM, SAO -> SAM																						
FSM:	GSM -> INF; COT, CCF -> COT																						
BSM:	GRQ -> INR																						
SBM:	ACM -> ACM; CHG -> CHG																						
UBM:	SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, MPR, EUM -> REL																						
CSM:	ANU, ANC, ANN -> ANM; CBK -> SUS; CLF -> REL; RAN -> RES; FOT -> FOT																						
CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; CCR -> CCR; RSC -> RSC																						
GRM:	MGB, HGB, SGB -> CGB; MBA, HBA, SBA -> CGBA; MGU, HGU, SGU -> CGU; MUA, HUA, SUA -> CGUA; GRS -> GRS; GRA -> GRA																						
CNM:	ACC -> OLM																						
<b>(2)</b>	Field	<b>typeOfMessage_b</b>	Spec Ref	n/a																			
	Definition	The ‘protocol independant’ indication of the type of a call control message.																					
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) K_GG59_INITIAL &lt;-&gt; IAM (FAM), IAI (FAM)</li> <li>(2) K_GG59_FINAL &lt;-&gt; RLG (CCM), GRA (GRM), CCF(FSM)</li> <li>(3) K_GG59_REL &lt;-&gt; CLF(CSM), RSC(CCM), GRS(GRM)</li> <li>(4) K_GG59_CALLCTL &lt;-&gt; any other message</li> </ul> <p>Implementation Reason: CallTrace, CDR Builder</p>																					
<b>6.5.1.4</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	Q.723 Bluebook, Section 3.3.1-2(d), 3.4.1(e)																			
	Definition	The Calling Party Category Parameter. This contains information sent in the forward direction indicating the category of the calling party, eg. ordinary subscriber, payphone etc.																					
	Details	n/a																					

<b>TUP MSU Breakout Fields</b>				
<b>6.5.1.5</b>	Field	<b>continuityIndctrs_b</b>	Spec Ref	Q.723 Bluebook, Section 3.4.2
	Definition	The Continuity Indicators Parameter. This contains a continuity check indicator bit which is sent in the forward direction to indicate whether or not a continuity check will be performed on the circuit(s) involved or is being (has been) performed on a previous circuit in the connection.		
	Details	<ul style="list-style-type: none"> <li>(1) The Continuity Signal (H0=0010, H1=0011) should be mapped onto the Continuity Indicators value for continuity check successful.</li> <li>(2) The Continuity Failure Signal (H0=0010, H1=0100) should be mapped onto the Continuity Indicators value for continuity check failed</li> </ul>		
<b>6.5.1.6</b>	Field	<b>bckwdCallIndctrs_ba</b>	Spec Ref	Q.723 Bluebook, Section 3.6.1 (d)
	Definition	The Message Indicators Parameter. This is information sent in the backward direction containing; charge indicator, called party's status indicator, called party's category indicator, end-to-end method indicator, interworking indicator, end-to-end information indicator, ISDN User Part indicator, holding indicator, ISDN access indicator, echo control device indicator and SCCP method indicator		
	Details	Implementation Info: The contents of the Message Indicators parameters should be extracted into this field from messages sent in the backwards directions.		
<b>6.5.1.7 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	Q.723 Bluebook, Section 3.3.2(m), 3.4.1(f)
	Definition	The Nature of Address Indicator subfield of the Calling Line Identity parameter field.		
	Details	n/a		
	Field	<b>callingParty.telno</b>	Spec Ref	Q.723 Bluebook, Section 3.3.2(m), 3.4.1(f)
	Definition	The Address Signal subfield of the Calling Line Identity parameter.		
<b>6.5.1.8 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	Q.723 Bluebook, Section 3.3.1(f), 3.3.2 (e)
	Definition	The Nature of Address Indicator subfield of the Message Indicators parameter.		
	Details	n/a		
	Field	<b>calledParty.telno</b>	Spec Ref	Q.723 Bluebook, Section 3.3.1-4
	Definition	The Address Signals parameter.		
<b>6.5.1.9</b>	Field	<b>ocn.telno</b>	Spec Ref	Q.723 Bluebook, Section 3.3.2(n), 3.4.1(h)
	Definition	The Address Signals parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 6.4.1.8 (3)).		

<b>TUP MSU Breakout Fields</b>																																																		
<b>6.5.1.10 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	Q.723 Bluebook, Section 3.7																																														
	Definition	The Unsuccessful Backward set-up Messages are used to define the reason for unsuccessful call set-up.																																																
	Details	<p>Implementation Info:            TUP does not have the concept of a single RELease message containing a Cause parameter.            Instead it uses the Unsuccessful Backward Set-up Messages to define the reason for unsuccessful call set-up. These should be mapped as follows:</p> <table> <tbody> <tr><td>CLF (CLEAR Forward)</td><td>-&gt;</td><td>0 (normal)</td></tr> <tr><td>SEC (Switching Equip Congestion)</td><td>-&gt;</td><td>263(abnormal)</td></tr> <tr><td>CGC (Circuit Grp Congestion)</td><td>-&gt;</td><td>256 (abnormal)</td></tr> <tr><td>NNC (National Network Congestion)</td><td>-&gt;</td><td>257 (normal)</td></tr> <tr><td>ADI (ADDress Incomplete)</td><td>-&gt;</td><td>264 (normal)</td></tr> <tr><td>CFL (Call Failure)</td><td>-&gt;</td><td>258 (abnormal)</td></tr> <tr><td>SSB (SubScriber Busy)</td><td>-&gt;</td><td>265 (normal)</td></tr> <tr><td>UNN (UNallocated Number)</td><td>-&gt;</td><td>266 (normal)</td></tr> <tr><td>LOS (Line Out of Service)</td><td>-&gt;</td><td>267 (normal)</td></tr> <tr><td>SST (Send Special information Tone)</td><td>-&gt;</td><td>268 (normal)</td></tr> <tr><td>ACB (Access Barred)</td><td>-&gt;</td><td>259 (abnormal)</td></tr> <tr><td>DPN (Digital Path Not provided)</td><td>-&gt;</td><td>260 (abnormal)</td></tr> <tr><td>MPR (Misdialled trunk PRefix)</td><td>-&gt;</td><td>269 (normal)</td></tr> <tr><td>EUM (Extended Unsuccessful Message)</td><td>-&gt;</td><td>270 (normal)</td></tr> <tr><td>anyother UBM</td><td>-&gt;</td><td>271 (abnormal)</td></tr> </tbody> </table>				CLF (CLEAR Forward)	->	0 (normal)	SEC (Switching Equip Congestion)	->	263(abnormal)	CGC (Circuit Grp Congestion)	->	256 (abnormal)	NNC (National Network Congestion)	->	257 (normal)	ADI (ADDress Incomplete)	->	264 (normal)	CFL (Call Failure)	->	258 (abnormal)	SSB (SubScriber Busy)	->	265 (normal)	UNN (UNallocated Number)	->	266 (normal)	LOS (Line Out of Service)	->	267 (normal)	SST (Send Special information Tone)	->	268 (normal)	ACB (Access Barred)	->	259 (abnormal)	DPN (Digital Path Not provided)	->	260 (abnormal)	MPR (Misdialled trunk PRefix)	->	269 (normal)	EUM (Extended Unsuccessful Message)	->	270 (normal)	anyother UBM	->	271 (abnormal)
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	Implementation Reason: TM, CDR Builder																																																	
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	Q.723 Bluebook, Section 3.7																																														
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.																																																
	Details	<p>Implementation Info:            See 6.5.1.10 (1) for information pertaining to what message is marked as abnormal and normal.</p>																																																
<b>6.5.1.11</b>	Field	<b>H0H1_b</b>	Spec Ref	Q.723 Bluebook, Table 3																																														
	Definition	The Heading Code field for TUP																																																
	Details	n/a																																																

## 6.5.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.5.2.1</b>	IAM IAI	calledParty.telno callingParty.telno <sup>a</sup>	n/a
<b>6.5.2.2</b>	All other messages (with CIC)	n/a	dpc_m, opc_m, cic_m
<b>6.5.2.3</b>	GRS GRA	n/a	dpc_m, opc_m, cic_m <sup>b</sup>

a. Calling Line Identity (if present)

b. for every value of CIC implied by the Range Parameter

### 6.5.3 Call Trace Assistance

This section should reflect any changes made to the ISUP breakout definition.

Call Trace Assistance															
6.5.3.1	IAM IAI	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED	X				X	X	X						
		CALLING	X				X	X	X						
		OPCDPCCIC	X												
		OCN (if present)					X								
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		n/a		7		n/a						
		Cross Triggers	Local				Global								
			X												
6.5.3.2	SAM SAO	State of Call	CTState				CTEnhState								
		CALLED									X				
		OPCDPCCIC		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		n/a		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			Routing				n/a								

Call Trace Assistance															
6.5.3.3	RLG GRA	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		OPCDPCCIC		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			2 (OPCDPCCIC)		5 <sup>a</sup>		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			Cleared (RLC) Circuit Group Reset (GRA)				n/a								
6.5.3.4	CCF	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		OPCDPCCIC		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			2 (OPCDPCCIC)		n/a		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			Continuity Test Failed				n/a								

Call Trace Assistance											
6.5.3.5	GSM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		OPCDPCCIC		X	X						
		CALLING (if present)	X				X				
		OCN (if present)	X				X				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a		n/a		n/a		5000(mSec)		
		Cross Triggers		Local			Global				
				n/a			n/a				
		State of Call		CTState			CTEnhState				
				K_ANLS_NOCHANGE			n/a				
6.5.3.6	Others with CIC	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		OPCDPCCIC		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a		n/a		n/a		n/a		
		Cross Triggers		Local			Global				
				n/a			n/a				
		State of Call		CTState			CTEnhState				
				K_ANLS_NOCHANGE			n/a				

a.Times out any outstanding TCAP part associated with the call

## 6.6 FTZ T-ISUP

This section describes the breakout Requirements for the German National ISUP variant [2.3.22]. This is based on the standard ISUP breakout definition [6.4] with the following exceptions<sup>1</sup>. Those fields which are not available or cannot be sensibly mapped in IUP are marked as ‘Not Applicable to Protocol’ in the Spec ref text box. The original ISUP section numbering has been kept for ease of reference.

*Note: This breakout definition should be implemented as both a service layer breakout and a user data layer breakout, although the actual field setting etc. should be identical.*

### 6.6.1 Fields

FTZ T-ISUP MSU Breakout Fields				
<b>6.4.1.2</b>	Field	<b>cicRange_u</b>	Spec Ref	FTZ 163 TR 75, Section 4.3.1.23
	Definition	The Range sub-field of the Range and Status Parameter. Information sent in a circuit group supervision message (eg. Circuit Group Blocking) to indicate the range of circuits affected by the action in the message.		
	Details	Implementation Info: The T-ISUP Range parameter contains the number of circuits NOT the number of circuits -1. Thus the value of the Range parameter should be copied directly into cicRange_u.		
<b>6.4.1.18 (1)</b>  <b>(2)</b>  <b>(3)</b>	Field	<b>tnsNwkType_b</b>	Spec Ref	Not Applicable to Protocol
	Field	<b>compTNSNetworkId</b>	Spec Ref	Not Applicable to Protocol
	Field	<b>tnsCircuitCode_b</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.20 (1)</b>  <b>(2)</b>	Field	<b>releaseCode_u</b>	Spec Ref	FTZ 163 TR 75, Section 4.3.1.20
	Definition	The Cause Value subfield of the Cause Indicators Parameter. This is information sent in either direction containing the reason for sending the message in which it is contained.		
	Details	Implementation Info: See 6.4. This should also be derived from the UBM Cause Indicator Field, with the mapping being the same as for TUP (see 6.5.1.20)		
	Field	<b>abnormalFlag_b</b>	Spec Ref	n/a
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.		
Details		n/a		

1. Please note that FTZ T-ISUP is based on the ISUP definition of Revision 3.00 of the Breakout Document. Any subsequent fields added to ISUP definition after Revision 3.00 will not be included in the FTZ T-ISUP.

## 6.6.2 Capture Buffer Indices

This section should reflect any changes made to the ISUP breakout definition (see Section 6.4.2)

Capture Buffer Indices		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.6.2.1</b>	IAM	See Section 6.4.2.1
<b>6.6.2.2</b>	GRS GRA	See Section 6.4.2.2
<b>6.6.2.3</b>	Other	See Section 6.4.2.3

## 6.6.3 Call Trace Assistance

This section should reflect any changes made to the ISUP breakout definition (see Section 6.4.3)

Call Trace Assistance		
<b>6.6.3.1</b>	IAM	See Section 6.4.3.1
<b>6.6.3.2</b>	SAM	See Section 6.4.3.2
<b>6.6.3.3</b>	RLC GRA	See Section 6.4.3.3
<b>6.6.3.4</b>	COT (succ)	See Section 6.4.3.4
<b>6.6.3.5</b>	COT (fail)	See Section 6.4.3.5
<b>6.6.3.6</b>	ACM ANM SUS RES REL RSC GRS CON	See Section 6.4.3.6
<b>6.6.3.7</b>	INF	See Section 6.4.3.7
<b>6.6.3.8</b>	Other	See Section 6.4.3.8

## 6.7 IUP

### 6.7.1 Fields

This section describes the Breakout Requirements for the UK IUP variant [2.3.26]. This is based on the standard ISUP breakout definition [6.4] with the following exceptions<sup>1</sup>. Those fields which are not available or cannot be sensibly mapped in IUP are marked as ‘Not Applicable to Protocol’ in the Spec ref text box. The original ISUP section numbering has been kept for ease of reference.

IUP MSU Breakout Fields					
6.4.1.1	Field	cic_m	Spec Ref	PNO-ISC/SPEC/006, Section 1.2.2	
	Definition	The Circuit Identification Code. The Circuit Identification Code information identifies the physical path between a pair of exchanges.			
	Details	n/a			
6.4.1.2	Field	cicRange_u	Spec Ref	Not Applicable to Protocol	

1. Please note that UK IUP is based on the ISUP definition of Revision 3.00 of the Breakout Document. Any subsequent fields added to ISUP definition after Revision 3.00 will not be included in the UK IUP.

<b>IUP MSU Breakout Fields</b>												
<b>6.4.1.3 (1)</b>	Field	<b>messageType_b</b>	Spec Ref	Not Applicable to Protocol								
<b>(2)</b>	Field	<b>protIndMsgType</b>	Spec Ref	n/a								
	Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.										
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) The H0, H1 values for TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ul> <p>Note: These acronyms have been made up as no acronyms exist in the spec.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">FAM: IAM, IFAM -&gt; IAM; SAM, FAM-&gt; SAM</td> </tr> <tr> <td style="padding: 2px;">FSM: ASUI -&gt; INF</td> </tr> <tr> <td style="padding: 2px;">BSM: SASUI -&gt; INR; SND, SAD -&gt; no equivalent</td> </tr> <tr> <td style="padding: 2px;">BSIM: ACM -&gt; ACM; CONG, TCNG, CNA, RPTA, SUBE, SUBO -&gt; REL</td> </tr> <tr> <td style="padding: 2px;">CSM: ANS -&gt; ANM; CLR -&gt; SUS; RAN -&gt; RES; REL -&gt; REL; C&amp;FC, TKO, HOWL, ECL -&gt; no equivalent</td> </tr> <tr> <td style="padding: 2px;">CCM: CCTF -&gt; RLC; BLO -&gt; BLO; BLA -&gt; BLA; UBL -&gt; UBL; UBA -&gt; UBA; OLM -&gt; OLM</td> </tr> <tr> <td style="padding: 2px;">SIM: CON, SSV, SRV, OPC, UUD, SWAP, NEED -&gt; no equivalent; ACI, SIM-&gt; INF; UIS -&gt; SUS; UIR -&gt; RES</td> </tr> </table>				FAM: IAM, IFAM -> IAM; SAM, FAM-> SAM	FSM: ASUI -> INF	BSM: SASUI -> INR; SND, SAD -> no equivalent	BSIM: ACM -> ACM; CONG, TCNG, CNA, RPTA, SUBE, SUBO -> REL	CSM: ANS -> ANM; CLR -> SUS; RAN -> RES; REL -> REL; C&FC, TKO, HOWL, ECL -> no equivalent	CCM: CCTF -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; OLM -> OLM	SIM: CON, SSV, SRV, OPC, UUD, SWAP, NEED -> no equivalent; ACI, SIM-> INF; UIS -> SUS; UIR -> RES
FAM: IAM, IFAM -> IAM; SAM, FAM-> SAM												
FSM: ASUI -> INF												
BSM: SASUI -> INR; SND, SAD -> no equivalent												
BSIM: ACM -> ACM; CONG, TCNG, CNA, RPTA, SUBE, SUBO -> REL												
CSM: ANS -> ANM; CLR -> SUS; RAN -> RES; REL -> REL; C&FC, TKO, HOWL, ECL -> no equivalent												
CCM: CCTF -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; OLM -> OLM												
SIM: CON, SSV, SRV, OPC, UUD, SWAP, NEED -> no equivalent; ACI, SIM-> INF; UIS -> SUS; UIR -> RES												
<b>(3)</b>	Field	<b>typeOfMessage_b</b>	Spec Ref	n/a								
	Definition	The ‘protocol independant’ indication of the type of a call control message.										
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) K_GG59_INITIAL &lt;-&gt; IAM (FAM), IFAM (FAM)</li> <li>(2) K_GG59_FINAL &lt;-&gt; CCTF (CCM)</li> <li>(3) K_GG59_REL &lt;-&gt; REL (CSM)</li> <li>(4) K_GG59_CALLCTL &lt;-&gt; any other message</li> </ul> <p>Implementation Reason: CallTrace, CDR Builder</p>										
<b>6.4.1.4</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	Not Applicable to Protocol								
	Definition	The Calling Party Category Parameter. This contains information sent in the forward direction indicating the category of the calling party, eg. ordinary subscriber, payphone etc.										
	Details	Although IUP has a Calling Party Category field [4.16(a), 4.16(e)(iii)], the values bear no relation to ANSI ISUP. As a result, it does not make sense to extract this field.										
<b>6.4.1.5</b>	Field	<b>continuityIndtrs_b</b>	Spec Ref	Not Applicable to Protocol								
<b>6.4.1.6</b>	Field	<b>fwdCallInds_ba</b>	Spec Ref	Not Applicable to Protocol								
<b>6.4.1.7</b>	Field	<b>bckwdCallIndtrs_ba</b>	Spec Ref	Not Applicable to Protocol								

IUP MSU Breakout Fields				
<b>6.4.1.8</b> (1)	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	PNO-ISC/SPEC/006, Section 4.19
	Definition	The Nature of Address Indicator subfield of the Calling Line Identity parameter field.		
	Details	Implementation Info: The Nature of Address Indicator subfield of the Calling Line Identity parameter field should be mapped here.		
	(2)	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref Not Applicable to Protocol
	(3)	Field	<b>callingParty.telno</b>	Spec Ref PNO-ISC/SPEC/006, Section 4.19
	Definition	The Address Signal subfield of the Calling Line Identity parameter.		
	Details	Implementation Info: See 6.4.1.8 (3)		
<b>6.4.1.9</b> (1)	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref Not Applicable to Protocol
	(3)	Field	<b>calledParty.telno</b>	Spec Ref PNO-ISC/SPEC/006, Section 4.9
	Definition	The Called Party Address Signals parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 6.4.1.8 (3)).		
<b>6.4.1.10</b> (1)	Field	<b>ocn.natOfAddr_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	Field	<b>ocn.numberingPlan_b</b>	Spec Ref Not Applicable to Protocol
	(3)	Field	<b>ocn.telno</b>	Spec Ref Not Applicable to Protocol
<b>6.4.1.11</b> (1)	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	Field	<b>chargeNum.numberingPlan_b</b>	Spec Ref Not Applicable to Protocol
	(3)	Field	<b>chargeNum.telno</b>	Spec Ref Not Applicable to Protocol
<b>6.4.1.12</b> (1)	Field	<b>redirectingNum.natOfAddr_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	Field	<b>redirectingNum.numberingPlan_b</b>	Spec Ref Not Applicable to Protocol
	(3)	Field	<b>redirectingNum.telno</b>	Spec Ref Not Applicable to Protocol
<b>6.4.1.13</b>	Field	<b>redirectInfo_ba</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.14</b> (1)	Field	<b>genericAddress.natOfAddr_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	Field	<b>genericAddress.numberingPlan_b</b>	Spec Ref Not Applicable to Protocol
	(3)	Field	<b>genericTypeOfAddress_b</b>	Spec Ref Not Applicable to Protocol
	(4)	Field	<b>genericAddress.telno</b>	Spec Ref Not Applicable to Protocol
<b>6.4.1.15</b> (1)	Field	<b>lrn.natOfAddr_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	Field	<b>lrn.telno</b>	Spec Ref Not Applicable to Protocol

<b>IUP MSU Breakout Fields</b>				
<b>6.4.1.16 (1)</b>	Field	<b>userServiceInfoLen_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	<b>userServiceInfo_pb</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.17 (1)</b>	Field	<b>transMedReq_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	<b>transMedPrime_b</b>	Spec Ref	Not Applicable to Protocol
	(3)	<b>transMedUsed_b</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.18 (1)</b>	Field	<b>tnsNwkType_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	<b>compTNSNetworkId</b>	Spec Ref	Not Applicable to Protocol
	(3)	<b>tnsCircuitCode_b</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.19 (1)</b>	Field	<b>callRefIdentity_m</b>	Spec Ref	Not Applicable to Protocol
	(2)	<b>callRefPointcode_m</b>	Spec Ref	Not Applicable to Protocol

<b>IUP MSU Breakout Fields</b>																													
<b>6.4.1.20 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	PNO-ISC/SPEC/006, Section 4.15 & 4.24																									
	Definition	The Unsuccessful Backward set-up Messages (BSIM) and Call Supervision Messages (CSM) are used to define the reason for unsuccessful call set-up.																											
	Details	<p>Implementation Info: TUP does not have the concept of a single RELease message containing a Cause parameter. Instead it uses the Unsuccessful Backward Set-up Messages to define the reason for unsuccessful call set-up. These should be mapped as follows:</p> <p><b>H0=BSIM:</b></p> <table> <tr><td>CONG (CONGestion)</td><td>-&gt;</td><td>512 (abnormal)</td></tr> <tr><td>TCNG (Terminal Congestion)</td><td>-&gt;</td><td>513 (abnormal)</td></tr> <tr><td>RPTA (Repeat Attempt)</td><td>-&gt;</td><td>514 (abnormal)</td></tr> <tr><td>SUBE (Subscriber Engaged)</td><td>-&gt;</td><td>515 (normal)</td></tr> <tr><td>SUBO (Subscriber Out Of Order)</td><td>-&gt;</td><td>516 (normal)</td></tr> <tr><td>CNA (Connection Not Admitted)</td><td>-&gt;</td><td>Each value in Table 1 + 768 (300 hex)</td></tr> </table> <p>All Reasons other than those in Table 1 should be classed as Normal.</p> <p><b>H0=CSM, H1=REL</b> The values of the Reason Parameter should be handled as follows:</p> <table> <tr><td>Value 47</td><td>-&gt;</td><td>0 (normal)</td></tr> <tr><td>All other values</td><td>-&gt;</td><td>Each value in Table 1 + 1024 (400 hex)</td></tr> </table> <p>All Reasons other than those in Table 1 should be classed as Normal.</p>				CONG (CONGestion)	->	512 (abnormal)	TCNG (Terminal Congestion)	->	513 (abnormal)	RPTA (Repeat Attempt)	->	514 (abnormal)	SUBE (Subscriber Engaged)	->	515 (normal)	SUBO (Subscriber Out Of Order)	->	516 (normal)	CNA (Connection Not Admitted)	->	Each value in Table 1 + 768 (300 hex)	Value 47	->	0 (normal)	All other values	->	Each value in Table 1 + 1024 (400 hex)
CONG (CONGestion)	->	512 (abnormal)																											
TCNG (Terminal Congestion)	->	513 (abnormal)																											
RPTA (Repeat Attempt)	->	514 (abnormal)																											
SUBE (Subscriber Engaged)	->	515 (normal)																											
SUBO (Subscriber Out Of Order)	->	516 (normal)																											
CNA (Connection Not Admitted)	->	Each value in Table 1 + 768 (300 hex)																											
Value 47	->	0 (normal)																											
All other values	->	Each value in Table 1 + 1024 (400 hex)																											
	<b>Table 1: Abnormal CNA/REL Reasons</b>																												
	<table border="1"> <thead> <tr> <th>Reason</th><th>Description</th></tr> </thead> <tbody> <tr><td>2</td><td>Network Termination</td></tr> <tr><td>3</td><td>Service Unavailable</td></tr> <tr><td>7</td><td>Congestion (Re-routing not permitted)</td></tr> <tr><td>12</td><td>Network Protective Controls</td></tr> <tr><td>18</td><td>Remote Procedural Error</td></tr> <tr><td>30</td><td>Network Address Extension Error</td></tr> <tr><td>34</td><td>Protocol Violation</td></tr> <tr><td>55</td><td>Translation Out of Service</td></tr> </tbody> </table>				Reason	Description	2	Network Termination	3	Service Unavailable	7	Congestion (Re-routing not permitted)	12	Network Protective Controls	18	Remote Procedural Error	30	Network Address Extension Error	34	Protocol Violation	55	Translation Out of Service							
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34	Protocol Violation																												
55	Translation Out of Service																												
	Implementation Reason: TM, CDR Builder																												
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	PNO-ISC/SPEC/006, Section 4.15 & 4.24																									
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.																											
	Details	<p>Implementation Info: See 6.4.1.20 (1) above for information pertaining to what message is marked as abnormal and normal.</p>																											
<b>(3)</b>	Field	<b>relCauseLocn_b</b>	Spec Ref	Not Applicable to Protocol																									
<b>(4)</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	Not Applicable to Protocol																									

<b>IUP MSU Breakout Fields</b>				
<b>6.4.1.21</b>	Field	<b>olip_b</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.22</b>	Field	<b>carrierId_ba</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.23</b>	Field	<b>carrierSelection_b</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.24</b>	Field	<b>outTrunkNum.telno</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.25</b>	Field	<b>jurisdiction_ba</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.26</b>	Field	<b>serviceCode_b</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.27</b> (1)	Field	<b>isupParamList_b</b>	Spec Ref	Not Applicable to Protocol
	(2)	<b>isupParamCount_b</b>	Spec Ref	Not Applicable to Protocol
	(3)	<b>startOfISUPOptnl_pb</b>	Spec Ref	Not Applicable to Protocol
<b>6.4.1.28</b>	Field	<b>IUP_h0_b</b>	Spec Ref	Section 1.3
	Definition	The H0 field of the Heading Code for IUP		
	Details	n/a		
<b>6.4.1.28</b>	Field	<b>IUP_h1_b</b>	Spec Ref	Section 1.3
	Definition	The H1 field of the Heading Code for IUP		
	Details	n/a		

## 6.7.2 Capture Buffer Indice

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.7.2.1</b>	IAM IFAM	calledParty.telno callingParty.telno <sup>a</sup>	dpc_m, opc_m, cic_m
<b>6.7.2.2</b>	All other messages (with CIC)	n/a	dpc_m, opc_m, cic_m

a.Calling Line Identity (if present)

### 6.7.3 Call Trace Assistance

Call Trace Assistance															
<b>6.7.3.1</b>	IAM IFAM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED	X				X	X	X						
		CALLING (if present)	X				X	X	X						
		OPCDPCCIC	X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			n/a		n/a		7	n/a							
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			Routing				n/a								
<b>6.7.3.2</b>	SAM FAM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED								X					
		OPCDPCCIC		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			n/a		n/a		n/a	n/a							
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			Routing				n/a								

Call Trace Assistance															
6.7.3.3	CCTF	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		OPCDPCCIC		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			2 (OPCDPCCIC)		5 <sup>a</sup>		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			K_ANLS_NOCHANGE				n/a								
6.7.3.4	ACI ASUI SIM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		OPCDPCCIC		X	X										
		CALLING (if present)	X				X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		n/a		n/a		5000(mSec)						
		Cross Triggers	Local				Global								
			n/a				n/a								
		State of Call	CTState				CTEnhState								
			K_ANLS_NOCHANGE				n/a								
6.7.3.5	Others with CIC	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		OPCDPCCIC		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		n/a		n/a		n/a						
		Cross Triggers	Local				Global								
			n/a				n/a								
		State of Call	CTState				CTEnhState								
			K_ANLS_NOCHANGE				n/a								

a.Times out any outstanding TCAP part associated with the call

## 6.8 Finnish TUP

This section describes the Breakout Requirements for the Finnish TUP variant [2.3.29]. This is based on the standard TUP breakout definition [6.5] with the following exceptions. The original TUP section numbering has been kept for ease of reference.

### 6.8.1 Fields

Finnish TUP MSU Breakout Fields																									
6.5.1.3 (2)	Field	protIndMsgType	Spec Ref	TUP (Helsinki 1988), Table 2-1																					
	Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.																							
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) The H0, H1 values for TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ol>																							
		<table border="0"> <tr> <td>FAM:</td> <td>IAI -&gt; IAM; SAO -&gt; SAM</td> </tr> <tr> <td>FSM:</td> <td>GSM -&gt; INF;</td> </tr> <tr> <td>BSM:</td> <td>GRQ -&gt; INR</td> </tr> <tr> <td>SBM:</td> <td>ACM -&gt; ACM; MPM -&gt; CHG</td> </tr> <tr> <td>UBM:</td> <td>SEC, CGC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, DPN, SNC, CON, EUM -&gt; REL</td> </tr> <tr> <td>CSM:</td> <td>ANU -&gt; ANM; CBK -&gt; SUS; CLF -&gt; REL; TOS, TOR -&gt; no equivalent</td> </tr> <tr> <td>CCM:</td> <td>RLG -&gt; RLC; BLO -&gt; BLO; BLA -&gt; BLA; UBL -&gt; UBL; UBA -&gt; UBA; RSC -&gt; RSC</td> </tr> <tr> <td>GRM</td> <td>MGB, HGB -&gt; CGB; MBA, HBA -&gt; CGBA; MGU, HGU -&gt; CGU; MUA, HUA -&gt; CGUA; GRS -&gt; GRS; GRA -&gt; GRA</td> </tr> <tr> <td>NNM</td> <td>no equivalent</td> </tr> <tr> <td>SFM</td> <td>no equivalent</td> </tr> </table>				FAM:	IAI -> IAM; SAO -> SAM	FSM:	GSM -> INF;	BSM:	GRQ -> INR	SBM:	ACM -> ACM; MPM -> CHG	UBM:	SEC, CGC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, DPN, SNC, CON, EUM -> REL	CSM:	ANU -> ANM; CBK -> SUS; CLF -> REL; TOS, TOR -> no equivalent	CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; RSC -> RSC	GRM	MGB, HGB -> CGB; MBA, HBA -> CGBA; MGU, HGU -> CGU; MUA, HUA -> CGUA; GRS -> GRS; GRA -> GRA	NNM	no equivalent	SFM	no equivalent
FAM:	IAI -> IAM; SAO -> SAM																								
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CSM:	ANU -> ANM; CBK -> SUS; CLF -> REL; TOS, TOR -> no equivalent																								
CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; RSC -> RSC																								
GRM	MGB, HGB -> CGB; MBA, HBA -> CGBA; MGU, HGU -> CGU; MUA, HUA -> CGUA; GRS -> GRS; GRA -> GRA																								
NNM	no equivalent																								
SFM	no equivalent																								

<b>Finnish TUP MSU Breakout Fields</b>																																																		
<b>6.5.1.20 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	TUP (Helsinki 1988), Section 3.7																																														
	Definition	The Unsuccessful Backward set-up Messages are used to define the reason for unsuccessful call set-up.																																																
	Details	<p>Implementation Info:            TUP does not have the concept of a single RELease message containing a Cause parameter.            Instaed it uses the Unsuccessful Backward Set-up Messages to define the reason for unsuccessful call set-up. These should be mapped as follows:</p> <table> <tbody> <tr><td>CLF (CLEAR Forward)</td><td>-&gt;</td><td>0 (normal)</td></tr> <tr><td>SEC (Switching Equip Congestion)</td><td>-&gt;</td><td>263(abnormal)</td></tr> <tr><td>CGC (Circuit Grp Congestion)</td><td>-&gt;</td><td>256 (abnormal)</td></tr> <tr><td>ADI (ADdress Incomplete)</td><td>-&gt;</td><td>264 (normal)</td></tr> <tr><td>CFL (Call FaiLure)</td><td>-&gt;</td><td>258 (abnormal)</td></tr> <tr><td>SSB (SubScriber Busy)</td><td>-&gt;</td><td>265 (normal)</td></tr> <tr><td>UNN (UNallocated Number)</td><td>-&gt;</td><td>266 (normal)</td></tr> <tr><td>LOS (Line Out of Service)</td><td>-&gt;</td><td>267 (normal)</td></tr> <tr><td>SST (Send Special information Tone)</td><td>-&gt;</td><td>268 (normal)</td></tr> <tr><td>ACB (Access Barred)</td><td>-&gt;</td><td>259 (abnormal)</td></tr> <tr><td>DPN (Digital Path Not provided)</td><td>-&gt;</td><td>260 (abnormal)</td></tr> <tr><td>SNC (Subscriber Number Changed)</td><td>-&gt;</td><td>272 (normal)</td></tr> <tr><td>CON (Congestion)</td><td>-&gt;</td><td>273 (abnormal)</td></tr> <tr><td>EUM (Extended Unsuccessful Message)</td><td>-&gt;</td><td>270 (normal)</td></tr> <tr><td>anyother UBM</td><td>-&gt;</td><td>271 (abnormal)</td></tr> </tbody> </table>				CLF (CLEAR Forward)	->	0 (normal)	SEC (Switching Equip Congestion)	->	263(abnormal)	CGC (Circuit Grp Congestion)	->	256 (abnormal)	ADI (ADdress Incomplete)	->	264 (normal)	CFL (Call FaiLure)	->	258 (abnormal)	SSB (SubScriber Busy)	->	265 (normal)	UNN (UNallocated Number)	->	266 (normal)	LOS (Line Out of Service)	->	267 (normal)	SST (Send Special information Tone)	->	268 (normal)	ACB (Access Barred)	->	259 (abnormal)	DPN (Digital Path Not provided)	->	260 (abnormal)	SNC (Subscriber Number Changed)	->	272 (normal)	CON (Congestion)	->	273 (abnormal)	EUM (Extended Unsuccessful Message)	->	270 (normal)	anyother UBM	->	271 (abnormal)
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	Implementation Reason: TM, CDR Builder																																																	
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	TUP (Helsinki 1988), Section 3.7																																														
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.																																																
	Details	<p>Implementation Info:            See 6.5.1.20 (1) for information pertaining to what message is marked as abnormal and normal.</p>																																																

## 6.8.2 Capture Buffer Indices

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.2)

Capture Buffer Indices		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.8.2.1</b>	IAM IAI	See 6.5.2.1
<b>6.8.2.2</b>	All other messages (with CIC)	See 6.5.2.2
<b>6.8.2.3</b>	GRS GRA	See 6.5.2.3

## 6.8.3 Call Trace Assistance

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.3)

Call Trace Assistance		
<b>6.8.3.1</b>	IAM IAI	See Section 6.4.3.1
<b>6.8.3.2</b>	SAM SAO	See Section 6.4.3.2
<b>6.8.3.3</b>	RLG GRA	See Section 6.4.3.3
<b>6.8.3.4</b>	CCF	See Section 6.4.3.4
<b>6.8.3.5</b>	GSM	See Section 6.4.3.5
<b>6.8.3.6</b>	Other	See Section 6.4.3.6

## 6.9 Australian TUP

This section describes the Breakout Requirements for the Australian TUP variant [2.3.31]. This is based on the standard TUP breakout definition [6.5] with the following exceptions. The original TUP section numbering has been kept for ease of reference.

### 6.9.1 Fields

<b>Australlian TUP MSU Breakout Fields</b>																						
<b>6.5.1.3 (2)</b>	Field	<b>protIndMsgType</b>	Spec Ref	TP 00846S, Section 6.3.2																		
	Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.																				
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) The H0, H1 values for TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ul>																				
		<table border="0"> <tr> <td>FAM:</td> <td>IAM, IAI -&gt; IAM; SAM, SAO -&gt; SAM</td> </tr> <tr> <td>FSM:</td> <td>CPI -&gt; INF</td> </tr> <tr> <td>BSM:</td> <td>CPR -&gt; INR; MSC -&gt; no equivalent</td> </tr> <tr> <td>SBM:</td> <td>ACM -&gt; ACM</td> </tr> <tr> <td>UBM:</td> <td>SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SCC -&gt; REL</td> </tr> <tr> <td>CSM:</td> <td>ANS -&gt; ANM; CBK, CLF, FRL -&gt; REL; RAN -&gt; RES;</td> </tr> <tr> <td>CCM:</td> <td>RLG -&gt; RLC; BLO -&gt; BLO; BLA -&gt; BLA; UBL -&gt; UBL; UBA -&gt; UBA;</td> </tr> <tr> <td>RSC</td> <td>RSC -&gt; RSC</td> </tr> <tr> <td>GRM</td> <td>GRS -&gt; GRS; GRA -&gt; GRA</td> </tr> </table>			FAM:	IAM, IAI -> IAM; SAM, SAO -> SAM	FSM:	CPI -> INF	BSM:	CPR -> INR; MSC -> no equivalent	SBM:	ACM -> ACM	UBM:	SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SCC -> REL	CSM:	ANS -> ANM; CBK, CLF, FRL -> REL; RAN -> RES;	CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA;	RSC	RSC -> RSC	GRM	GRS -> GRS; GRA -> GRA
FAM:	IAM, IAI -> IAM; SAM, SAO -> SAM																					
FSM:	CPI -> INF																					
BSM:	CPR -> INR; MSC -> no equivalent																					
SBM:	ACM -> ACM																					
UBM:	SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SCC -> REL																					
CSM:	ANS -> ANM; CBK, CLF, FRL -> REL; RAN -> RES;																					
CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA;																					
RSC	RSC -> RSC																					
GRM	GRS -> GRS; GRA -> GRA																					
<b>6.5.1.5</b>	Field	<b>continuityIndctrs_b</b>	Spec Ref	Not Applicable to Protocol																		
<b>6.5.1.10 (3)</b>	Field	<b>ocn.telno</b>	Spec Ref	Not Applicable to Protocol																		

<b>Australian TUP MSU Breakout Fields</b>										
<b>6.9.1.1 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	TP 00846S, Section 6.3.2						
	Definition	The Unsuccessful Backward set-up Messages are used to define the reason for unsuccessful call set-up.								
	Details	<p>Implementation Info:            TUP does not have the concept of a single RELease message containing a Cause parameter.            Instead it uses the Unsuccessful Backward Set-up Messages to define the reason for unsuccessful call set-up. These should be mapped as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>SCC (Switching or Circuit Congestion)</td> <td>-&gt;</td> <td>261 (abnormal)</td> </tr> <tr> <td>FRL (Forced Release)</td> <td>-&gt;</td> <td>262 (normal)</td> </tr> </table> <p>Implementation Reason: TM, CDR Builder</p>			SCC (Switching or Circuit Congestion)	->	261 (abnormal)	FRL (Forced Release)	->	262 (normal)
SCC (Switching or Circuit Congestion)	->	261 (abnormal)								
FRL (Forced Release)	->	262 (normal)								
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	TP 00846S, Section, 6.3.2						
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.								
	Details	<p>Implementation Info:            See 6.5.1.20 (1) for information pertaining to what message is marked as abnormal and normal.</p>								

## 6.9.2 Capture Buffer Indices

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.2)

Capture Buffer Indices		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.9.2.1</b>	IAM IAI	See 6.5.2.1
<b>6.9.2.2</b>	All other messages (with CIC)	See 6.5.2.2
<b>6.9.2.3</b>	GRS GRA	See 6.5.2.3

## 6.9.3 Call Trace Assistance

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.3)

Call Trace Assistance		
<b>6.9.3.1</b>	IAM IAI	See Section 6.4.3.1
<b>6.9.3.2</b>	SAM SAO	See Section 6.4.3.2
<b>6.9.3.3</b>	RLG GRA	See Section 6.4.3.3
<b>6.9.3.4</b>	CCF	See Section 6.4.3.4
<b>6.9.3.5</b>	GSM	See Section 6.4.3.5
<b>6.9.3.6</b>	Other	See Section 6.4.3.6

## 6.10 French TUP

This section describes the Breakout Requirements for the French TUP variant [2.3.40-2]. This is based on the standard TUP breakout definition [6.5] with the following exceptions. The original TUP section numbering has been kept for ease of reference.

### 6.10.1 Fields

French TUP MSU Breakout Fields																																			
6.5.1.2	Field	cicRange_u	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.12																															
	Definition	The Range sub-field of the Range and Status Parameter. Information sent in a circuit group supervision message (eg. Circuit Group Blocking) to indicate the range of circuits affected by the action in the message.																																	
	Details	Implementation Info: Although the RZG and RZA messages do not contain a status field i.e. the Range will be zero, the breakout should be coded to handle non-zero values.																																	
6.5.1.3 (2)	Field	protIndMsgType	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.3 Fig 1																															
	Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.																																	
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) The H0, H1 values for French TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ol> <p>Note: The equivalent TUP values are in brackets after the mapping.</p>																																	
		<table> <tbody> <tr> <td>MT:</td> <td>CHT, ITX, TXA -&gt; CRG (no equivalent)</td> </tr> <tr> <td>AD:</td> <td>MSA -&gt; SAM (SAM); MSS -&gt; SAM (SAO)</td> </tr> <tr> <td>EA:</td> <td>IFG -&gt; INF (GSM); CCP -&gt; COT (COT); CCN -&gt; COT (CCF)</td> </tr> <tr> <td>DE:</td> <td>DEG -&gt; INR (GRQ)</td> </tr> <tr> <td>SE:</td> <td>TAX -&gt; CRG (CHG)</td> </tr> <tr> <td>EE:</td> <td>EEC -&gt; REL (SEC); EFC -&gt; REL (CGC); ERN -&gt; REL (NNC); ECH -&gt; REL (CFL); OCC -&gt; REL (SSB); NNU -&gt; REL (UNN), LHS -&gt; REL (LOS); TSI -&gt; REL (SST); ACI -&gt; REL (ACB); INU -&gt; REL (MPR)</td> </tr> <tr> <td>SA:</td> <td>NRP -&gt; RES (RAN)</td> </tr> <tr> <td>SC:</td> <td>LIG -&gt; RLC (RLG); BLO -&gt; BLO (BLO); BLA -&gt; BLA (BLA); DBO -&gt; UBL (UBL); DBA -&gt; UBA (UBA); CCD -&gt; CCR (CCR); RZC -&gt; RSC (RSC)</td> </tr> <tr> <td>SG:</td> <td>RZG -&gt; GRS (GRS); RZA -&gt; GRA (GRA)</td> </tr> <tr> <td>GR:</td> <td>no equivalent (no H1 messages)</td> </tr> <tr> <td>MB:</td> <td>MUU, MCE -&gt; INF (no equivalent)</td> </tr> <tr> <td>EN:</td> <td>ACF -&gt; ACM (ACM)</td> </tr> <tr> <td>ET:</td> <td>MIF -&gt; IAM (IAM)</td> </tr> <tr> <td>EC:</td> <td>SND -&gt; REL (no equivalent);</td> </tr> <tr> <td>SN:</td> <td>RIU -&gt; ANM(ANM); RAU -&gt; SUS(CBK); FIU -&gt; REL (CFL)</td> </tr> </tbody> </table>				MT:	CHT, ITX, TXA -> CRG (no equivalent)	AD:	MSA -> SAM (SAM); MSS -> SAM (SAO)	EA:	IFG -> INF (GSM); CCP -> COT (COT); CCN -> COT (CCF)	DE:	DEG -> INR (GRQ)	SE:	TAX -> CRG (CHG)	EE:	EEC -> REL (SEC); EFC -> REL (CGC); ERN -> REL (NNC); ECH -> REL (CFL); OCC -> REL (SSB); NNU -> REL (UNN), LHS -> REL (LOS); TSI -> REL (SST); ACI -> REL (ACB); INU -> REL (MPR)	SA:	NRP -> RES (RAN)	SC:	LIG -> RLC (RLG); BLO -> BLO (BLO); BLA -> BLA (BLA); DBO -> UBL (UBL); DBA -> UBA (UBA); CCD -> CCR (CCR); RZC -> RSC (RSC)	SG:	RZG -> GRS (GRS); RZA -> GRA (GRA)	GR:	no equivalent (no H1 messages)	MB:	MUU, MCE -> INF (no equivalent)	EN:	ACF -> ACM (ACM)	ET:	MIF -> IAM (IAM)	EC:	SND -> REL (no equivalent);	SN:	RIU -> ANM(ANM); RAU -> SUS(CBK); FIU -> REL (CFL)
MT:	CHT, ITX, TXA -> CRG (no equivalent)																																		
AD:	MSA -> SAM (SAM); MSS -> SAM (SAO)																																		
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SC:	LIG -> RLC (RLG); BLO -> BLO (BLO); BLA -> BLA (BLA); DBO -> UBL (UBL); DBA -> UBA (UBA); CCD -> CCR (CCR); RZC -> RSC (RSC)																																		
SG:	RZG -> GRS (GRS); RZA -> GRA (GRA)																																		
GR:	no equivalent (no H1 messages)																																		
MB:	MUU, MCE -> INF (no equivalent)																																		
EN:	ACF -> ACM (ACM)																																		
ET:	MIF -> IAM (IAM)																																		
EC:	SND -> REL (no equivalent);																																		
SN:	RIU -> ANM(ANM); RAU -> SUS(CBK); FIU -> REL (CFL)																																		

<b>French TUP MSU Breakout Fields</b>				
<b>6.10.1.1</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1
	Definition	The Calling Party Category Parameter. This contains information sent in the forward direction indicating the category of the calling party, eg. ordinary subscriber, payphone etc.		
	Details	<p>Implementation Info:            The Calling Party Category field is equivalent to the ISUP values with the following exceptions:            001110 (payphone) should be mapped to ISUP value 001111 (payphone)            001111 (reserved) should be mapped to ISUP value 001110 (reserved)            Note that the field is 7 bits and bit G is used in NV5 (see p3 of 2.3.41).</p>		
<b>6.5.1.7</b>	Field	<b>bckwdCallIndctr_ba</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.8.1
	Definition	The Message Indicators Parameter. This is information sent in the backward direction containing; charge indicator, called party's status indicator, called party's category indicator, end-to-end method indicator, interworking indicator, end-to-end information indicator, ISDN User Part indicator, holding indicator, ISDN access indicator, echo control device indicator and SCCP method indicator		
	Details	Implementation Info: The contents of the Message Indicators parameters should be extracted into this field from message ACF.		
<b>6.5.1.9 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1
	Definition	The Translation Code field of the Additional Routing Information.		
	Details	Implementation Info: The Translation Code field of the Additional Routing Information in the Message Indicators parameter should be mapped into the calldNatOfAddr_b by adding 1 to the value. This results in the national and international values (2 and 3) being mapped onto the ANSI ISUP equivalents (3 and 4).		
	Field	<b>calledParty.telno</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1.P 8,9
	Definition	The Called Party Address Signals parameter of the Initial Addres message		
	Details	Implementation Info: This should be extracted using the same rules as defined for called-Party.telno (see 6.4.1.8 (3)).		
<b>6.5.1.8 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1
	Definition	The Nature of Address Indicator subfield of the Line Identity parameter.		
	Details	Implementation Info: The Nature of Address indicator, in the Line Identityof the Line Identity parameter should be mapped to the equivalent ISUP Calling Party Address Nature of Address Indicator.		
	Field	<b>callingParty.telno</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1
	Definition	The Calling Line Identity parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 6.4.1.8 (3)).		

<b>French TUP MSU Breakout Fields</b>				
<b>6.5.1.10 (1)</b>	Field	<b>ocn.natOfAddr_b</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1
	Definition	The Nature of 1st Called Party Address in the Identity of 1st Called Party Parameter.		
	Details	Implementation Info: The Nature of 1st Called Party Address in the Identity of 1st Called Party Parameter should be mapped to the equivalent ISUP Original Called Party Number Nature of Address Indicator value.		
<b>(3)</b>	Field	<b>ocn.telno</b>	Spec Ref	ST/PAA/CER/SCS/2600, Section 2.5.1
	Definition	The Address Signal subfield of the Original Called Number parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling Party.telno (see 6.4.1.8 (3)).		

<b>French TUP MSU Breakout Fields</b>																																
<b>6.4.1.20 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	Section 2.9.3																												
	Definition	The Unsuccessful Backward set-up Messages (BSIM) and Call Supervision Messages (CSM) are used to define the reason for unsuccessful call set-up.																														
	Details	<p>Implementation Info:            TUP does not have the concept of a single RELEase message containing a Cause parameter. Instead it uses the EE (Backward Set-up Failure) Messages and the SND to define the reason for unsuccessfull call set-up. These should be mapped as follows:</p> <p>(1) EE Messages should be mapped as follows:</p> <table> <tbody> <tr><td>EEC</td><td>-&gt; 274 (abnormal)</td></tr> <tr><td>EFC</td><td>-&gt; 275 (abnormal)</td></tr> <tr><td>ERN</td><td>-&gt; 276 (normal)</td></tr> <tr><td>ECH</td><td>-&gt; 277 (abnormal)</td></tr> <tr><td>OCC</td><td>-&gt; 278 (normal)</td></tr> <tr><td>NNU</td><td>-&gt; 279 (normal)</td></tr> <tr><td>LHS</td><td>-&gt; 280 (normal)</td></tr> <tr><td>TSI</td><td>-&gt; 281 (normal)</td></tr> <tr><td>ACI</td><td>-&gt; 282 (abnormal)</td></tr> <tr><td>INU</td><td>-&gt; 283 (normal)</td></tr> <tr><td>other EE</td><td>-&gt; 284 (abnormal)</td></tr> </tbody> </table> <p>(2) SND messages should be mapped according to the value of the SND Causes Parameters (see Table 2):</p>				EEC	-> 274 (abnormal)	EFC	-> 275 (abnormal)	ERN	-> 276 (normal)	ECH	-> 277 (abnormal)	OCC	-> 278 (normal)	NNU	-> 279 (normal)	LHS	-> 280 (normal)	TSI	-> 281 (normal)	ACI	-> 282 (abnormal)	INU	-> 283 (normal)	other EE	-> 284 (abnormal)					
EEC	-> 274 (abnormal)																															
EFC	-> 275 (abnormal)																															
ERN	-> 276 (normal)																															
ECH	-> 277 (abnormal)																															
OCC	-> 278 (normal)																															
NNU	-> 279 (normal)																															
LHS	-> 280 (normal)																															
TSI	-> 281 (normal)																															
ACI	-> 282 (abnormal)																															
INU	-> 283 (normal)																															
other EE	-> 284 (abnormal)																															
	<b>Table 2:</b>																															
	<table border="1"> <thead> <tr> <th>Cause</th><th>releaseCode_u</th><th>Description</th><th>abnormalFlag_b</th></tr> </thead> <tbody> <tr><td>0</td><td>285</td><td>Cause Undetermined</td><td>abnormal</td></tr> <tr><td>1</td><td>286</td><td>Transfer of Access Data Impossible</td><td>abnormal</td></tr> <tr><td>2</td><td>287</td><td>Incompatibility of Support Service</td><td>abnormal</td></tr> <tr><td>3</td><td>288</td><td>Incompatibility of Support Service and Transfer of Access Data Impossible</td><td>abnormal</td></tr> <tr><td>4</td><td>289</td><td>Called Party Busy</td><td>normal</td></tr> <tr><td>Other</td><td>290</td><td>Unexpected SND</td><td>abnormal</td></tr> </tbody> </table>				Cause	releaseCode_u	Description	abnormalFlag_b	0	285	Cause Undetermined	abnormal	1	286	Transfer of Access Data Impossible	abnormal	2	287	Incompatibility of Support Service	abnormal	3	288	Incompatibility of Support Service and Transfer of Access Data Impossible	abnormal	4	289	Called Party Busy	normal	Other	290	Unexpected SND	abnormal
Cause	releaseCode_u	Description	abnormalFlag_b																													
0	285	Cause Undetermined	abnormal																													
1	286	Transfer of Access Data Impossible	abnormal																													
2	287	Incompatibility of Support Service	abnormal																													
3	288	Incompatibility of Support Service and Transfer of Access Data Impossible	abnormal																													
4	289	Called Party Busy	normal																													
Other	290	Unexpected SND	abnormal																													
	Implementation Reason: TM, CDR Builder																															
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	Section 4.15 & 4.24																												
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.																														
	Details	<p>Implementation Info:            See 6.5.1.20 (1) for information pertaining to what message is marked as abnormal and normal.</p>																														

## 6.10.2 Capture Buffer Indices

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.2)

Capture Buffer Indices		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.10.2.1</b>	MIF	Treat as IAM - See Section 6.5.2.1
<b>6.10.2.2</b>	All other messages with CIC (including MSA and MSS)	See Section 6.5.2.2
<b>6.10.2.3</b>	RZG RZA	Treat as GRS, GRA - See Section 6.5.2.3

## 6.10.3 Call Trace Assistance

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.3)

Call Trace Assistance		
<b>6.10.3.1</b>	MIF	Treat as IAM - See Section 6.5.3.1
<b>6.10.3.2</b>	MSA MSS	Treat as SAM, SAO - See Section 6.5.3.2
<b>6.10.3.3</b>	LIG RZA	Treat as RLG, GRA - See Section 6.5.3.3
<b>6.10.3.4</b>	CCN	Treat as CCF - See Section 6.5.3.4
<b>6.10.3.5</b>	IFG	Treat as GSM - See Section 6.5.3.5
<b>6.10.3.6</b>	All Others which include a CIC (inc MSA and MSS)	See Section 6.5.3.6

## 6.11 Brazilian TUP

### 6.11.1 Fields

This section describes the Breakout Requirements for the Brazilian TUP variant [2.3.43]. This is based on the standard TUP breakout definition [6.5] with the following exceptions. The original TUP section numbering has been kept for ease of reference.

Brazilian TUP MSU Breakout Fields						
6.5.1.3 (2)	Field	Spec Ref				
	Definition	The ‘protocol independant’ message type code.				
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) The H0, H1 values for Brazilian TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ul>				
	FAM: IAI -> IAM; SAM, SAO -> SAM FSM: GSM -> INF; COT, CCF -> COT BSM: GRQ -> INR SBM: ACM -> ACM; SPM, CHG -> CHG UBM: CRF, CCD, ADI, CFL, SSB, UNN, LOS, MPR, AMD -> REL CSM: ANC, ANN -> ANM; CBK -> SUS; CLF -> REL; RAN -> RES CCM: RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; CCR -> CCR; RSC -> RSC GRM: MGB, HGB, SGB -> CGB; MBA, HBA, SBA -> CGBA; MGU, HGU, SGU -> CGU; MUA, HUA, SUA -> CGUA; GRS -> GRS; GRA -> GRA					
6.5.1.9 (1)	Field	Spec Ref	210-110-724, 3.3.1 (f)			
	Definition	The Nature of Address Indicator subfield of the Called Party Number parameter.				
	Details	Implementation Info: The Nature of Address indicator, in the Message Indicators parameter of the IAI should be broken out into this field.				
(3)	Field	Spec Ref	210-110-724, 3.3.1 (h)			
	Definition	The Address Signals parameter of the Initial Address with Additional Information message.				
	Details	Implementation Info: This should be extracted using the same rules as defined for called-Party.telno (see 6.4.1.8 (3)). The exception being that no ST digit exists in Brazilian TUP.				

<b>6.5.1.8 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	210-110-724, 3.3.1 (m)
Definition		The Nature of Address Indicator subfield of the Calling Party Number parameter.		
Details		Implementation Info: The Nature of Address indicator, in the Address Indicators subfield of the Line Identity parameter should be broken out into this field.		
<b>(3)</b>	Field	<b>callingParty.telno</b>	Spec Ref	210-110-724, 3.3.2 (m)
	Definition	The Calling Line Identity parameter.		
	Details	Implementation Info: This should be extracted using the same rules as defined for calling-Party.telno (see 6.5.1.8 (3)). The exception being that no ST digit exists in Brazilian TUP.		
<b>6.5.1.10 (3)</b>	Field	<b>ocn.telno</b>	Spec Ref	Not Applicable to Protocol
<b>6.5.1.20 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	210-110-724, Section 3.7.1 (c)
	Definition	This is a ‘protocol independant’ release code which should be mapped onto the ANSI ISUP values (new values can be added assuming they don’t clash with existing values).		
	Details	Brazilian TUP does not have the concept of a single RELEase message containing a Cause parameter, instead it uses the following UBM messages:  CRF (Network Congestion Ahead) -> 292 (normal) <b>new</b> CCD (Congestion at Dest Exchange) -> 293 (normal) <b>new</b> ADI (ADdress Incomplete) -> 264 (normal) CFL (Call FaiLure) -> 258 (abnormal) SSB (SubScriber Busy) -> 265 (normal) UNN (UNallocated Number) -> 266 (normal) LOS (Line Out of Service) -> 267 (normal) MPR (Misdialled trunk PRefix) -> 269 (normal) AMD (Subscriber with Changed No) -> 294 (normal) <b>new</b>		
<b>(2)</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	210-110-724, Section 3.7.1 (c)
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u		
	Details	See 1.1.1.2 for information pertaining to what message is marked as abnormal and normal.		

## 6.11.2 Capture Buffer Indices

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.2)

Capture Buffer Indices		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.11.2.1</b>	IAM IAI	See 6.5.2.1
<b>6.11.2.2</b>	All other messages (with CIC)	See 6.5.2.2
<b>6.11.2.3</b>	GRS GRA	See 6.5.2.3

## 6.11.3 Call Trace Assistance

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.3)

Call Trace Assistance		
<b>6.11.3.1</b>	IAM IAI	See Section 6.4.3.1
<b>6.11.3.2</b>	SAM SAO	See Section 6.4.3.2
<b>6.11.3.3</b>	RLG GRA	See Section 6.4.3.3
<b>6.11.3.4</b>	CCF	See Section 6.4.3.4
<b>6.11.3.5</b>	GSM	See Section 6.4.3.5
<b>6.11.3.6</b>	Other	See Section 6.4.3.6

## 6.12 Chinese TUP

### 6.12.1 Fields

This section describes the Breakout Requirements for the China TUP variant [2.3.48]. This is based on the standard TUP breakout definition [6.5] with the following exceptions. The original TUP section numbering has been kept for ease of reference.

Chinnese TUP MSU Breakout Fields																															
6.5.1.3 (1)	Field	Spec Ref	TUP (China '90) Table 4-1																												
	Definition	The ‘protocol independant’ message type code. This should be mapped onto the ANSI ISUP values if different.																													
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) The H0, H1 values for TUP map onto the equivalent ISUP values (see below)</li> <li>(2) The invalid H0, H1 values should be mapped onto K_GG59_PROT_IND_INVALID_VALUE</li> <li>(3) The H0, H1 values where there is no obvious equivalent in ISUP, the values should be mapped to 0</li> </ol> <table border="0"> <tr> <td>FAM:</td> <td>IAM, IAI -&gt; IAM; SAM, SAO -&gt; SAM</td> </tr> <tr> <td>FSM:</td> <td>GSM -&gt; INF; COT, CCF -&gt; COT</td> </tr> <tr> <td>BSM:</td> <td>GRQ -&gt; INR</td> </tr> <tr> <td>SBM:</td> <td>ACM -&gt; ACM; CHG -&gt; CHG</td> </tr> <tr> <td>UBM:</td> <td>SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, <b>MPR</b>, EUM -&gt; REL</td> </tr> <tr> <td>CSM:</td> <td>ANU, ANC, ANN -&gt; ANM; CBK -&gt; SUS; CLF -&gt; REL; RAN -&gt; RES; FOT -&gt; FOT</td> </tr> <tr> <td>CCM:</td> <td>RLG -&gt; RLC; BLO -&gt; BLO; BLA -&gt; BLA; UBL -&gt; UBL; UBA -&gt; UBA; CCR -&gt; CCR; RSC -&gt; RSC</td> </tr> <tr> <td>GRM:</td> <td>MGB, HGB, SGB -&gt; CGB; MBA, HBA, SBA -&gt; CGBA; MGU, HGU, SGU -&gt; CGU; MUA, HUA, SUA -&gt; CGUA; GRS -&gt; GRS; GRA -&gt; GRA</td> </tr> <tr> <td>CNM:</td> <td>ACC -&gt; OLM</td> </tr> <tr> <td>NSB:</td> <td><b>MPM</b> -&gt; <b>CHG</b></td> </tr> <tr> <td>NCB:</td> <td><b>OPR</b> -&gt; <b>no equivalent</b></td> </tr> <tr> <td>NUB:</td> <td><b>SLB, STB</b> -&gt; <b>REL</b></td> </tr> <tr> <td>NAM:</td> <td><b>MAL</b> -&gt; <b>no equivalent</b></td> </tr> </table>				FAM:	IAM, IAI -> IAM; SAM, SAO -> SAM	FSM:	GSM -> INF; COT, CCF -> COT	BSM:	GRQ -> INR	SBM:	ACM -> ACM; CHG -> CHG	UBM:	SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, <b>MPR</b> , EUM -> REL	CSM:	ANU, ANC, ANN -> ANM; CBK -> SUS; CLF -> REL; RAN -> RES; FOT -> FOT	CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; CCR -> CCR; RSC -> RSC	GRM:	MGB, HGB, SGB -> CGB; MBA, HBA, SBA -> CGBA; MGU, HGU, SGU -> CGU; MUA, HUA, SUA -> CGUA; GRS -> GRS; GRA -> GRA	CNM:	ACC -> OLM	NSB:	<b>MPM</b> -> <b>CHG</b>	NCB:	<b>OPR</b> -> <b>no equivalent</b>	NUB:	<b>SLB, STB</b> -> <b>REL</b>	NAM:	<b>MAL</b> -> <b>no equivalent</b>
FAM:	IAM, IAI -> IAM; SAM, SAO -> SAM																														
FSM:	GSM -> INF; COT, CCF -> COT																														
BSM:	GRQ -> INR																														
SBM:	ACM -> ACM; CHG -> CHG																														
UBM:	SEC, CGC, NNC, ADI, CFL, SSB, UNN, LOS, SST, ACB, DPN, <b>MPR</b> , EUM -> REL																														
CSM:	ANU, ANC, ANN -> ANM; CBK -> SUS; CLF -> REL; RAN -> RES; FOT -> FOT																														
CCM:	RLG -> RLC; BLO -> BLO; BLA -> BLA; UBL -> UBL; UBA -> UBA; CCR -> CCR; RSC -> RSC																														
GRM:	MGB, HGB, SGB -> CGB; MBA, HBA, SBA -> CGBA; MGU, HGU, SGU -> CGU; MUA, HUA, SUA -> CGUA; GRS -> GRS; GRA -> GRA																														
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NCB:	<b>OPR</b> -> <b>no equivalent</b>																														
NUB:	<b>SLB, STB</b> -> <b>REL</b>																														
NAM:	<b>MAL</b> -> <b>no equivalent</b>																														
(2)	Field	Spec Ref	n/a																												
	Definition	The ‘protocol independant’ indication of the type of a call control message.																													
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) K_GG59_INITIAL &lt;-&gt; IAM (FAM), IAI (FAM)</li> <li>(2) K_GG59_FINAL &lt;-&gt; RLG (CCM), GRA (GRM), CCF(FSM)</li> <li>(3) K_GG59_REL &lt;-&gt; CLF(CSM), RSC(CCM), GRS(GRM)</li> <li>(4) K_GG59_CALLCTL &lt;-&gt; any other message</li> </ol> <p>Implementation Reason: CallTrace, CDR Builder</p>																													

<b>Chinnese TUP MSU Breakout Fields</b>																																																								
<b>6.5.1.20 (1)</b>	Field	<b>releaseCode_u</b>	Spec Ref	<b>TUP (China '90) 4.3.8 &amp; 4.3.13</b>																																																				
	Definition	The Unsuccessful Backward set-up Messages are used to define the reason for unsuccessful call set-up. <b>The two National Unsuccessful backward set-up messages STB (Subscriber-Toll-Busy) and SLB (Subscriber-Local-Busy) are also used.</b>																																																						
	Details	<p>Implementation Info:            TUP does not have the concept of a single RELease message containing a Cause parameter. Instead it uses the Unsuccessful Backward set-up Messages to define the reason for unsuccessful call set-up. These should be mapped as follows:</p> <table border="0"> <tr><td>CLF (CLeaR Forward)</td><td>-&gt;</td><td>0 (normal)</td></tr> <tr><td>SEC (Switching Equip Congestion)</td><td>-&gt;</td><td>263(abnormal)</td></tr> <tr><td>CGC (Circuit Grp Congestion)</td><td>-&gt;</td><td>256 (abnormal)</td></tr> <tr><td>NNC (National Network Congestion)</td><td>-&gt;</td><td>257 (abnormal)</td></tr> <tr><td>ADI (ADDress Incomplete)</td><td>-&gt;</td><td>264 (normal)</td></tr> <tr><td>CFL (Call FaiLure)</td><td>-&gt;</td><td>258 (abnormal)</td></tr> <tr><td>SSB (SubScriber Busy)</td><td>-&gt;</td><td>265 (normal)</td></tr> <tr><td>UNN (UNallocated Number)</td><td>-&gt;</td><td>266 (normal)</td></tr> <tr><td>LOS (Line Out of Service)</td><td>-&gt;</td><td>267 (normal)</td></tr> <tr><td>SST (Send Special information Tone)</td><td>-&gt;</td><td>268 (normal)</td></tr> <tr><td>ACB (Access Barred)</td><td>-&gt;</td><td>259 (abnormal)</td></tr> <tr><td>DPN (Digital Path Not provided)</td><td>-&gt;</td><td>260 (abnormal)</td></tr> <tr><td>MPR (Misdialled trunk PRefix)</td><td>-&gt;</td><td><del>269</del> (normal)</td></tr> <tr><td>EUM (Extended Unsuccessful Message)</td><td>-&gt;</td><td>270 (normal)</td></tr> <tr><td>anyother UBM</td><td>-&gt;</td><td>271 (abnormal)</td></tr> <tr><td><b>STB (Subscriber Toll Busy)</b></td><td>-&gt;</td><td><b>295 (normal)</b></td></tr> <tr><td><b>SLB (Subscriber Local Busy)</b></td><td>-&gt;</td><td><b>296 (normal)</b></td></tr> </table>				CLF (CLeaR Forward)	->	0 (normal)	SEC (Switching Equip Congestion)	->	263(abnormal)	CGC (Circuit Grp Congestion)	->	256 (abnormal)	NNC (National Network Congestion)	->	257 (abnormal)	ADI (ADDress Incomplete)	->	264 (normal)	CFL (Call FaiLure)	->	258 (abnormal)	SSB (SubScriber Busy)	->	265 (normal)	UNN (UNallocated Number)	->	266 (normal)	LOS (Line Out of Service)	->	267 (normal)	SST (Send Special information Tone)	->	268 (normal)	ACB (Access Barred)	->	259 (abnormal)	DPN (Digital Path Not provided)	->	260 (abnormal)	MPR (Misdialled trunk PRefix)	->	<del>269</del> (normal)	EUM (Extended Unsuccessful Message)	->	270 (normal)	anyother UBM	->	271 (abnormal)	<b>STB (Subscriber Toll Busy)</b>	->	<b>295 (normal)</b>	<b>SLB (Subscriber Local Busy)</b>	->	<b>296 (normal)</b>
CLF (CLeaR Forward)	->	0 (normal)																																																						
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<b>SLB (Subscriber Local Busy)</b>	->	<b>296 (normal)</b>																																																						
		Implementation Reason: TM, CDR Builder																																																						
(2)	Field	<b>abnormalFlag_b</b>	Spec Ref	<b>TUP (China '90) 4.3.8 &amp; 4.3.13</b>																																																				
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.																																																						
	Details	<p>Implementation Info:            See 6.5.1.10 (1) for information pertaining to what message is marked as abnormal and normal.</p>																																																						

## 6.12.2 Capture Buffer Indices

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.2)

Capture Buffer Indices		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>6.12.2.1</b>	IAM IAI	See 6.5.2.1
<b>6.12.2.2</b>	All other messages (with CIC)	See 6.5.2.2
<b>6.12.2.3</b>	GRS GRA	See 6.5.2.3

## 6.12.3 Call Trace Assistance

This section should reflect any changes made to the TUP breakout definition (see Section 6.5.3)

Call Trace Assistance		
<b>6.12.3.1</b>	IAM IAI	See Section 6.4.3.1
<b>6.12.3.2</b>	SAM SAO	See Section 6.4.3.2
<b>6.12.3.3</b>	RLG GRA	See Section 6.4.3.3
<b>6.12.3.4</b>	CCF	See Section 6.4.3.4
<b>6.12.3.5</b>	GSM	See Section 6.4.3.5
<b>6.12.3.6</b>	Other	See Section 6.4.3.6

## 6.13 Japanese ISUP

This defines the requirements additional to the basic ISUP requirements (see 6.4). The following fields should be extracted from all messages which contain them unless stated otherwise. All references are to JT-Q.763 (see 2.3.96) and should be considered in association with JJ-90.10 (see 2.3.97).

### 6.13.1 Fields

Japanese ISUP MSU Breakout Fields					
6.13.1.1	Field	CTAppLevel_b (expansionArea.appLevel_b)	Spec Ref	n/a	
	Definition	Indicates which, if any, of the structures in the expansion area union contain information.			
	Details	Implementation Info: Should be set to K_GG59_JPNISUP_EXPINFO.			

<b>Japanese ISUP MSU Breakout Fields</b>					
<b>6.13.1.2 (1)</b>	Field	<b>callingCarrier.carrierId</b>	Spec Ref	JT-Q.763 - Section 3.95	
	Definition	The Carrier ID from the Calling Carrier Information parameter within a Carrier Information Transfer parameter of an IAM message.			
	Details	<p>The Calling Carrier Information parameter is identified by Carrier Information Name = Originating Carrier Information (11111011). The Calling Carrier ID shall be extracted from the sub-parameter with Carrier Information Subparameter Name = Carrier Identification Code (11111110).</p> <p>Implementation Info: In the unlikely event of multiple Calling Carrier Information parameters in the IAM, the first one should be extracted. callingCarrier.carrierId should be extracted as a BCD digit string with an indication of the number of digits present.</p>			
(2)	Field	<b>callingCarrier.chargeArea</b>	Spec Ref	JT-Q.763 - Section 3.83	
	Definition	The Charge Area from the Charge Area Information parameter of an IAM message.			
	Details	Implementation Info: The Charge Area Information Discrimination Indicator (lower 7 bits of the first octet) is not required therefore callingCarrier.chargeArea should be populated from the second octet of the Charge Area Information parameter onwards. callingCarrier.carrierId should be extracted as a BCD digit string with an indication of the number of digits present.			
(3)	Field	<b>callingCarrier.poi_b</b>	Spec Ref	JT-Q.763 - Section 3.95	
	Definition	The Point Of Interconnection from the Calling Carrier Information parameter within a Carrier Information Transfer parameter of an IAM message.			
	Details	<p>The Calling Carrier Information parameter is identified by Carrier Information Name = Originating Carrier Information (11111011). The Calling POI Information shall be extracted from the sub-parameter with Carrier Information Subparameter Name = POI Ladder Information (11111100).</p> <p>Implementation Info: A value of zero corresponds to “no indication” and hence may be used to indicate field not present. In the unlikely event of multiple Calling Carrier Information parameters in the IAM, the first one should be extracted.</p>			
(4)	Field	<b>callingCarrier.transitInfoTransfer_b</b>	Spec Ref	JT-Q.763 - Section 3.95	
	Definition	The Calling Transit Information Transfer Indicators from the Calling Carrier Information parameter within a Carrier Information Transfer parameter of an IAM message.			
	Details	Implementation Info: The Calling Transit Information Transfer Indicators shall be extracted from the 2 least significant bits of the first octet of the Carrier Information Transfer parameter.			

<b>Japanese ISUP MSU Breakout Fields</b>				
<b>6.13.1.3 (1)</b>	Field	<b>calledCarrier.carrierId</b>	Spec Ref	JT-Q.763 - Section 3.95
	Definition	The Carrier ID from the Called Carrier Information parameter within a Carrier Information Transfer parameter of an ACM or CPG message.		
	Details	The Called Carrier Information parameter is identified by Carrier Information Name = Called Carrier Information (11111100). The Called Carrier ID shall be extracted from the sub-parameter with Carrier Information Subparameter Name = Carrier Identification Code (11111110). Implementation Info: In the unlikely event of multiple Called Carrier Information parameters in the ACM, CPG or CHG, the first one should be extracted. callingCarrier.carrierId should be extracted as a BCD digit string with an indication of the number of digits present.		
<b>(2)</b>	Field	<b>calledCarrier.chargeArea</b>	Spec Ref	JT-Q.763 - Section 3.83
	Definition	The Charge Area from the Charge Area Information parameter of an ACM, CPG, CHG or ANM message.		
	Details	Implementation Info: The Charge Area Information Discrimination Indicator (lower 7 bits of the first octet) is not required therefore calledCarrier.chargeArea should be populated from the second octet of the Charge Area Information parameter onwards. callingCarrier.carrierId should be extracted as a BCD digit string with an indication of the number of digits present.		
<b>(3)</b>	Field	<b>calledCarrier.poi_b</b>	Spec Ref	JT-Q.763 - Section 3.95
	Definition	The Point Of Interconnection from the Called Carrier Information parameter within a Carrier Information Transfer parameter in an ACM or CPG message.		
	Details	The Called Carrier Information parameter is identified by Carrier Information Name = Called Carrier Information (11111100). The Called POI Information shall be extracted from the sub-parameter with Carrier Information Subparameter Name = POI Ladder Information (11111100). Implementation Info: A value of zero corresponds to “no indication” and hence may be used to indicate field not present. In the unlikely event of multiple Called Carrier Information parameters in the ACM, CPG or CHG, the first one should be extracted.		

<b>Japanese ISUP MSU Breakout Fields</b>				
<b>6.13.1.4 (1)</b>	Field	<b>transitCarrier_a</b>	Spec Ref	n/a
	Definition	Populated from up to K_GG59_MAXTRANSITCARRIERS instances of different carriers which can be either Chosen Carriers, Transit Carriers or SCP Carriers from a Carrier Information Transfer parameter of an IAM, ACM or CPG. A Chosen Carrier shall be extracted from a Selected Transit Carrier Information parameter; a Transit Carrier shall be extracted from a Redirection Carrier Information parameter; an SCP Carrier shall be extracted from an SCP Carrier Information parameter.		
	Details	The Selected Transit Carrier Information parameter is identified by Carrier Information Name = Selected Carrier Information (11111101). The Redirection Transit Carrier Information parameter is identified by Carrier Information Name = Redirection Carrier Information (11111110). The SCP Carrier Information parameter is identified by Carrier Information Name = SCP Carrier Information (11111010).		
	(2) Field	<b>transitCarrier_a.carrierId</b>	Spec Ref	JT-Q.763 - Section 3.95
	Definition	The Carrier ID from the appropriate Carrier Information parameter within a Carrier Information Transfer parameter of an IAM, ACM or CPG.		
	Details	The Carrier ID shall be extracted from the sub-parameter with Carrier Information Subparameter Name = Carrier Identification Code (11111110). Implementation Info: transitCarrier_a.carrierId should be extracted as a BCD digit string with an indication of the number of digits present.		
<b>(3)</b>	Field	<b>transitCarrier_a.chargeArea</b>	Spec Ref	JT-Q.763 - Section 3.95
	Definition	The Charge Area from the appropriate Carrier Information parameter within a Carrier Information Transfer parameter of an IAM, ACM or CPG		
	Details	The Charge Area shall be extracted from the sub-parameter with Carrier Information Subparameter Name = POI Charging Area Information (11111101). Implementation Info: transitCarrier_a.chargeArea should be extracted as a BCD digit string with an indication of the number of digits present.		
<b>(4)</b>	Field	<b>transitCarrier_a.direction_b</b>	Spec Ref	n/a
	Definition	The message direction.		
	Details	Implementation Info: (1) K_GG59_FWDCARRIER_IAM for Forward Carrier data from IAM. (2) K_GG59_BWDCARRIER_ACN for Backward Carrier data from ACM. (3) K_GG59_BWDCARRIER_CPG for Backward Carrier data from CPG.		
<b>(5)</b>	Field	<b>transitCarrier_a.poi_b</b>	Spec Ref	JT-Q.763 - Section 3.95
	Definition	The Point Of Interconnection from the appropriate Carrier Information parameter within a Carrier Information Transfer parameter of an IAM, ACM or CPG		
	Details	The POI Information shall be extracted from the sub-parameter with Carrier Information Subparameter Name = POI Ladder Information (11111100). Implementation Info: A value of zero corresponds to “no indication” and hence may be used to indicate field not present. In the unlikely event of multiple Carrier Information parameters in the IAM, ACM or CPG, the first one should be extracted.		

<b>Japanese ISUP MSU Breakout Fields</b>				
(6)	Field	<b>transitCarrier_a.type_b</b>	Spec Ref	JT-Q.763 - Section 3.95
	Definition	The Carrier Information Name of the appropriate Carrier Information parameter within a Carrier Information Transfer parameter of an IAM, ACM or CPG.		
	Details	Implementation Info: Chosen Carrier: Carrier Information Name = Selected Carrier Information (11111101) Transit Carrier: Carrier Information Name = Redirection Carrier Information (11111110) SCP Carrier: Carrier Information Name = SCP Carrier Information (11111010)		
6.13.1.5 (1)	Field	<b>contractor.natOfAddr_b</b>	Spec Ref	JT-Q.763 - Section 3.87
	Definition	The Nature of Address Indicator subfield of the Contractor Number parameter of an IAM.		
	Details	n/a		
(2)	Field	<b>contractor.numberingPlan_b</b>	Spec Ref	JT-Q.763 - Section 3.87
	Definition	The Numbering Plan Indicator subfield of the Contractor Number parameter of an IAM.		
	Details	n/a		
(3)	Field	<b>contractor.telno</b>	Spec Ref	JT-Q.763 - Section 3.87
	Definition	The Address Signal subfield of the Contractor Number parameter of an IAM,		
	Details	See 6.4.1.8 (3)		

<b>Japanese ISUP MSU Breakout Fields</b>				
<b>6.13.1.6 (1)</b>	Field	<b>chargeInfo.chargeInfoType_b</b>	Spec Ref	JT-Q.763 - Sections 3.85 and 3.86
	Definition	The Charge Information Type parameter of an ACM, CHG or CPG		
	Details	n/a		
<b>(2)</b>	Field	<b>chargeInfo.unitRate_b</b>	Spec Ref	JT-Q.763 - Sections 3.85 and 3.86
	Definition	The Unit Rate Indicator subfield within the Charging Information parameter of an ACM, CHG or CPG		
	Details	Implementation Info: Should only be extracted if a Charge Information Type parameter exists in the same MSU and is set to Charging Rate Transfer (11111110).		
<b>(3)</b>	Field	<b>chargeInfo.chargeRateInfo_a.</b> <b>chargeCat_b</b>	Spec Ref	JT-Q.763 - Sections 3.85 and 3.86
	Definition	The Charge Rate Information Category subfield of a Charge Rate Information field within the Charging Information parameter of an ACM, CHG or CPG.		
	Details	Implementation Info: Should only be extracted if a Charge Information Type parameter exists in the same MSU and is set to Charging Rate Transfer (11111110). Bit 8 shall be masked off in this field so that only bits 1-7 are extracted.		
<b>(4)</b>	Field	<b>chargeInfo.chargeRateInfo_a.</b> <b>chargeRate_ba</b>	Spec Ref	JT-Q.763 - Sections 3.85 and 3.86
	Definition	The Charge Rate Information Intervals of a Charge Rate Information field within the Charging Information parameter of an ACM, CHG or CPG.		
	Details	Implementation Info: Should only be extracted if unitRate_b = 11111100 or 11111101 and chargeCat_b = 11111100 or 11111101. This should contain the Initial Fee and up to 4 charge intervals as a string of ASCII characters as in the MSU, with a null termination added on the end. The maximum length (including the null termination) is given by K_GG59_CHARGERATELEN.		

<b>Japanese ISUP MSU Breakout Fields</b>				
<b>6.13.1.7 (1)</b>	Field	<b>additionalCats_a</b>	Spec Ref	n/a
	Definition	Populated from up to K_GG59_MAXADDCATS instances of different additional categories. Each additional category contains fixed and/or mobile sub-categories (see 0.1.1.7 (2) and (3)).		
	Details	n/a		
<b>(2)</b>	Field	<b>additionalCats_a.addFxdCat_ba</b>	Spec Ref	JT-Q.763 - Sections 3.93
	Definition	Up to K_GG59_MAXFXDCATS instances of the Additional Party's Category subfield where Additional Party's Name is a Fixed System Addition Party's Category type within the Additional Party's Category parameter of an IAM, ACM, CPG or CHG		
<b>(3)</b>	Details	n/a		
	Field	<b>additionalCats_a.addMobCat_ba</b>	Spec Ref	JT-Q.763 - Sections 3.93
	Definition	Up to K_GG59_MAXMOBCATS instances of the Additional Party's Category subfield where Additional Party's Name is a Mobile System Addition Party's Category type within the Additional Party's Category parameter of an IAM, ACM, CPG or CHG		
	Details	n/a		

## 6.14 Ericsson ISUP

This section describes the Breakout Requirements for the Ericsson ISUP variant [TBD] and TIM Greece ISUP variant [2.3.127]. This defines the requirements additional to the standard ISUP requirements (see 6.4).

### 6.14.1 Fields

See also 6.4.1 for the standard ISUP requirements.

<b>MSU Breakout Fields</b>				
<b>6.14.1.1</b>	Field	<b>networkCallRefCallId_m</b>	Spec Ref	TIM acceSS7 Network Call Reference V1.0
	Definition	The Call Id field in Network Call Reference parameter. It's Ericsson (TIM Greece) private parameter.		
	Details	Implementation Info: This field shall be extracted whenever present in Ericsson (TIM Greece) ISUP messages.		

<b>6.14.1.2</b>	Field	<b>networkCallRefSwitchId_m</b>	Spec Ref	TIM acceSS7 Network Call Reference V1.0
	Definition	The Switch Id field in Network Call Reference parameter. It's Ericsson (TIM Greece) private parameter.		
	Details	Implementation Info: This field shall be extracted whenever present in Ericsson (TIM Greece) ISUP messages.		

## 6.14.2 Capture Buffer indices

See also 6.4.2 for the standard ISUP requirements. No additional requirements.

## 6.14.3 Call Trace Assistance

See also 6.4.3 for the standard ISUP requirements. No additional requirements.

## 6.15 BICC

This section describes the breakout requirements for BICC (Bear Independent Call Control).

The section is based upon the existing ISUP requirements [6.4] and therefore only details breakout requirements which are new or changed in relation to the existing ISUP requirements.

## 6.15.1 Fields

MSU Breakout Fields					
	Field	cic_m	Spec Ref	ITU-T Q.1902.3, Section 5.3.	
<b>6.15.1.1</b>	Definition	The 4-octet Call Instance Code field.			
	Details	Implementation Info: N/A.			
<b>6.15.1.2</b>	Field	<b>ipbcPMsgType_m</b>	Spec Ref	ITU-T Q.1970, Section 6.2	
	Definition	IPBCP message type parameter.			
	Details	Implementation Info: This field shall be extracted from all IPBCP messages. It identifies the type of message. One of: K_GG59_IPBCP_REQUEST K_GG59_IPBCP_ACCEPTED K_GG59_IPBCP_CONFUSED K_GG59_IPBCP_REJECTED			
<b>6.15.1.3</b>	Field	<b>bctpProtInd_m</b>	Spec Ref	ITU-T Q.1990, Section 6.2	
	Definition	A six-bit tunnelled protocol indicator field.			
	Details	Implementation Info: This lower 6 bits of the tunnelled protocol indicator parameter shall be extracted from all BCTP messages. One of: K_GG59_BCTP_TPL_IPBCP			
<b>6.15.1.4 (1)</b>	Field	<b>sdpOrigin.a7PresentInd_m</b>	Spec Ref	ITU-T Q.1970, Section 6.2	
	Definition	The address type of SDP origin parameter.			
	Details	Implementation Info: K_GG59_IPADDRESS_IPV4 (0x01) K_GG59_IPADDRESS_IPV6 (0x02)			
<b>(2)</b>	Field	<b>sdpOrigin.ipAddr.ipv4_m</b>	Spec Ref	ITU-T Q.1970, Section 6.2	
	Definition	The IP address assigned to the BIWF sending an IPBCP message.			
	Details	Implementation Info: Each source IPv4 address in SDP origin parameter should be broken out to this field.			
<b>(3)</b>	Field	<b>sdpOrigin.ipAddr.ipv6_ma</b>	Spec Ref	ITU-T Q.1970, Section 6.2	
	Definition	The IP address assigned to the BIWF sending an IPBCP message.			
	Details	Implementation Info: Each source IPv6 address in SDP origin parameter should be broken out to this field.			

<b>6.15.1.5 (1)</b>	Field	<b>sdpConnectionData.a7PresentInd_m</b>	Spec Ref	ITU-T Q.1970, Section 6.2
	Definition	The address type of SDP connection data parameter.		
	Details	Implementation Info: K_GG59_IPADDRESS_IPV4 (0x01) K_GG59_IPADDRESS_IPV6 (0x02)		
	(2)	Field	<b>sdpConnectionData.ipAddr.ipv4_m</b>	Spec Ref ITU-T Q.1970, Section 6.2
(2)	Definition	The IP unicast address of SDP connection data parameter.		
	Details	Implementation Info: Each source IPv4 address in SDP connection data parameter should be broken out to this field.		
	(3)	Field	<b>sdpConnectionData.ipAddr.ipv6_ma</b>	Spec Ref ITU-T Q.1970, Section 6.2
(3)	Definition	The IP unicast address of SDP connection data parameter.		
	Details	Implementation Info: Each source IPv6 address in SDP connection data parameter should be broken out to this field.		
	<b>6.15.1.6</b>	Field	<b>sdpMediaAnnouncement.string_pb</b> <b>sdpMediaAnnouncement.length_u</b>	Spec Ref ITU-T Q.1990, Section 6.2
<b>6.15.1.6</b>	Definition	SDP media announcement parameter.		
	Details	Implementation Info: This field is implemented as a multi-value structure field. All the instances in IPBCP message should be extracted. The pointer is set to first octet of the "media" subfield. The length should be the total length of all subfields.  See 6.15.4 for Context Assistance requirement for this field.		

<b>6.15.1.7</b>	(1)	Field <b>sdpMediaConnectionData.a7PresentInd_m</b>	Spec Ref	ITU-T Q.1970, Section 6.2	
	Definition	The address type of SDP media connection data parameter.			
	Details	Implementation Info: K_GG59_IPADDRESS_IPV4 (0x01) K_GG59_IPADDRESS_IPV6 (0x02)			
(2)	Field <b>sdpMediaConnectionData.ipAddr.ipv4_m</b>	Spec Ref	ITU-T Q.1970, Section 6.2		
	Definition	The IP unicast address of SDP media connection data parameter.			
	Details	Implementation Info: Each source IPv4 address in SDP media connection data parameter should be broken out to this field. See 6.15.4 for Context Assistance requirement for this field.			
(3)	Field <b>sdpMediaConnectionData.ipAddr.ipv6_ma</b>	Spec Ref	ITU-T Q.1970, Section 6.2		
	Definition	The IP unicast address of SDP media connection data parameter.			
	Details	Implementation Info: Each source IPv6 address in SDP media connection data parameter should be broken out to this field. See 6.15.4 for Context Assistance requirement for this field.			
<b>6.15.1.8</b>	Field <b>bncId_m</b>	Spec Ref	ITU-T Q.765.5, Section 11.1.4		
	Definition	The 4-octet Backbone Network Connection Identifier field.			
	Details	Implementation Info: n/a.			
<b>6.15.1.9</b>	Field <b>interworkFunctionAddr.string_pb</b> <b>interworkFunctionAddr.length_u</b>	Spec Ref	Q.765.5, Section 11.1.5		
	Definition	The Interworking Function Address is in NSAP format according to Annex A of ITU-T X.213 and its Amendment 1.			
	Details	Implementation Info: (1)This field is implemented as a multi-value structure field and will only be extracted if the identifier is 0x03. (2)The pointer is set to the first octet of contents subfield in interworFunctionAddr (2)The length should be the octet string length of contents subfield in interworkFunctionAddr. Notice: "Compatibility information" octet is excluded.			
<b>6.15.1.10</b>	Field <b>bncCharacter_m</b>	Spec Ref	Q.765.5, Section 11.1.9		
	Definition	BNC Characteristics is a 1 octet field. It indicates the bearer type, e.g. AAL1, AAL2, or IP/RTP.			
	Details	Implementation Info: This field is implemented as a multi-value field and will only be extracted if the identifier is 0x07.			

## 6.15.2 Capture Buffer indices

See also 6.4.2 for the standard ISUP requirements. No additional requirements.

## 6.15.3 Call Trace Assistance

See also 6.4.3 for the standard ISUP requirements. No additional requirements.

## 6.15.4 Context Assistance

Context Assistance		
<b>6.15.4.1</b>	sdpMediaAnnouncement sdpMediaConnectionData	The context bits (mask with K_GG59_CTXTMASK_SDP_MEDIAANN) will be used to indicate the index of media announcement parameter and mark its relevant connection data. The index number should start from 1 and increase by 1 for next media announcement.

## 6.16 ALCAP

This section describes the breakout requirements for ALCAP (Access Link Control Application Parts)

It is defined by 3GPP as equivalent of ITU recommendation Q.2630.3: (see 2.3.133).

### 6.16.1 Fields

MSU Breakout Fields				
<b>6.16.1.1</b>	Field	<b>alcapMsgType_m</b>	Spec Ref	ITU-T Q.2630.3, Section 7.2.1
	Definition	ALCAP message type parameter.		
	Details	Implementation Info: It identifies the type of message. One of: K_GG59_ALCAP_BLOCK_CONFIRM K_GG59_ALCAP_BLOCK_REQUEST K_GG59_ALCAP_CONFUSION K_GG59_ALCAP_ESTABLISH_CONFIRM K_GG59_ALCAP_ESTABLISH_REQUEST K_GG59_ALCAP_RELEASE_CONFIRM K_GG59_ALCAP_RELEASE_REQUEST K_GG59_ALCAP_RESET_CONFIRM K_GG59_ALCAP_RESET_REQUEST K_GG59_ALCAP_UNBLOCK_CONFIRM K_GG59_ALCAP_UNBLOCK_REQUEST K_GG59_ALCAP MODIFY_ACKNOWLEDGE K_GG59_ALCAP MODIFY_REJECT K_GG59_ALCAP MODIFY_REQUEST		
<b>6.16.1.2</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	ITU-T Q.2630.3, Section 7.4.16.

	Definition	The value of the first two octets of the Cause Parameter		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>6.16.1.3</b>	Field	<b>releaseCode_u</b>	Spec Ref	ITU-T Q.2630.3, Section 7.4.16.
	Definition	The value of the first two octets of the Cause Parameter.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		

# 7 User Data Breakout Requirements

## 7.1 Generic TCAP

### 7.1.1 Fields

The following fields should be extracted from all messages which contain them. All references are to TR-NWT-000246, T1.114.3 (see 2.3.3) unless otherwise stated.

MSU Breakout Fields						
	Field	Spec Ref				
7.1.1.1	Field	<b>origTransId_m</b>	Spec Ref			
	Definition	This field contains the Transaction ID assigned by the originator.				
	Details	<p>Implementation Info:            The originating Transaction ID should be extracted if present.            If the message is UDTs and XUDTS which contains TCAP End/Abort and there is no OTID in the message, the Responding Transaction ID should be copied into this field. See TSDrd94452 for more details.</p>				
7.1.1.2	Field	<b>respTransId_m</b>	Spec Ref			
	Definition	This field contains the Transaction ID assigned by the responder.				
	Details	<p>Implementation Info:            If the message is an SCCP UDTs or XUDTS, then origTransId_m should be copied into here as well, as there will be no Responding Transaction ID in the message. This bodgelet will allow Call Trace to treat this like an error Response, which in effect it is.</p>				
7.1.1.3	Field	<b>packageType_b</b>	Spec Ref			
	Definition	The Package Type Identifier. The field consists of one octet and is mandatory for all TCAP messages.				
	Details	<p>Implementation Info:            The Package Type Identifier should be mapped onto the generic K_GG59_ #defines if different, eg. for ITU TCAP ...            Begin -&gt; K_GG59_QUERYWPERM            Continue -&gt; K_GG59_CONVERSATION            End -&gt; K_GG59_RESPONSE            Invalid values should be mapped to K_GG59_PROT_IND_INVALID_VALUE</p>				

<b>7.1.1.4 (1)</b>	Field	<b>opCode_ba</b>	Spec Ref	T1.114.3, Section 4.8
	Definition	The Operation Code. This is a list of the TCAP Operations Code in the package. The Operation Code is partitioned into an Operation Family followed by a Specifier associated with each Operation Family member. The length of the Operation Family field and Specifier field are one octet each.		
	Details	<p><b>Implementation Info:</b>  <b>The opCode array should be broken into as follows:</b>            - For US protocols, row 0 is populated with the Operation Family Specifier and row 1 is populated with the Operation Specifier.            - For European protocols, a 1 byte operation code is stored in row 1 and a 2 byte operation code is stored with MSB in row 0 LSB in row 1.</p>		
<b>(2)</b>	Field	<b>numOpcodes_b</b>	Spec Ref	n/a
	Definition	This indicates the number of Operation Codes in opCode_ba.		
	Details	<p><b>Implementation Info:</b>            If there are more than K_GG59_MAXOPCODES in the package, this field should indicate the actual number.</p>		
<b>(3)</b>	Field	<b>opcodeType_ba</b>	Spec Ref	n/a
	Definition	The Operation Code type indicates whether the operation code is Private or National for NA protocols, Global or Local for Bluebook, Whitebook protocols.		
	Details	<p><b>Implementation Info:</b>            This field is implemented as an array (as for opCode_ba above). This value should be extracted from all messages which contain it and in the same form as it exists in the message.            The value in opcodeType_ba will be D0,D1,6 or 2 depending on whether it's National, Private, Global or Local.</p>		
<b>7.1.1.5 (1)</b>	Field	<b>componentType_ba</b>	Spec Ref	T1.114.3, Section 4.1
	Definition	This is a list of the TCAP Component Type Identifiers in the package.		
	Details	<p><b>Implementation Info:</b>            The TCAP Component Type Identifiers should be mapped onto the generic K_GG59_#defines if the values are different. Invalid values should be mapped to K_GG59_PROT_IND_INVALID_VALUE.</p>		
<b>(2)</b>	Field	<b>numComponents_b</b>	Spec Ref	n/a
	Definition	This indicates the number of Component Type Identifiers in componentType_ba.		
	Details	<p><b>Implementation Info:</b>            If there are more than K_GG59_MAXCOMPONENTS in the package, this field should indicate the actual number.</p>		
<b>7.1.1.6</b>	Field	<b>pabortCause_b</b>	Spec Ref	T1.114.3, Section 3.8
	Definition	This is the P-Abort Cause field.		
	Details	<p><b>Implementation Info:</b>            For Bellcore TCAP (and protocols based on the Bellcore TCAP) the value should be mapped to the ANSI TCAP equivalent.</p>		

<b>7.1.1.7 (1)</b>	Field	<b>probType_b</b>	Spec Ref	T1.114.3, Section 4.14	
(2)	Definition	This is the Problem Type value contained within the Problem Code field. This field indicates the reason the Component or Transaction Portion was rejected.			
	Details	n/a			
	Field	<b>probSpec_b</b>	Spec Ref	T1.114.3, Section 4.14	
(2)	Definition	This is the Problem Specifier value contained within the Problem Code field. The Problem Specifier indicates a specific problem found within the Problem Type.			
	Details	n/a			
	Field	<b>errorID_b</b>	Spec Ref	T1.114.3, Section 4.9	
(2)	Definition	This is the Error Code Identifier.			
	Details	<p>Implementation Info:            This field will indicate a national or private error code and should be mapped onto K_GG59_NATERROR (US: National Errors, ITU: Global Errors) or K_GG59_PRIVERROR (US: Private Errors, ITU: Local Errors) if different.</p>			
	Field	<b>tcapErrorCode_b</b>	Spec Ref	T1.114.3, Section 4.11	
(2)	Definition	This field provides the reason why a specific operation could not be completed successfully. The meaning of this value will depend on errorID_b.			
	Details	n/a			

<b>7.1.1.9 (1)</b>	<b>Field</b>	<b>TMServiceAssFailCode_u</b>	<b>Spec Ref</b>	n/a
	Definition	This is an internal Traffic Monitor error code which is derived from whichever level error is found in an SCCP or TCAP MSU. The NLS strings associated with this field are stored in <code>a7TMSAfail.h</code> . New failure codes should be added to this file. When decoding a new TCAP based protocol, it may be necessary to add a new ‘base’ for ‘Private TCAP’ (US) or ‘local Value’ (ITU) error codes.		
	Details	<p>Implementation Info:            For TCAP, the mapping of fields to TMServiceAssFailCode_u is as below. If multiple errors are found in a single MSU, the first one encountered should be left set up in TMServiceAssFailCode_u.</p> <ul style="list-style-type: none"> <li>(i) if a RESPONSE package contains a REJECT component set either to               <ul style="list-style-type: none"> <li>(1) <code>K_GG59_BASETCAP_PROBCODE + (probType_b &lt;&lt; 8) + probSpec_b</code>                      (for US)</li> <li>(2) <code>K_GG59_BASEEURO_PROBCODE + ((probType_b &amp; 0x0f) &lt;&lt; 8) + probSpec_b</code>                      (for ITU-T Q.773 (03/93) - SS7 - Transaction Capabilities Formats &amp; Encoding.</li> </ul> </li> <li>(ii) if a RESPONSE package contains a RETURN ERROR component               <ul style="list-style-type: none"> <li>(1) With a US National TCAP error code, set to  <code>K_GG59_BASETCAP_ERRORCODE + tcapErrorCode_b</code></li> <li>(2) With an ITU globalValue error code, set to  <code>K_GG59_BASEEURO_ERRORCODE + tcapErrorCode_b</code></li> <li>(3) With a US Private TCAP error code, or ITU local Value error code, set to  <code>K_GG59_BASEXXXX_ERRORCODE + tcapErrorCode_b</code>, where  <code>K_GG59_BASEXXXX_ERRORCODE + tcapErrorCode_b</code> is the base for the protocol in question. The base for private error codes must be stated in the appropriate section for the protocol in question.</li> </ul> </li> <li>(iii) if this is an ABORT package set either to               <ul style="list-style-type: none"> <li>(1) <code>K_GG59_BASE_PABORTCAUSE + pabortCause_b</code>                      (for US)</li> <li>(2) <code>K_GG59_BASEEURO_PABORTCAUSE + pabortCause_b</code>                      (for ITU-T Q.773 (03/93) - SS7 - Transaction Capabilities Formats &amp; Encoding.</li> </ul> </li> </ul>		
<b>(2)</b>	<b>Field</b>	<b>TMServiceId_b</b>	<b>Spec Ref</b>	n/a
	Definition	This field is used to identify the type of message, eg. by Traffic Monitor. The Traffic Monitor supports a set of Service Assurance measurements on different services. Userdata decodes set TMServiceId_b. The Traffic Monitor resource file maps 1 or more TMServiceId_b values onto each ‘Traffic Monitor service’. Thus, if appropriate, multiple SSNs can be mapped to one service (or different messages with the same SSN can be mapped onto different ‘Traffic Monitor services’). This mechanism also make Traffic Monitor independent of particular SSN Values.		
	Details	<p>Implementation Info:            This field should be set to <code>K_GG59_OTHERSERV</code> for generic TCAP breakouts.</p>		

<b>7.1.1.10 (1)</b>	Field	<b>acgCause_b</b>	Spec Ref	T1.114.5, Section 4.2.1 & Fig. 5	
	Definition	This is the Control Cause Indication subfield of the Automatic Code Gap (ACG) Indicators parameter. This octet indicates the reason that ACG control is being initiated.			
	Details	n/a			
<b>(2)</b>	Field	<b>acgDuration_b</b>	Spec Ref	T1.114.5, Section 4.2.2 & Fig. 5	
	Definition	This is the Duration subfield of the Automatic Code Gap (ACG) Indicators parameter. This octet indicates the time interval in seconds that an ACG control should be applied.			
	Details	n/a			
<b>(3)</b>	Field	<b>acgGap_b</b>	Spec Ref	T1.114.5, Section 4.2.3 & Fig. 5	
	Definition	This is the Gap subfield of the Automatic Code Gap (ACG) Indicators parameter. This octet indicates the time interval in seconds between applications of the ACG control. It also allows the ACG control to be cancelled or maintained indefinitely.			
	Details	n/a			
<b>7.1.1.11</b>	Field	<b>invokeID_ba</b>	Spec Ref	T1.114.3, Section 5.7.1	
	Definition	This is a list of TCAP component invoke ID in the package.			
	Details	<p>Implementation Info:</p> <p>This field is implemented as an array. This value should be extracted only for the Ericsson CS1+ INAP messages. The actual number of the array equals to the lesser of numComponents_b and K_GG59_MAXCOMPONENTS.</p>			

## 7.1.2 Capture Buffer Indices (Pre-CT GTT Functionality)

Prior to the implementation of the CT GTT functionality in B.07.10 the Capture Buffer Indices for TCAP based protocols are set as follows.

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>7.1.2.1</b>	Query Packages (within UDT or XUDT message, package origin)	n/a	SCCPCallingPc_m (if 0 then use opc_m), SCCPCallingSSN_b, origTransId_m
	(within UDTS or XUDTS message, package destination) <sup>a</sup>	n/a	dpc_m, SCCPCalledSSN_b, origTransId_m <sup>b</sup>
<b>7.1.2.2</b>	Conversation Packages (package origin)	n/a	opc_m, SCCPCallingSSN_b, origTransId_m
	(package destination)	n/a	dpc_m, SCCPCalledSSN_b, respTransId_m
<b>7.1.2.3</b>	Response Package	n/a	dpc_m, SCCPCalledSSN_b, respTransId_m
<b>7.1.2.4</b>	Abort Package	n/a	dpc_m, SCCPCalledSSN_b, respTransId_m

Note:-

a - It does not seem to be possible to mirror this function for Conversation or Response packages in (X)UDTS MSUs, since the OPC of a UDTS carrying a Response, or a Conversation from the responding side, will almost certainly NOT be the pointcode of the SP which organised the transaction.

b - The unusual association of origTransId\_m with dpc/called SSN. This is because the SCCP message has been returned to sender, with the original TCAP contents untouched.

## 7.1.3 TCAP Capture Buffer Indices (Post-CT GTT Functionality)

After the implementation of the CT GTT functionality in B.07.10 the Capture Buffer Indices for TCAP based protocols are set as follows.

These should be implemented in place of 7.1.2 for GSM MAP Phase 2 and Phase 2+ TCAP only.

Capture Buffer Indices	
	hashAddSCCPAddr

Capture Buffer Indices		
<b>7.1.3.1</b>	Query Packages (within UDT or XUDT message, package origin)  (within UDTS or XUDTS message, package destination) <sup>a</sup>	sccpCalling, origTransId, opc  sccpCalled, origTransId, dpc
<b>7.1.3.2</b>	Conversation Packages (package origin)  (package destination)	sccpCalling, origTransId, opc  sccpCalled, respTransId, dpc
<b>7.1.3.3</b>	Response Package	sccpCalled, respTransId, dpc
<b>7.1.3.4</b>	Abort Package	sccpCalled, respTransId, dpc

## 7.1.4 Call Trace Assistance

Call Trace Assistance														
<b>7.1.4.1</b>	Query Packages (UDTS, UXDTS)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCRTIDSSN		X		X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2		n/a		7		n/a					
		Cross Triggers	Local			Global								
			X			n/a								
		State of Call	CTState			CTEnhState								
			n/a			For Query for UDTS, XUDTS: ‘Query returned by SCCP’  For Query for UDT, XUDT: ‘Query Sent’								
<b>7.1.4.2</b>	Begin Packages	State of Call	CTState			CTEnhState								
			n/a			‘Begin Sent’								
<b>7.1.4.3</b>	Response Packages	State of Call	CTState			CTEnhState								
			n/a			‘Response received’								
<b>7.1.4.4</b>	End Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
				X		X								
		PCOTIDSSN (if in UDTS/XUDTS)	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			[PCOTIDSSN] = 2		5		n/a		n/a					
		State of Call	CTState			CTEnhState								
			n/a			‘End received’								
<b>7.1.4.5</b>	Converstaion Packages	State of Call	CTState			CTEnhState								
			n/a			‘Conversation’								
<b>7.1.4.6</b>	Continue Packages	State of Call	CTState			CTEnhState								
			n/a			‘Continue’								

Call Trace Assistance															
<b>7.1.4.7</b>	Abort Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
				X		X									
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
		[PCOTIDSSN] = 2		5		n/a		n/a							
	State of Call	CTState				CTEnhState									
		n/a				'Abort Received'									
<b>7.1.4.8</b>	Unidirectional Packages	State of Call	CTState				CTEnhState								
			n/a				'Unidirectional received'								
<b>7.1.4.9</b>	Other Packages	State of Call	CTState				CTEnhState								
			n/a				'Unknown TCAP package received'								

## 7.2 800/N00 Database Services

### 7.2.1 Fields

This defines the requirements additional to the basic TCAP requirements (see 7.1).

The following fields should be extracted from all messages which contain them. All references are to Database Services Service Switching Points TR-NWT-000533 Issue 3, January 1994 (see 2.3.8) unless otherwise stated.

Sprint N00 Digits parameters encoded using the TBCD encoding scheme should convert any digits with value 'a' to value '0'.

<b>MSU Breakout Fields</b>				
<b>7.2.1.1</b>	Field	<b>lataDigits_b</b>	Spec Ref	B.4.1 AB5
	Definition	This field contains the 3 digits of the originating LATA.		
	Details	Implementation Info: If a Digits parameter contains LATA digits (use Type of Digits to determine) then the digits should be copied in the same form as stored in the message.		
<b>7.2.1.2</b>	Field	<b>origStationType_b</b>	Spec Ref	B.4.1 AE
	Definition	This is the Originating Station Type parameter.		
	Details	n/a		
<b>7.2.1.3</b>	Field	<b>carrier_b</b>	Spec Ref	B.4.2 T5
	Definition	This field contains the 3 digits of the carrier identification code.		
	Details	Implementation Info: If a Digits parameter contains carrier digits (use Type of Digits to determine) then the digits should be copied in the same form as stored in the message.		
<b>7.2.1.4</b>	Field	<b>terminationInds_b</b>	Spec Ref	B.4.6 O
	Definition	This field contains a single octet in which each bit contains a yes or no value for a particular indicator.		
	Details	n/a		

<b>7.2.1.5 (1)</b>	Field	<b>calledParty.telno</b>	Spec Ref	B.4.1 V5, B.4.2 AN
	Definition	This field contains the 10 digits of the dialed number (ie. the dialed 800-NXX-XXXX number).		
	Details	<p>Implementation Info:            If a Digits parameter contains called party number (dialled) digits (use Type of Digits to determine) then the digits should be copied into calledParty.telno in the same form as stored in the message.callingParty.telno [B.4.1 Y5]</p>		
<b>(2)</b>	Field	<b>calledParty.telnoType_b</b>	Spec Ref	See 7.2.1.5(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	<p>Implementation Info:            See 7.2.1.5(1).            The telnoType_b subfield should be set as the following:  <b>K_GG59_TELNOTYPE_DIALED</b> (for called party number (dialed))</p>		
<b>7.2.1.6 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	B.4.1 V5, B.4.2 AN
	Definition	This field contains the Calling Party Number (ANI).		
	Details	<p>Implementation Info:            If a Digits parameter contains calling party number (ANI) digits (use Type of Digits to determine) then the digits should be copied into callingParty.telno in the same form as stored in the message.</p>		
<b>(2)</b>	Field	<b>callingParty.telnoType_b</b>	Spec Ref	See 7.2.1.6(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	<p>Implementation Info:            See 7.2.1.6(1).            The telnoType_b subfield should be set as the following:  <b>K_GG59_TELNOTYPE_ANI</b> (for calling party number (ANI))</p>		
<b>7.2.1.7 (1)</b>	Field	<b>txNum[0].telno.telno</b>	Spec Ref	B.4.2 W5
	Definition	This field contains the 10 digits of the routing number.		
	Details	<p>Implementation Info:            If a Digits parameter contains routing number digits (use Type of Digits to determine) then the digits should be copied into txNum[0].telno in the same form as stored in the message.</p>		
<b>(2)</b>	Field	<b>txNum[0].telnoType_b</b>	Spec Ref	See 7.2.1.7(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	<p>Implementation Info:            See 7.2.1.7(1).            The telnoType_b subfield should be set as the following:  <b>K_GG59_TELNOTYPE_ROUTINGNUM</b> (for Routing Number)</p>		
<b>7.2.1.8</b>	Field	<b>echoField_m</b>	Spec Ref	B.4.2 BD, B.4.6 R
	Definition	This is the Echo Data parameter.		
	Details	<p>Implementation Info:            This field shall be extracted whenever present in the same format as stored in the message.</p>		

<b>7.2.1.9 (1)</b>	Field	<b>TMServiceId_b</b>	Spec Ref	n/a
	Definition	See 7.1.1.9 (2)		
	Details	Implementation Info: This should be set to K_GG59_800NUMBERSERVNUM.		
	(2)	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref
		Definition	See 7.1.1.9 (1)	
		Details	Implementation Info: If an Operation Code is present in the message and the family is Procedural and the specifier is Report Error set TMServiceAssFailCode_u to K_GG59_REPORT_ERROR_OPCODE.	
<b>7.2.1.10</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	The appDetails union at the end of gg59.h contains the fields for various application level protocols. The fields are stored in a union of struct's since they are independant of each other. The value in the field appLevel_b indicates which (if any) of the struct's contains information. If appLevel_b is zero then none of the structs are valid and none of their fields should be checked, since if userData_b is FALSE the fields will not have been cleared and will contain random data.		
	Details	Implementation Info: This should be set to K_GG59_USTCAP_INFO.		
<b>7.2.1.11</b>	Field	<b>standardAnnouncement_m</b>	Spec Ref	GR-533-CORE B.2.10 GR-246-CORE T1.114.5 4.3
	Definition	The Standard Announcement octet		
	Details	Implementation Info: This field shall be extracted whenever present in the same format as stored in the message.		

## 7.2.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.2.2.1</b>	Query Packages (both with & without permission)	callingParty.telno calledParty.telno	see Section 7.1.2.1
<b>7.2.2.2</b>	Response Package	n/a	see Section 7.1.2.3 opc_m, SCCPCallingSSN_b, echoField_m
<b>7.2.2.3</b>	Unidirectional Package	n/a	dpc_m, SCCPCalledSSN_b, echoField_m

## 7.2.3 Call Trace Assistance

Call Trace Assistance																
<b>7.2.3.1</b>	Query Packages (with permission in UDT and XUDT)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLING	X				X	X								
		CALLED	X				X	X								
		PCOTIDSSN	X													
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u									
			n/a	5		n/a	n/a									
		Cross Triggers	Local			Global										
			n/a			X										
		State of Call	CTState			CTEnhState										
			n/a			'Querying 800 database'.										
<b>7.2.3.2</b>	Query Packages (with in UDTs and XUDTs)		Refer to Section 7.1.3.1													
<b>7.2.3.3</b>	Response Package <i>[Set for ALL Response packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		DPCRTIDSSN		X		X										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u									
			2[DPCRTIDSSN]	0		n/a	n/a									
		Cross Triggers	Local			Global										
			X			n/a										
		State of Call	CTState			CTEnhState										
			n/a			'Response received from 800 SCP'.										

Call Trace Assistance															
7.2.3.4	Response Package (Translated Number) <sup>a</sup> <i>[These setting are in addition to or overwrite 7.2.3.3]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			TX	X			X								
		DPCRTIDSSN		X	X	X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2[DPCRTIDSSN]		5		n/a	5000							
		Cross Triggers	Local				Global								
			n/a				X								
		State of Call	CTState				CTEnhState								
			n/a				'Translated Number returned'.								
7.2.3.5	Response Package (Play Announcement Operation) <i>[These setting are in addition to or overwrite 7.2.3.3]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		DPCRTIDSSN		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2[DPCRTIDSSN]		0		n/a	n/a							
		Cross Triggers	Local				Global								
			X				n/a								
		State of Call	CTState				CTEnhState								
			n/a				'Playing Announcement'.								
7.2.3.6	Response Package (Send Notification Component) <sup>a</sup> <i>[These setting are in addition to or overwrite 7.2.3.3]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		DPCRTIDSSN		X		X									
		OPCSS- NECHO	X												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2[DPCRTIDSSN]		2		n/a	n/a							
		Cross Triggers	Local				Global								
			X				n/a								
		State of Call	CTState				CTEnhState								
			n/a				'Waiting Termination Info' <sup>a</sup>								

Call Trace Assistance														
7.2.3.7	Unidirectional Package containing an echo_id	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[DPCSSNECHO]		n/a		n/a		n/a					
		Cross Triggers	Local			Global								
			n/a			n/a								
		State of Call	CTState			CTEnhState								
			n/a			'Termination Info returned'.								

a.If Response contains both Translated Number and Send Notification, then 'Waiting Termination Info' message should take precedence.

## 7.3 LIDB

This defines the requirements additional to the basic TCAP requirements (see 7.1).

The following fields should be extracted from all messages which contain them. All references are to GR-954-CORE (see 2.3.32) unless otherwise stated.

### 7.3.1 Fields

MSU Breakout Fields				
7.3.1.1 (1)	Field	Spec Ref		
(1)	Field	<b>callingParty.natOfAddr_b</b>	7.1.3.2, 7.2.6 AD, 7.2.4 AD, 7.2.8 X GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.1, Fig A-6B GR-1188-CORE issue2: Table D-1,D-2,D-3	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is ANI (calling) digits. The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is ‘queried number’ (getData). The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is CDN (Calling Directory Number)		
	Details	Implementation Info: See 7.3.1.1 (2) Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to National ISUP (3) K_GG59_NSIGNATOFADDR.		
(2)	Field	<b>callingParty.telno</b>	7.1.3.2, 7.2.6 AD, 7.2.4 AD, 7.2.8 X GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.1, Fig A-6B GR-1188-CORE issue2: Table D-1,D-2,D-3	Spec Ref
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is ANI (calling) digits. The Address Signal subfield of the Digits parameter, when Type of Digits is ‘queried number’ (getData).		
	Details	Implementation Info: - If a Digits parameter contains ANI (calling) digits (use Type of Digits to determine) then the digits should be copied into callingParty.telno in the same form as stored in the message. - If a Digits parameter contains CDN (Calling Directory Number) digits then the digits should be copied into callingParty.telno in the same form as stored in the message. - For getData queries the lineNumber, if present (use tag to decide), should always be copied into the callingParty.telno field in the same form as stored in the message. - Only “queried number” appears in Getdata queries, “CDN” in OLNS and GN and “ANI” otherwise.		

(3)	Field	<b>callingParty.telnoType_b</b>	Spec Ref	See 7.3.1.1(2)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.3.1.1(2).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_ANI (for ANI (calling))</li> <li>K_GG59_TELNOTYPE_CDN (for Calling Directory Number)</li> <li>K_GG59_TELNOTYPE_QUERIEDNUM (for Queried Number)</li> </ul>			
<b>7.3.1.2 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.6 AA, 7.2.4 AG, 7.2.8 A GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.1, Fig A-6B	
	Definition	<p>The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is dialled (called) digits.</p> <p>The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is ‘queried number’ (getData).</p>			
	Details	<p>Implementation Info: See 7.3.1.2 (2).</p> <p>Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to National ISUP (3) K_GG59_NSIGNATOFADDR.</p>			
<b>(2)</b>	Field	<b>calledParty.telno</b>	Spec Ref	7.1.3.2, 7.2.6 AA, 7.2.4 AG, 7.2.8 A GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.1, Fig A-6B	
	Definition	<p>The Address Signal subfield of the Digits parameter, when Type of Digits is dialled (called) digits.</p> <p>The Address Signal subfield of the Digits parameter, when Type of Digits is ‘queried number’ (getData).</p>			
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- If a Digits parameter contains dialled (called) digits (use Type of Digits to determine) then the digits should be copied into calledParty.telno in the same form as stored in the message.</li> <li>- In the case of OLNS if this optional field is not present copy calledParty.telno here (see 7.3.1.2 Details (1)).</li> <li>- For getData queries the lineNumber, if present (use tag to decide), should always be copied into the calledParty.telno field in the same form as stored in the message.</li> </ul>			
<b>(3)</b>	Field	<b>calledParty.telnoType_b</b>	Spec Ref	See 7.3.1.2(2)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.3.1.2(2).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_DIALED (for Dialled (Called) digits)</li> <li>K_GG59_TELNOTYPE_CDN (for Calling Directory Number)</li> <li>K_GG59_TELNOTYPE_QUERIEDNUM (for Queried Number)</li> </ul>			

<b>7.3.1.3 (1)</b>	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.6 AA, 7.2.4 AG, 7.2.8 A GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.5, Fig A-6B	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is billing number or true billing number digits.			
	Details	<p>Implementation Info: See 7.3.1.3 (2).</p> <p>Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to National ISUP (3) K_GG59_NSIGNATOFADDR.</p>			
<b>(2)</b>	Field	<b>chargeNum.telno</b>	Spec Ref	7.1.3.2, 7.2.6 X, 7.2.4 X, 7.2.8 AD, 7.2.5.4 AR GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.5, Fig A-6B	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is billing number or true billing number digits.			
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- If a Digits parameter contains billing/true billing number digits (use Type of Digits to determine) then the digits should be copied into chargeNumParty.telno in the same form as stored in the message.</li> <li>- GetData responses can contain “true billing number”.</li> </ul>			
<b>(3)</b>	Field	<b>chargeNum.telnoType_b</b>	Spec Ref	See 7.3.1.3(2)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.3.1.3(2).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_BILLNUM (for Billing Number)</li> <li>K_GG59_TELNOTYPE_TRUEBILLNUM (for True Billing Number)</li> </ul>			
<b>7.3.1.4 (1)</b>	Field	<b>RAO.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.5.4 AC, 7.2.7 AL GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is RAO digits.			
	Details	<p>Implementation Info:</p> <p>The nature of address should be copied into RAO.natOfAddr_b as per 7.3.1.4 (2).</p> <p>Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to National ISUP (3) K_GG59_NSIGNATOFADDR.</p>			

(2)	Field	<b>RAO.telno</b>	Spec Ref	7.1.3.2, 7.2.5.4 AC, 7.2.7 AL GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is RAO digits.			
	Details	Implementation Info: If a Digits parameter contains RAO digits (use Type of Digits to determine) then the digits should be copied into RAO.telno in the same form as stored in the following messages: - CC Type 1: Normal Response - BNS Response - GetData responses.			
7.3.1.5 (1)	Field	<b>primPreferIC.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.5.4 AI, 7.2.7 AR GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is Primary Preferred IC digits.			
	Details	Implementation Info: The nature of address should be copied into primPreferIC.natOfAddr_b as per 7.3.1.5 (2). Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to National ISUP (3) K_GG59_NSIGNATOFADDR.			
(2)	Field	<b>primPreferIC.telno</b>	Spec Ref	7.1.3.2, 7.2.5.4 AI, 7.2.7 AR GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Primary Preferred IC digits.			
	Details	Implementation Info: If a Digits parameter contains Primary Preferred IC digits (use Type of Digits to determine) then the digits should be copied into primPreferIC.telno in the same form as stored in the message from the: - CC Type 1 Normal Response - BNS Response - GetData responses.			

<b>7.3.1.6 (1)</b>	Field	<b>altPreferIC.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.5.4 AL, 7.2.7 AU GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is Alternate Preferred IC digits.		
	Details	<p>Implementation Info:</p> <p>The nature of address should be copied into altPreferIC.natOfAddr_b as per 7.3.1.6 (2). Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to Nationl ISUP (3) K_GG59_NSIGNATOADDR.</p>		
	Field	<b>altPreferIC.telno</b>	Spec Ref	7.1.3.2, 7.2.5.4 AL, 7.2.7 AU GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B
<b>7.3.1.7 (1)</b>	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Alternate Preferred IC digits.		
	Details	<p>Implementation Info:</p> <p>If a Digits parameter contains Alternate Preferred IC digits (use Type of Digits to determine) then the digits should be copied into altPreferIC.telno in the same form as stored in the message from the:</p> <ul style="list-style-type: none"> <li>- CC Type 1 Normal Response</li> <li>- BNS Response</li> <li>- GetData responses.</li> </ul>		
	Field	<b>preferINC.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.5.4 AO, 7.2.7 AX GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is Preferred INC digits.		
<b>(2)</b>	Details	<p>Implementation Info:</p> <p>The nature of address should be copied into preferINC.natOfAddr_b as per 7.3.1.7 (2). Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to Nationl ISUP (3) K_GG59_NSIGNATOADDR.</p>		
	Field	<b>preferINC.telno</b>	Spec Ref	7.1.3.2, 7.2.5.4 AO, 7.2.7 AX GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.2, Fig A-6B
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Preferred INC digits.		
	Details	<p>Implementation Info:</p> <p>If a Digits parameter contains Preferred INC digits (use Type of Digits to determine) then the digits should be copied into preferINC.telno in the same form as stored in the message from the:</p> <ul style="list-style-type: none"> <li>- CC Type 1 Normal Response</li> <li>- BNS Response</li> <li>- GetData responses.</li> </ul>		

<b>7.3.1.8 (1)</b>	Field	<b>referralNum.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.7 BA GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.5, Fig A-6B
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is Referral Number digits.		
	Details	Implementation Info: The nature of address should be copied into referralNum.natOfAddr_b as per 7.3.1.8 (2). Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to National ISUP (3) K_GG59_NSIGNATOFADDR.		
	(2)	Field	<b>referralNum.telno</b>	Spec Ref 7.1.3.2, 7.2.7 BA GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.5, Fig A-6B
<b>7.3.1.9 (1)</b>	Field	<b>TMServiceId_b</b>	Spec Ref	n/a
	Definition	See 7.1.1.9 (2)		
	Details	Implementation Info: - This should be set to K_GG59_LIDBSERVNUM, except for OLNS and GN Query and Response, when it should be set to K_GG59_CNAMESERVNUM.		
	(2)	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref n/a
<b>7.3.1.10</b>	Definition	See 7.1.1.9 (1)		
	Details	Implementation Info: - If a RESPONSE package contains a RETURN ERROR component and a Private Error Code, set TMServiceAssFailCode_u to K_GG59_BASELIDB_ERRORCODE + tcapErrorCode_b. - If an Operation Code is present in the message and the family is Procedural and the specifier is Report Error set TMServiceAssFailCode_u to K_GG59_REPORT_ERROR_OPCODE.		
	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10		
	Details	Implementation Info: This should be set to K_GG59_USTCAP_INFO.		

<b>7.3.1.11</b>	Field	<b>companyId_u</b>	Spec Ref	7.1.3.8
	Definition	The Company ID parameter (2 byte) identifies the telephone company with which the data is to be associated.		
	Details	<p>Implementation Info:</p> <p>The Company Id information is a 2 byte digits field which should be extracted from the following, in the same form as stored in the message:</p> <ul style="list-style-type: none"> <li>- Calling Card - Type 1: Normal Response</li> <li>- Billing Number Screening Response</li> </ul>		
<b>7.3.1.12</b>	Field	<b>PIN_u</b>	Spec Ref	7.1.3.11, 7.2.4 AA
	Definition	The PIN parameter (2 byte) is a 4-digit password. The value of this field ranges from 2000 to 9999.		
	Details	<p>Implementation Info:</p> <p>The PIN information is a 2 byte digits field which should be extracted from the following, in the same form as stored in the message:</p> <ul style="list-style-type: none"> <li>- Calling Card - Type 1: Query</li> </ul>		
<b>7.3.1.13</b>	Field	<b>PINrestInd_b</b>	Spec Ref	7.1.3.12, 7.2.5.4 Z
	Definition	The PIN Restriction Indicator(1 byte) indicates whether or not a PIN is restricted.		
	Details	<p>Implementation Info:</p> <p>The PIN Restriction Indicators is a 1 byte digits field which should be extracted from the following, in the same form as stored in the message:</p> <ul style="list-style-type: none"> <li>- Calling Card - Type 1: Normal Response</li> </ul>		
<b>7.3.1.14</b>	Field	<b>CSDI_b</b>	Spec Ref	7.1.3.5, 7.2.5.Q,
	Definition	The CCAN Service Denial Indicator indicates whether CC billing is allowed for CCAN.		
	Details	<p>Implementation Info:</p> <p>If Calling Card Account Number (CCAN) Service Denial Indicator is present then extract the value into CSDI_b field.</p>		
<b>7.3.1.15</b>	Field	<b>PSDI_b</b>	Spec Ref	7.1.3.13, 7.2.5.3 Q
	Definition	The PIN Service Denial Indicator indicates whether or not a PIN can be used.		
	Details	<p>Implementation Info:</p> <p>If the PIN Service Denial Indicator is present then extract the value into PSDI_b field.</p>		

<b>7.3.1.16</b>	Field	<b>queryType_u</b>	Spec Ref	7.2.4 R, 7.2.6 R, 7.2.8 R GR-954-CORE issue 3 GR-2838-CORE issue2 GR-1188-CORE issue2
	Definition	This field indicates what Query Type has been parsed.		
	Details	<p>Implementation Info:            Information will be extracted into this field from the following:</p> <ul style="list-style-type: none"> <li>- Calling Card Verification Information identifier of the CC Query Type 1</li> <li>- BNS Information Identifier of the BNS Query</li> <li>- OLNS Information Identifier of the OLNS Query</li> <li>- LIDBGetDataIdentifier defined within a getData query.</li> <li>- GN Information Identifier of the GN Query</li> </ul> <p>This information should be extracted in the same form as stored in the message.</p>		
<b>7.3.1.17</b>	Field	<b>CCSAN_b</b>	Spec Ref	7.1.3.6, 7.2.5.4 W
	Definition	The Calling Card Subaccount Number contains a code used on customer bills to distinguish the various users of a CCAN, each associated with a different PIN.		
	Details	<p>Implementation Info:            If Calling Card SubAccount Number (CCSAN) is present then extract the value into CCSAN_b field.</p>		
<b>7.3.1.18</b>	Field	<b>recStatInd_b</b>	Spec Ref	7.1.3.14, 7.2.7R, 7.2.5.4 R
	Definition	The Record Status Indicator(1 byte) provides status information regarding a particular record.		
	Details	<p>Implementation Info:            The recStatInd_b field should be extracted from any message which contains it and, in the same form as it exists in the message. The messages that currently fall into this category are:</p> <ul style="list-style-type: none"> <li>- CC Type 1: Normal Response</li> <li>- BNS Response</li> </ul>		
<b>7.3.1.19</b>	Field	<b>ICInd_u</b>	Spec Ref	7.1.3.9, 7.2.5.4AF, 7.2.7 AO
	Definition	The IC Indicators parameter (2 byte) specifies whether certain carriers associated with the billing number have been indicated or not, and whether or not these carriers have been denied.		
	Details	<p>Implementation Info:            The ICInd_u field should be extracted from any message which contains it and, in the same form as it exists in the message. The messages that currently fall into this category are:</p> <ul style="list-style-type: none"> <li>- CC Type 1: Normal Response</li> <li>- BNS Response</li> </ul>		
<b>7.3.1.20</b>	Field	<b>collAccInd_b</b>	Spec Ref	7.1.3.7, 7.2.7 W
	Definition	The Collect Acceptance Indicator(1 byte) indicates the proper handling of requests for Collect Billing to a line number.		
	Details	<p>Implementation Info:            The collAccInd_b field should be extracted from any message which contains it and, in the same form as it exists in the message. The messages that currently fall into this category are:</p> <ul style="list-style-type: none"> <li>- BNS Response</li> </ul>		

<b>7.3.1.21</b>	Field	<b>interceptInd_b</b>	Spec Ref	7.1.3.10, 7.2.7 AI
	Definition	The Intercept Indicator (1 byte) indicates whether a number is working and, if not, the applicable condition		
	Details	<p>Implementation Info:</p> <p>The interceptInd_b field should be extracted from any message which contains it and, in the same form as it exists in the message. The messages that currently fall into this category are:</p> <ul style="list-style-type: none"> <li>- BNS Response</li> </ul>		
<b>7.3.1.22</b>	Field	<b>servEquipInd_b</b>	Spec Ref	7.1.3.15, 7.2.7 AF
	Definition	The Service or Equipment Indicator parameter(1 byte) indicates the type of service or equipment on a line.		
	Details	<p>Implementation Info:</p> <p>The servEquipInd_b field should be extracted from the following message and, in the same form as it exists in the message:</p> <ul style="list-style-type: none"> <li>- BNS Response</li> </ul>		
<b>7.3.1.23</b>	Field	<b>TNAInd_b</b>	Spec Ref	7.1.3.16, 7.2.7 Z
	Definition	The Third Number Acceptance Indicator (1 byte)indicates the proper handling request for Third Number Billing to a line.		
	Details	<p>Implementation Info:</p> <p>The TNAInd_b field should be extracted from any message which contains it and, in the same form as it exists in the message. The messages that currently fall into this category are:</p> <ul style="list-style-type: none"> <li>- BNS Response</li> </ul>		
<b>7.3.1.24</b>	Field	<b>treatInd_b</b>	Spec Ref	7.1.3.17, 7.2.7 AC
	Definition	The Treatment Indicator (1 byte) indicates the type of line treatment and prompt to be given to the line.		
	Details	<p>Implementation Info:</p> <p>The treatInd_b field should be extracted from the following message and, in the same form as it exists in the message:</p> <ul style="list-style-type: none"> <li>- BNS Response</li> </ul>		

<b>7.3.1.25 (1)</b>	Field	<b>txNum[].natOfAddr_b</b>	Spec Ref	GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.5, Fig A-6B	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is “Diversion Routing Number.”(getData) or Queried Number in any messages.			
	Details	<p>Implementation Info: Also, these values should be mapped to the ISUP equivalents. That is, International LIDB (1) should be mapped to International ISUP (4) K_GG59_INTLNATOFADDR, National (0) should be mapped to Nationl ISUP (3) K_GG59_NSIGNATOFADDR.</p>			
	(2)	Field	<b>txNum[].telno</b>	Spec Ref GR-954-CORE issue 3: 1.1.1, 7.1.3.10 GR-2838-CORE issue2: Fig A-1, B.2.5, Fig A-6B	
		Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is “Diversion Routing Number” (getData) or Queried Number in any messages.		
	(3)	Details	<p>Implementation Info:            - If a Digits parameter contains Diversion Routing Number digits (use Type of Digits to determine) then the digits should be copied into txNum[0].telno in the same form as stored in the message.            - For getData queries the lineNumber, if present (use tag to decide), should always be copied into the txNum[0].telno field in the same form as stored in the message.</p>		
		Field	<b>txNum[].telnoType_b</b>	Spec Ref See 7.3.1.25(2)	
		Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	<b>7.3.1.26</b>	Details	<p>Implementation Info: See 7.3.1.25(2). The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_DEVROUTINGNUM (for Diversion Routing Number) K_GG59_TELNOTYPE_QUERIEDNUM (for Queried Number)</p>		
		Field	<b>callingName_ba</b>	Spec Ref GR-954-CORE, Section 7.1.3.12	
		Definition	The null-terminated string for character subfield of the generic name when carrying a Calling Name.		
		Details	<p>Implementation Info: The character subfield of the generic name parameter extracted whenever present in the message and when the Type Of name subfield equals Calling Name. The array must be null terminated. If the number of characters is greater than (K_GG26_CALLINGNAME_LEN - 1) then the first (K_GG26_CALLINGNAME_LEN - 1) characters must be extracted and the string then null terminated.</p>		

### 7.3.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.3.2.1</b>	Query		See Section 7.1.2.1 (Generic TCAP)
<b>7.3.2.2</b>	OLNS Query GetData Query GN Query	callingParty.telno calledParty.telno	
<b>7.3.2.3</b>	Response		See Section 7.1.2.3 (Generic TCAP)

### 7.3.3 Call Trace Assistance

Call Trace Assistance											
<b>7.3.3.1</b>	CC, BNS Query	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLED	X				X				
		CALLING	X				X				
		CHARGING	X				X				
		PCOTIDSSN	X								
		MATCHRULE	AND								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
					5						
		Cross Triggers	Local				Global				
			X								
		State of Call	CTState				CTEnhState				
							'Querying LIDB Database'				
<b>7.3.3.2</b>	OLNS Query getData Query  GN Query	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLED					X	X			
		CALLING					X	X			
		PCOTIDSSN	X								
		MATCHRULE	OR <sup>a</sup>								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
					5		5				
		Cross Triggers	Local				Global				
			X								
		State of Call	CTState				CTEnhState				
							'Requesting Caller's Name' "GetData Query "				

Call Trace Assistance																
7.3.3.3	Response <i>[Set for ALL Response packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
			DPCRTIDSSN	X		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			2[DPCRTIDSSN]		5		n/a									
		Cross Triggers	Local				Global									
			X													
		State of Call	CTState				CTEnhState									
							'Response Received from LIDB SCP' or 'Calling Name Delivered' if response contains Generic Name parameter									
7.3.3.4	Response Containing True Billing Number  <i>[These settings are in addition to or overwrite 7.3.3.3]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CHARGING	X				X									
		DPCRTIDSSN		X	X	X										
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			2[DPCRTIDSSN]		5		n/a		5000mSec							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
							'Response Received from LIDB SCP'									

Call Trace Assistance															
7.3.3.5	Response Containing Diversion Routing Number <i>[These setting are in addition to or overwrite 7.3.3.3]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X				X								
		DPCRTIDSSN		X	X	X									
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			2[DPCRTIDSSN]	5		n/a	5000mSec								
		Cross Triggers	Local			Global									
						X									
		State of Call	CTState			CTEnhState									
						'GetData Diversion Routing Number'									

a.Indicates that only one of Calling or Called need match (see 7.3.1.2).

## 7.4 CLASS

### 7.4.1 Fields

This defines the requirements additional to the basic TCAP requirements (see 7.1).

The following fields should be extracted from all messages which contain them. Due to the diverse nature of CLASS and the multiple specs involved, there are multiple references to each field.

References in *italic* text are to TR-NWT-001188 Iss.1 December 1991, (see 2.3.5).

References in normal text are to TR-NWT-000215 Iss.3 June 1993, (see 2.3.6).

References in **bold** text are to TR-NWT-000227 Iss.3 June 1993, (see 2.3.7).

Note 1: All references to Automatic Callback, (see 1.3.6) also apply to Automatic Recall (see 1.3.7), which has identical SS7 procedures and message codes.

Note 2: In this section particular Class queries are referred to by the following names

- (a) Calling Name Delivery Query : this is a Query with Permission package containing a 'Provide value' TCAP operation with parameter id 'Generic Name' (see 1.3.5 Tables4 & 5).
- (b) 'Queue Call' Query : this is a Query with Permission package containing a 'QueueCall' TCAP operation (see 1.3.6 B.2.1).
- (c) 'Terminating Scanning Request' Query : this is a Query with Permission package containing a 'Send Notification when party free' TCAP Operation (see 1.3.6 B.2.2).
- (d) 'Originating Scanning Request Query' : this is a Query with Permission package containing a 'Provide Value' TCAP Operation (see 1.3.6 B.2.3 O), including a Busy/Idle Status parameter (see 1.3.6 B.2.3 Z), but no Queue Call operation.

MSU Breakout Fields				
<b>7.4.1.1 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	<i>[Section 8 Tables 4 &amp;5 row 25] [B2.1 Y, B2.2 Y, B2.3 Y, B3.6 X]</i>
	Definition	The Calling Party Number Field.		
	Details	Implementation Info: (1) From the digits parameter of a 'Calling Name Delivery' Query. (2) From the 'calling DN' digits parameter of a 'Queue Call' Query. (3) From the 'calling DN' digits parameter of a 'Terminating Scanning Request' Query. (4) From the 'calling DN' digits parameter of an 'Originating Scanning Request' Query. (5) From the 'calling DN' digits parameter of a 'Dequeue call Unidirectional'.		
	Field	<b>callingParty.telnoType_b</b>	Spec Ref	See 7.4.1.1(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	Implementation Info: See 7.4.1.1(1). The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CDN (for Calling Directory Number)		
<b>(2)</b>				

<b>7.4.1.2 (1)</b>	<b>Field</b>	<b>calledParty.telno</b>	<b>Spec Ref</b>	<i>[Section 8 Tables 4 &amp; 5 row 25 and 3.8 L] [B2.1 V, B2.2 V, B2.3 V, B3.6 U]</i>
	<b>Definition</b>	The Called Party Number Field.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) From the digits parameter of a ‘Calling Name Delivery’ Query. This is required to cover an interaction with the Automatic Callback feature where ‘Calling Name Delivery’ is used to look up the Called Number. (ref TR-NWT-001188 3.8 L).</li> <li>(2) From the ‘destination number’ digits parameter of a ‘Queue Call’ Query.</li> <li>(3) From the ‘destination number’ digits parameter of a ‘Terminating Scanning Request’ Query.</li> <li>(4) From the ‘destination number’ digits parameter of an ‘Originating Scanning Request’ Query.</li> <li>(5) From the ‘destination number’ digits parameter of a ‘Dequeue call Unidirectional’.</li> </ul>		
<b>(2)</b>	<b>Field</b>	<b>calledParty.telnoType_b</b>	<b>Spec Ref</b>	See 7.4.2.1(1)
	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	<b>Details</b>	<p>Implementation Info: See 7.4.1.2(1).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_DESTNUM (for Destination Number)</li> <li>K_GG59_TELNOTYPE_CDN (for Calling Directory Number)</li> </ul>		
<b>7.4.1.3</b>	<b>Field</b>	<b>callingName_ba</b>	<b>Spec Ref</b>	<i>Table 6 row 17 &amp; Fig.20</i>
	<b>Definition</b>	This is the character subfield carried within the Generic Name parameter.		
	<b>Details</b>	n/a		
<b>7.4.1.4 (1)</b>	<b>Field</b>	<b>TMServiceId_b</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	See 7.1.1.9 (2)		
	<b>Details</b>	<p>Implementation Info: This should be set to K_GG59_CLASSSERVNUM.</p>		
<b>(2)</b>	<b>Field</b>	<b>TMServiceAssFailCode_u</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	See 7.1.1.9 (1)		
	<b>Details</b>	<p>Implementation Info: If a RESPONSE package contains a RETURN ERROR component and a Private Error Code, set TMServiceAssFailCode to K_GG59_BASECLASS_ERRORCODE + tcapErrorCode_b.</p>		
<b>7.4.1.5</b>	<b>Field</b>	<b>appLevel_b</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	See 7.2.1.10		
	<b>Details</b>	<p>Implementation Info: This should be set to K_GG59_USTCAP_INFO.</p>		

## 7.4.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.4.2.1</b>	Query (Calling Name Delivery Query)	callingParty.telno	See Section 7.1.2.1
<b>7.4.2.2</b>	Response Package	n/a	See Section 7.1.2.3

### 7.4.3 Call Trace Assistance

Call Trace Assistance										
<b>7.4.3.1</b>	Query Packages contained in SCCP UDT/XUDT		See Section 7.1.3.1 (Generic TCAP)							
			FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
<b>7.4.3.2</b>	Query Packages (Calling Name Delivery Query)	CTFlags Critter	CALLING				X	X		
			CALLED				X	X		
			PCOTIDSSN	X						
			MATCHRULE	OR <sup>a</sup>						
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u			
				n/a	5	5	n/a			
			Cross Triggers	Local			Global			
				X			n/a			
			State of Call	CTState			CTEnhState			
				n/a			'Requesting callers name'.			
<b>7.4.3.3</b>	Query Packages (Automatic Recall / Callback Queue Call Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			CALLING	X			X			
			CALLED	X			X			
			PCOTIDSSN	X						
			MATCHRULE	AND						
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u			
				n/a	5	n/a	n/a			
			Cross Triggers	Local			Global			
				X			n/a			
			State of Call	CTState			CTEnhState			
				n/a			'Queueing Call'.			

Call Trace Assistance												
<b>7.4.3.4</b>	Query Packages (Automatic Recall / Callback Terminating Scanning Request Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CALLING	X						X			
		CALLED	X						X			
		PCOTIDSSN	X									
		MATCHRULE	AND									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			n/a	5		n/a	n/a					
		Cross Triggers	Local				Global					
			X				n/a					
		State of Call	CTState				CTEnhState					
<b>7.4.3.5</b>	Query Packages (Automatic Recall / Callback Originating Scanning Request Query)	MATCHRULE	AND									
		CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CALLING	X						X			
		CALLED	X						X			
		PCOTIDSSN	X									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			n/a	5		n/a	n/a					
		Cross Triggers	Local				Global					
			X				n/a					
		State of Call	CTState				CTEnhState					
			n/a				'Originating Scanning'.					

Call Trace Assistance															
<b>7.4.3.6</b>	Conversation Packages <i>[Set for ALL Response packages including the Specific instances set below]</i>	CTFlags Critter PCOTIDSSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X	X											
		DPCRTIDSSN		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			n/a		2160 <sup>b</sup>		n/a	n/a							
		Cross Triggers	Local				Global								
			X				n/a								
		State of Call	CTState				CTEnhState								
			n/a				n/a								
<b>7.4.3.7</b>	Response Packages <i>[Set for ALL Response packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		DPCRTIDSSN		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2 [DPCRTIDSSN]		5		n/a	n/a							
		Cross Triggers	Local				Global								
			X				n/a								
		State of Call	CTState				CTEnhState								
			n/a				'CLASS Response received'.								
<b>7.4.3.8</b>	Response Packages (Generic Name parameter) <sup>a</sup> <i>[These setting are in addition to or overwrite 7.4.3.7]</i>	State of Call	CTState				CTEnhState								
			n/a				'Calling Name Delivered'.								
<b>7.4.3.9</b>	Response Packages (Busy / Idle Status Identifier = 'Idle') <sup>b</sup> <i>[These setting are in addition to or overwrite 7.4.3.7]</i>	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2[DPCRTIDSSN]		60		n/a	n/a							
		State of Call	CTState				CTEnhState								
			n/a				'Called Line Idle'.								
<b>7.4.3.10</b>	Response Packages (Busy / Idle Status Identifier = 'Busy') <sup>c</sup> <i>[These setting are in addition to or overwrite 7.4.3.7]</i>	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2[DPCRTIDSSN]		100 <sup>c</sup>		n/a	n/a							
		State of Call	CTState				CTEnhState								
			n/a				'Called Line Busy'.								

Call Trace Assistance												
<b>7.4.3.11</b>	Response Packages (Operation Code 'Control : Cancel') <sup>d</sup>  <i>[These setting are in addition to or overwrite 7.4.3.7]</i>	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
			2[DPCRTIDSSN]		1		n/a		n/a			
		State of Call	CTState			CTEnhState						
			n/a			'Operation Cancelled'.						
<b>7.4.3.12</b>	DeQueue Unidirectional Message <sup>e</sup>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CALLING						X	X			
		CALLED						X	X			
		MATCHRULE	AND									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
			n/a		2		2160 <sup>d</sup>		n/a			
		Cross Triggers	Local			Global						
			X			n/a						
		State of Call	CTState			CTEnhState						
			n/a			'Operation Cancelled'.						

a.Indicates that only one of Calling or Called need match (see 7.3.1.2).

b.Ref 2.3.6 Section 3.1.2.4 A(f) and 3.5.1 R224(c)

c.10 seconds greater than the maximum scanning interval (2.3.6 3.1.2.4.1 A)

d.As per footnote a

## 7.5 AIN

### 7.5.1 Fields

This defines the requirements additional to the basic TCAP requirements (see 7.1).

The following fields should be extracted from all messages which contain them. References are to TR-NWT-001285 (see 2.3.9) and Gr-1299-CORE (2.3.50).

MSU Breakout Fields				
	Field	Spec Ref		
7.5.1.1	Field	<b>terminationInds_b</b>	Spec Ref	Section 6.2.10
	Definition	Extracted from the Termination Indicators parameter value. This parameter is included in SSP responses to SCP requests for termination information. This parameter indicates if the call was answered and if an error was encountered.		
	Details	n/a		
7.5.1.2 (1)	Field	<b>callingParty.telno</b>	Spec Ref	Section 6.1.21
	Definition	The Address Signal subfield of the Calling Party Number Field.		
	Details	Implementation Info: The Digits of the CallingPartyID parameter should be copied into callingParty.telno in the same form as stored in the message.		
	Field	<b>callingParty.telnoType_b</b>	Spec Ref	See 7.5.1.2(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	Implementation Info: See 7.5.1.2(1). The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CALLINGPARTYNUM (for callingPartyId)		
7.5.1.3 (1)	Field	<b>calledParty.telno</b>	Spec Ref	Section 6.1.18
	Definition	The Address Signal subfield of the Called Party Number Field.		
	Details	Implementation Info: The Digits should be copied into calledParty.telno in the same form as stored in the message for the following parameters ... (1) CalledPartyId in any message (2) CollectedAddressInfo in Info_Analysed [5.2.1.1] or Info_Collected [5.2.2.2] messages. CalledPartyId and CollectedAddressInfo should be mutually exclusive in these messages.		
	Field	<b>calledParty.telnoType_b</b>	Spec Ref	See 7.5.1.3(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	Implementation Info: See 7.5.1.3(1). The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyId) K_GG59_TELNOTYPE_COLLECTADDRINFO (for CollectedAddressInfo)		

<b>7.5.1.4</b>	Field	<b>chargeNum.telno</b>	Spec Ref	Section 6.1.23	
	Definition	The Address Signal subfield of the Charge Number parameter.			
	Details	<p>Implementation Info: The Digits of the ChargeNumber parameter should be copied into chargeNum.telno in the same form as stored in the message .</p>			
<b>7.5.1.5</b>	Field	<b>ocn.telno</b>	Spec Ref	Section 6.1.39	
	Definition	The Address Signal subfield of the Original Called Number. This is the DN of the first redirecting party.			
	Details	<p>Implementation Info: The Digits of the OriginalCalledPartyID parameter should be copied into ocn.telno in the same form as stored in the message.</p>			
<b>7.5.1.6</b>	Field	<b>redirectingNum.telno</b>	Spec Ref	Section 6.1.46	
	Definition	The Address Signal subfield of the Redirecting Number.			
	Details	<p>Implementation Info: The Digits of the RedirectingPartyID parameter should be copied into redirectingNum.telno in the same form as stored in the message.</p>			
<b>7.5.1.7</b> (1)	Field	<b>txNum[].telno</b>	Spec Ref	Section 5.2.2.1, 5.2.2.6, 5.2.1.5	
	Definition	The Address Signals subfield from the translation number.			
	Details	<p>Implementation Info: The telno entries in txNum[] should be filled from the following parameters, if present. If more than one parameter is present, entries should be used in the order they are encountered in the message.</p> <ol style="list-style-type: none"> <li>(1) CalledPartyId parameter of Analyze_Route [5.2.2.1]</li> <li>(2) CalledPartyId parameter of Forward_Call [5.2.2.6]</li> <li>(3) OutpulseNumber parameter in any message</li> <li>(4) CollectedAddressInfo parameter in any message</li> <li>(5) DestinationAddress parameter in any message</li> <li>(6) InfoDigits in AnnounceElement parameter in any message</li> </ol>			
	Field	<b>txNum[].telnoType_b</b>	Spec Ref	See 7.5.1.7(1)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.5.1.7(1).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyId)</li> <li>K_GG59_TELNOTYPE_COLLECTADDRINFO (for CollectedAddressInfo)</li> <li>K_GG59_TELNOTYPE_OUTPULSENUM (for OutpulseNumber)</li> <li>K_GG59_TELNOTYPE_DESTADDR (for DestinationAddress)</li> <li>K_GG59_TELNOTYPE_INFODIGITS (for InfoDigits in AnnounceElement)</li> </ul>			
	Field	<b>txNum[].telnoType_d</b>	Spec Ref	See 7.5.1.7(1)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.5.1.7(1).</p> <p>The telnoType_d subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyId)</li> <li>K_GG59_TELNOTYPE_COLLECTADDRINFO (for CollectedAddressInfo)</li> <li>K_GG59_TELNOTYPE_OUTPULSENUM (for OutpulseNumber)</li> <li>K_GG59_TELNOTYPE_DESTADDR (for DestinationAddress)</li> <li>K_GG59_TELNOTYPE_INFODIGITS (for InfoDigits in AnnounceElement)</li> </ul>			
	Field	<b>txNum[].telnoType_o</b>	Spec Ref	See 7.5.1.7(1)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.5.1.7(1).</p> <p>The telnoType_o subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyId)</li> <li>K_GG59_TELNOTYPE_COLLECTADDRINFO (for CollectedAddressInfo)</li> <li>K_GG59_TELNOTYPE_OUTPULSENUM (for OutpulseNumber)</li> <li>K_GG59_TELNOTYPE_DESTADDR (for DestinationAddress)</li> <li>K_GG59_TELNOTYPE_INFODIGITS (for InfoDigits in AnnounceElement)</li> </ul>			

<b>7.5.1.8</b>	Field	<b>ainUserIdDn.telno</b>	Spec Ref	Section 6.1.58	
	Definition	The DN subfield of the User Id Parameter. this parameter contains the identification of a user.			
	Details	Implementation Info: This should be set to the Dn field from the UserId parameter in all messages which contain it.			
<b>7.5.1.9</b>	Field	<b>lataDigits_b</b>	Spec Ref	Section 6.1.38	
	Definition	The digits subfield of the LATA parameter. This parameter is sent from the SSP to the SCP. It identifies the Local Access and Transport Area.			
	Details	Implementation Info: The digits from a LATA parameter should be copied in the same form as stored in the message.			
<b>7.5.1.10</b>	Field	<b>carrier_b</b>	Spec Ref	Section 6.1.44	
	Definition	The Carrier Id subfield of the Primary Carrier parameter. This parameter contains the carrier selection information and the primary carrier identification to which a call should be routed.			
	Details	Implementation Info: These should be copied in the same format as stored in the message			
<b>7.5.1.11</b>	Field	<b>errorCause_b</b>	Spec Ref	Section 6.3.2	
	Definition	The Error Cause detects the application error at the SSP.			
	Details	Implementation Info: These should be copied in the same format as stored in the message.			
<b>7.5.1.12</b>	Field	<b>echoField_m</b>	Spec Ref	Section 6.2.3	
	Definition	The Echo Data parameter is used to associate the request with the response. This is done as calls can continue for long periods of time. The SCP would otherwise exhaust its invoke id resources if it had to store the ids for all calls currently in progress.			
	Details	Implementation Info: The AIN Echo Data parameter is a 6 byte field! So, for now, echoField_m should not be set, until errorField_m is extended to 6 bytes.			
<b>7.5.1.13 (1)</b>	Field	<b>TMServiceId_b</b>	Spec Ref	n/a	
	Definition	See 7.1.1.9 (2)			
	Details	Implementation Info: This should be set to K_GG59_AINSERVNUM.			
	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	n/a	
	Definition	See 7.1.1.9 (1)			
	Details	Implementation Info: If the component is carrying an ErrorCause parameter set TMServAssFailCode_u to K_GG59_BASEAIN_ERRORCAUSE + errorCause_b (this assumes that the error is 1 octet long).			

<b>7.5.1.14</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10		
	Details	Implementation Info: This should be set to K_GG59_USTCAP_INFO.		
<b>7.5.1.15</b>	Field	<b>clearCause_m</b>	Spec Ref	GR-1299-CORE S6
	Definition	The Clear Cause indicates why a connection between a user and a resource was terminated.		
	Details	Implementation Info: This field shall be extracted whenever present in the same format as stored in the message.		
<b>7.5.1.16</b>	Field	<b>failureCause_m</b>	Spec Ref	GR-1299-CORE S6
	Definition	The Failure Cause indicates that the received operation could not be performed due to the unavailability of a hardware or software resource.		
	Details	Implementation Info: This field shall be extracted whenever present in the same format as stored in the message.		
<b>7.5.1.17</b>	Field	<b>callingName_ba</b>	Spec Ref	GR-1299-CORE S6 & GR-1188-CORE
	Definition	The character subfield of the generic name when carrying a Calling Name.		
	Details	Implementation Info: The character subfield of the generic name parameter extracted whenever present in the message and when the Type Of name subfield equals Calling Name. The array must be null terminated. If the number of characters is greater than (K_GG26_CALLINGNAME_LEN - 1) then the first (K_GG26_CALLINGNAME_LEN - 1) characters must be extracted and the string then null terminated.		
<b>7.5.1.18</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	GR-1299-CORE S6 & TR-NWT-000444
	Definition	The first 2 octets of the Busy Cause parameter.		
	Details	Implementation Info: This field is the first 2 (K_GG59_CAUSEINDSLEN) octets of the Busy Cause parameter extracted whenever present in the message.		
<b>7.5.1.19</b>	Field	<b>relCauseLocn_b</b>	Spec Ref	GR-1299-CORE S6 & TR-NWT-000444
	Definition	The General location subfield of the Busy Cause parameter.		
	Details	Implementation Info: This field is the General location subfield of the Busy Cause parameter extracted whenever present in the message.		

## 7.5.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>7.5.2.1</b>	Query Packages	n/a	See Section 7.1.2.1 (Generic TCAP)
<b>7.5.2.2</b>	Conversation Packages	n/a	See Section 7.1.2.2 (Generic TCAP)
<b>7.5.2.3</b>	Response Package	n/a	See Section 7.1.2.3 (Generic TCAP)

### 7.5.3 Call Trace Assistance

Call Trace Assistance															
7.5.3.1	Origination_A Attempt Query Packages <sup>a</sup>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED					X								
		CALLING	X				X								
		PCOTIDSSN	X												
		CHARGING (if present)	X				X	X	X						
		OCN (if present)					X								
		RN (if present)					X								
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
					5										
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
							'Origination attempt'								

Call Trace Assistance													
<b>7.5.3.2</b>	Info_Analyzed, Info_Collected, Net- work Busy, Termina- tion Attempt Query Packages	CTFlags Critter  CALLED <sup>c</sup>  CALLING  PCOTIDSSN  CHARGING (if present)  OCN (if present)  RN (if present)  MATCHRULE	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X	X	X				
			X				X	X	X				
			X										
			X				X						
							X						
							X						
			AND										
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
					5		5						
			Cross Triggers	Local			Global						
				X									
			State of Call	CTState			CTEnhState						
							'Info Analysed' 'Info Collected', 'Network Busy', 'Termination Attempt' as appropriate						
<b>7.5.3.3</b>	Converstaion Pack- ages  <i>[Set for ALL Conver- sation packages including ths Specific instances set below]</i>	CTFlags Critter  DPCRTIDSSN  PCOTIDSSN  Time Outs  Cross Triggers	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
				X									
			X	X									
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
					120								
			Cross Triggers	Local			Global						
				X									

Call Trace Assistance																
<b>7.5.3.4</b>	Resource Clear Conversation <i>[These setting are in addition to or overwrite 7.5.3.3]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		DPCRTIDSSN		X												
		PCOTIDSSN	X	X												
		TX <sup>d</sup>	X													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
					120											
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
							'Resource Clear'									
<b>7.5.3.5</b>	Responses <i>[Set for ALLResponse packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		DPCRTIDSSN		X		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			2[K_GG59_DPCRTIDSSN]		5											
		Cross Triggers	Local				Global									
			X													
		State of Call	CTState				CTEnhState									
							'Response received from AIN SCP'									
<b>7.5.3.6</b>	Continue Response <i>[These setting are in addition to or overwrite 7.5.3.5]</i>	State of Call	CTState				CTEnhState									
							'Continue Response'									
<b>7.5.3.7</b>	Disconnect Response <i>[These setting are in addition to or overwrite 7.5.3.5]</i>	State of Call	CTState				CTEnhState									
							'Disconnect Response'									

Call Trace Assistance											
7.5.3.8	Resource Clear Response <i>[These setting are in addition to or overwrite 7.5.3.5]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCRTIDSSN		X		X					
		TX [see footnote c]	X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			2[K_GG59_DPCRTIDSSN]		120						
		Cross Triggers	Local			Global					
						X [see footnote c]					
		State of Call	CTState			CTEnhState					
						'Resource Clear Response'					
7.5.3.9	Analyze_Route Response <i>[These setting are in addition to or overwrite 7.5.3.5]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCRTIDSSN		X	X [footnote f]	X					
		CALLING	X								
			X				ttt <sup>ttt</sup>				
			X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			2[K_GG59_DPCRTIDSSN]		5				5000		
		Cross Triggers	Local			Global					
						X (see footnote e)					
		State of Call	CTState			CTEnhState					
						'Translated Number <sup>f</sup> returned' <sup>g</sup> if calledPartyId or OutpulseNumber is present, otherwise Message number of 'Analyze_Route Response'					

Call Trace Assistance														
<b>7.5.3.10</b>	AuthorizeTermination Response  <i>[These setting are in addition to or over-write 7.5.3.5]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCRTIDSSN		X		X								
		CALLING	X											
		CHARGING [if present]	X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[K_GG59_DPCRTIDSSN]		5									
		Cross Triggers	Local				Global							
			X											
		State of Call	CTState				CTEnhState							
							'Authorize_Termination Response'							
<b>7.5.3.11</b>	Forward_Call Response  <i>[These setting are in addition to or over-write 7.5.3.5]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCRTIDSSN		X		X								
		CALLING	X											
		TX [see footnote e]	X											
		CHARGING [if present]	X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[K_GG59_DPCRTIDSSN]		5									
		Cross Triggers	Local				Global							
							X [see footnote e]							
		State of Call	CTState				CTEnhState							
							'Forward Call Response'							

Call Trace Assistance											
<b>7.5.3.12</b>	Abort	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCRTIDSSN		X		X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
			2[K_GG59_DPCRTIDSSN]								
		State of Call	CTState			CTEnhState					
<b>7.5.3.13</b>	Send to Resource	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		Tx	X				X				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
		State of Call	CTState			CTEnhState					
			n/a			"Send To Resource"					

a. The Call Trace Assistance set for Query messages only apply to Query packages contained in SCCP UDT/XUDT messages. For Query packages contained in UDTs, XUDTs see generic TCAP section (see 7.1).

b. The CTFlags MATCHCALLS and MATCHSTALLED on CHARGING are only required for Operation Family Request Instructions.

c. If calledPartyId or CollectedAddressInfo parameter is present

d. if CollectedAddressInfo parameter present ( treat as ‘translated number, since digits are effectively changing the ‘called party number’).

e. Set for AIN0.2 only.

f. Although this text is identical to that used in 800 Response, use a different message number in order to allow either message to be changed independently.

g. if calledPartyId or OutpulseNumber is present

f. if calledPartyId is present

## 7.6 SCMG

### 7.6.1 Fields

The following fields should be extracted from all messages which contain them.

References in *italic* text are to ANSI T1.112.3 1996 (see 2.3.54).

References in normal text are to Bellcore, GR-246-CORE, T1.112.3 (see 2.3.51).

References in **bold** text are to ITU Q.713, 7/97 (see 2.3.53).

MSU Breakout Fields					
7.6.1.1	Field	scmgMT_b	Spec Ref	Table 20, Table 20, <b>Table 23</b>	
	Definition	This is the SCMG Format Identifier. It uniquely identifies the function and format of each SCMG message.			
	Details	Implementation Info: Currently the SCMG message type is extracted in the same form as it exists in the message. Currently, for all ANSI, Bellcore and ITU the values do not clash hence there is no need for mapping of these values. However, #defines do exist for each of these values if mapping is required in the future.			
7.6.1.2	Field	affectedSSN_b	Spec Ref	Table 22, Table 22, <b>Table 24/5</b>	
	Definition	The affected SSN.			
	Details	Implementation Info: n/a			
7.6.1.3	Field	TMServiceId_b	Spec Ref	n/a	
	Definition	See 7.1.1.9 (2)			
	Details	Implementation Info: This should be set to K_GG59_SCMGSERVNUM.			
7.6.1.4	Field	affectedPC_m	Spec Ref	ITU-T Q.713, Section 5.2.2 and 3.4.2.1	
	Definition	This is the affected signalling point code field.			
	Details	Implementation Info: n/a			

### 7.6.2 Capture Buffer indices

Not Applicable

### 7.6.3 Call Trace Assistance

Not Applicable

## 7.7 Generic INAP

### 7.7.1 Fields

This defines the requirements additional to the basic TCAP requirements (see 7.1).

The following fields should be extracted from all messages which contain them. References are to ETSI INAP (see 2.3.23). The definition also applies to the following INAPS:

- PY INAPs (see 2.3.36 and 2.3.37)
- FTZ INAP (see 2.3.24), which is a subset of ETSI INAP
- ITU CS-1 INAP (see 2.3.55)
- CHINA INAP (see 2.3.56)
- ETSI CS-2 INAP (see 2.3.57)
- ITU CS-2 INAP (see 2.3.58)
- ~~ETSI CAMEL~~ (see 2.3.62)
- NOKIA INAP (see 2.3.65)- Operations listed as “Not Supported” have include, as requested by the customer. Specifically, AssistRequestInstructions, InitiateCallAttempt, CallInformationReport and CallInformationRequest.
- Telecom Italia CS-2 INAP (see 2.3.66)
- Ericsson CS-1+ INAP (see 2.3.103). See Section 7.30 for additional requirements for Ericsson PrePaid System (see 2.3.112).
- Siemens INAP (see 2.3.134).

For each message the requirements listed in the “Generic INAP Package Flags” sections 7.7.4.1 to 7.7.4.4 shall be implemented. On top of this the requirements for each operation code add to these requirements. For example a Connect message in a continue package will have sections 7.7.4.2 and 7.7.3.3 implemented.

Notes: The requirements for CAMEL Application Part (CAP) was moved to section 7.34.

<b>MSU Breakout Fields</b>				
<b>7.7.1.1</b> (1)	Field	<b>callingParty.telno</b>	Spec Ref	Pg 45 & Section 9.11, 9.19, 9.20
	Definition	The Address Signal subfield of the Calling Party Number Field.		
	Details	<p>Implementation Info: The Digits should be copied into callingParty.telno in the same form as stored in the message for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) callingPartyNumber in any operation.</li> <li>(2) TP-OA (in sm-RP-UIHeader if TP-MTI=SMS-DELIVER) in InitialDP (MT SMS) [NOKIA 4.2.4.3.5]</li> </ul>		
(2)	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	Pg 45 & Section 9.11, 9.19, 9.20
	Definition	The nature of address subfield of the Calling Party Number Field.		
	Details	<p>Implementation Info: See 7.7.1.1(1)</p>		
(3)	Field	<b>callingParty.numberingPlan_b</b>	(3)	Field
	Definition	The numbering subfield of the Calling Party Number Field.		
	Details	<p>Implementation Info: See 7.7.1.1(1)</p>		
(4)	Field	<b>callingParty.telnoType_b</b>	Spec Ref	Pg 45 & Section 9.11, 9.19, 9.20
	Definition	The Telno Type subfield of the calling party number. It indicates the raw field name information.		
	Details	<p>Implementation Info: For TI INAP the telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CALLINGLINEID (for calling line identity) To support the generic calling party number for KFF, it should be set: K_GG59_TELNOTYPE_CALLINGPARTYNUM (for calling party number)</p>		

<b>7.7.1.2</b>	<b>(1)</b>	<b>Field</b>	<b>calledParty.telno</b>	<b>Spec Ref</b>	Pg 45 & Section 9.17-9.20	
		Definition	The Address Signal subfield of the Called Party Number Field.			
		Details	<p>Implementation Info:            The Digits should be copied into calledParty.telno in the same form as stored in the message for the following parameters ...</p> <ul style="list-style-type: none"> <li>(1) calledPartyNumber in any operation. (<b>Note:</b> calledPartyNumber in ConnectAssociation is also extracted to txNum[]. See also 7.7.1.5.)</li> <li>(2) destinationRoutingAddress in InitiateCallAttempt [9.20][NOKIA 4.1.3.2, Table 1]</li> <li>(3) TP-DA (in sm-RP-UIHeader if TP-MTI=SMS-SUBMIT) in InitialDP (MO SMS) [NOKIA 4.2.4.3.5]</li> <li>(4) Connected Number in any operation [Ericsson CS1+ INAP].</li> </ul>			
	<b>(2)</b>	<b>Field</b>	<b>calledParty.natOfAddr_b</b>	<b>Spec Ref</b>	Pg 45 & Section 9.17-9.20	
		Definition	The nature of address subfield of the Called Party Number Field.			
		Details	<p>Implementation Info:            See 7.7.1.2(1).</p>			
	<b>(3)</b>	<b>Field</b>	<b>calledParty.numberingPlan_b</b>	<b>Spec Ref</b>	Pg 45 & Section 9.17-9.20	
		Definition	The numbering plan subfield of the Called Party Number Field.			
		Details	<p>Implementation Info:            See 7.7.1.2(1).</p>			
	<b>(4)</b>	<b>Field</b>	<b>calledParty.telnoType_b</b>	<b>Spec Ref</b>	See 7.7.1.2(1).	
		Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
		Details	<p>Implementation Info:            See 7.7.1.2(1).            The telnoType_b subfield should be set as the following:            K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyNumber)            K_GG59_TELNOTYPE_DESTROUTINGADDR (for destinationRoutingAddress)            K_GG59_TELNOTYPE_CONNECTEDNUM (for [Ericsson CS1+ INAP] connectedNumber)</p>			

<b>7.7.1.3 (1)</b>	Field	<b>ocn.telno</b>	Spec Ref	Pg 51 & Section 9.11, 9.19
	Definition	The Address Signal subfield of the Original Called Number. This is the DN of the first redirecting party.		
	Details	<p>Implementation Info:            The Digits of the OriginalCalledPartyID parameter should be copied into ocn.telno in the same form as stored in the message for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) originalCalledPartyID in any operation.</li> </ul>		
<b>(2)</b>	Field	<b>ocn.natOfAddr_b</b>	Spec Ref	See 7.7.1.3(1).
	Definition	The nature of address subfield of the Original Called Number.		
	Details	<p>Implementation Info:            See 7.7.1.3(1) for Implementation Details.  <b>Limitation:</b> For the implementation effort considerations, only part of protocols (TDC related INAP/CAP protocols) extracted the subfield. See actual source codes for the latest implementation status.</p>		
<b>(3)</b>	Field	<b>ocn.numberingPlan_b</b>	Spec Ref	See 7.7.1.3(1).
	Definition	The numbering plan subfield of the Original Called Number.		
	Details	<p>Implementation Info:            See 7.7.1.3(1) for Implementation Details. See 7.7.1.3(2) for Limitation.</p>		
<b>7.7.1.4 (1)</b>	Field	<b>redirectingNum.telno</b>	Spec Ref	Pg 51 & Section
	Definition	The Address Signal subfield of the Redirecting Number.		
	Details	<p>Implementation Info:            The Digits of the redirectingPartyID parameter should be copied into redirectingNum.telno in the same form as stored in the message for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) redirectingPartyID in any operation.</li> </ul>		
<b>(2)</b>	Field	<b>redirectingNum.natOfAddr_b</b>	Spec Ref	See 7.7.1.4(1).
	Definition	The nature of address subfield of the Redirecting Number.		
	Details	<p>Implementation Info:            See 7.7.1.4(1) for Implementation Details.  <b>Limitation:</b> For the implementation effort considerations, only part of protocols (TDC related INAP/CAP protocols) extracted the subfield. See actual source codes for the latest implementation status.</p>		
<b>(3)</b>	Field	<b>redirectingNum.numberingPlan_b</b>	Spec Ref	See 7.7.1.4(1).
	Definition	The numbering plan subfield of the Redirecting Number.		
	Details	<p>Implementation Info:            See 7.7.1.4(1) for Implementation Details. See 7.7.1.4(2) for Limitation.</p>		

<b>7.7.1.5</b>	<b>(1)</b>	<b>Field</b>	<b>txNum[n].telno</b>	<b>Spec Ref</b>	<b>Section 9.11</b>		
	<b>Definition</b>	The Address Signals subfield from the translation number.					
		<p><b>Details</b></p> <p>Implementation Info: The telno entries in txNum[] should be filled from the following parameters, if present. If more than one parameter is present, entries should be used in the order they are encountered in the message.</p> <ul style="list-style-type: none"> <li>(1) destinationRoutingAddress in any operation.</li> <li>(2) Correlation ID in any operation.</li> <li>(3) Assisting SSP/IP Routing Address in any operation.</li> <li>(4) IP Routing Address in any operation.</li> <li>(5) calledPartyNumber in ConnectAssociation [ETSI EN 301 140-1, 18.30] <b>(Note:</b> (calledPartyNumber in any operation will be extracted to calledParty. See also 7.34.1.2.)</li> <li>(6) TP-DA (sm-RP-UIHeader if TP-MTI=SMS-SUBMIT) in Connect [NOKIA 4.2.4.3.2] (N.B. In MT-SMS Connect operation the TP-MTI is converted from SMS-DELIVER to SMS-SUBMIT)</li> <li>(7) Connected Number in any operation [Ericsson CS1+ INAP].</li> <li>(8) Destination Number Routing Address in in any operation [TI.CS.INAP].</li> <li>(9) National Rerouting Number in any operation [TI.CS.INAP].</li> </ul>					
	<b>(2)</b>	<b>Field</b>	<b>txNum[n].natOfAddr_b</b>	<b>Spec Ref</b>	See 7.7.1.5(1).		
<b>(3)</b>	<b>Definition</b>	The nature of address subfield of the translation number.					
	<p><b>Details</b></p> <p>Implementation Info: See 7.7.1.5(1) for Implementation Details.</p> <p><b>Limitation:</b> For the implementation effort considerations, only part of protocols (TDC related INAP/CAP protocols) extracted the subfield. See actual source codes for the latest implementation status.</p>						
	<b>(4)</b>	<b>Field</b>	<b>txNum[n].numberingPlan_b</b>	<b>Spec Ref</b>	See 7.7.1.5(1).		
<b>(5)</b>	<b>Definition</b>	The "Numbering Plan", "Type of Digits", or "Type of Number" subfield of the translation number.					
	<p><b>Details</b></p> <p>Implementation Info: See 7.7.1.5(1) for Implementation Details. See 7.7.1.5(2) for Limitation.</p>						
	<b>Field</b>	<b>txNum[n].encodingScheme_b</b>	<b>Spec Ref</b>	See 7.7.1.5(1).			
<b>(6)</b>	<b>Definition</b>	The Encoding Scheme subfield of the translation number.					
	<p><b>Details</b></p> <p>Implementation Info: See 7.7.1.5(1) for Implementation Details. See 7.7.1.5(2) for Limitation.</p>						
	<b>Field</b>	<b>txNum[n].telnoType_b</b>	<b>Spec Ref</b>	See 7.7.1.5(1).			
<b>(7)</b>	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.					

Details	<p>Implementation Info: See 7.7.1.5(1).</p> <p>The telnoType_b subfield should be set as the following:</p> <p>K_GG59_TELNOTYPE_CORRID_GN (for Correlation ID (Generic Number)) K_GG59_TELNOTYPE_CORRID_GD (for Correlation ID (Generic Digits)) K_GG59_TELNOTYPE_DESTROUTINGADDR (for destinationRoutingAddress) K_GG59_TELNOTYPE_ASIROUTINGADDR (for Assisting SSP/IP Routing Address) K_GG59_TELNOTYPE_IPROUTINGADDR (for IP Routing Address) K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyNumber) K_GG59_TELNOTYPE_CONNECTEDNUM (for [Ericsson CS1+ INAP] connectedNum) K_GG59_TELNOTYPE_DESTNUMROUTINGADDR (for [TI.CS.INAP] Destination Number Routing Address) K_GG59_TELNOTYPE_NATROUTINGNUM (for [TI.CS.INAP] National Rerouting Number)</p>
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<b>7.7.1.6 (1)</b>	Field	<b>tnsNwkType_b</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.31C (1).	
<b>(2)</b>	Definition	<p>The "Type of Network Identification" and "Network Identification Plan" subfields of the TransitNetwork Selection Parameter. As the name implies this is information sent in the forward direction indicating the format of the transit network identification.</p> <p>The Transit Network Selection Parameter indicates the transit network(s) requested for the routing of a call.</p>			
	Details	<p>Implementation Info:</p> <p>These two subfields are contained within the one octet with bit 8 defined as spare or odd/even indicator. This bit 8 should be masked off.</p>			
	Field	<b>compTNSNetworkId</b>	Spec Ref	ANSI T1.113.3-1992 - Section 3.31 (3)	
<b>7.7.1.7</b>	Definition	The "Digits" or "Network Identification" subfield of the Transit Network Selection Parameter.			
	Details	<p>Implementation Info:</p> <p>Digits of size K_GG59_MAXTNSDIGITS, should be extracted into a byte array in the same format as stored in the message. This should only contain the Digits and not the Circuit Code. The length field should also be set to indicate the number of digits present.</p>			
	Field	<b>serviceKey_m</b>	Spec Ref	Pg 52	
<b>7.7.1.8 (1)</b>	Definition	This is the Service Key ID field.			
	Details	<p>Implementation Info:</p> <p>This should be extracted from all messages that contain it in the same form as stored in the message.</p>			
	Field	<b>TMServiceId_b</b>	Spec Ref	n/a	
<b>(2)</b>	Definition	See 7.1.1.9 (2)			
	Details	<p>Implementation Info:</p> <p>This should be set to K_GG59_INAPSERVNUM.</p>			
	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	n/a	
<b>7.7.1.9</b>	Definition	See 7.1.1.9 (1)			
	Details	<p>Implementation Info:</p> <p>If the component is carrying an ErrorCause parameter set TMServiceAssFailCode_u to K_GG59_BASEINAP_ERRORCODE + tcapErrorCode_b (this assumes that the error is 1 octet long).</p>			
	Field	<b>appLevel_b</b>	Spec Ref	n/a	
<b>7.7.1.10</b>	Definition	See 7.2.1.10			
	Details	<p>Implementation Info:</p> <p>This should be set to K_GG59_INAP_INFO</p>			

<b>7.7.1.10</b>	Field	<b>IMSI.telno</b>	Spec Ref	GSM 03.03, V3.6.0, p.6 ETSI EN 301 140-1, Section 18.56 NOKIA CAU 28955/4.2-4 en
	Definition	This is the International Mobile Subscriber Identity field.		
	Details	<p>Implementation Info:            This should be extracted from any message that contains it.            N.B. Encoding of IMSI (MCC+MNC+MSIN) is specifications state 2 or 3 digit MNC but acceSS7 uses the old 2 digit MNC (as per customer requirements).</p> <p>NOKIA: This field should be extracted from the following messages:            extension iMSI in InitialDP [4.1.5.15, 4.2.2.6.4, 4.2.3.3.3, 4.2.4.3.5]</p> <p>Siemens: This field should be extracted from mapIMSI IE in InitialDP message.</p>		
<b>7.7.1.11</b>	Field	<b>IMEI.telno</b>	Spec Ref	NOKIA CAU 28955/4.2-4 en
	Definition	The IMEI refers to the International Mobile Equipment Identity		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		
<b>7.7.1.12</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	NOKIA CAU 28955/4.2-4 en
	Definition	The Calling Party Category parameter. This contains information sent in the forward direction indicating the category of the calling party, e.g., ordinary subscriber, payphone, etc.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		
<b>7.7.1.13</b>	Field	<b>redirectInfo_ba</b>	Spec Ref	NOKIA CAU 28955/4.2-4 en
	Definition	The Redirection Information parameter. This parameter contains the redirection indicator, original redirecting reason, redirection indicator and the current redirection reason.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		
<b>7.7.1.14</b>	Field	<b>carrierSelection_b</b>	Spec Ref	
	Definition	The Carrier Selection parameter. This is information sent in the forward direction to indicate whether the calling user selected the transit network by presubscription or dialled input and if presubscribed whether or not the carrier identification code was also dialled.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		
<b>7.7.1.15</b>	Field	<b>carrierId_ba</b>	Spec Ref	
	Definition	The Carrier Identification parameter. This is information sent in the forward direction to the transit network indicating the transit network selected by the originating subscriber.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		

<b>7.7.1.16</b>	Field	<b>serviceKey_digits</b>	Spec Ref	Telecom Italia SASCN S-3062/1 p.9
	Definition	Information for selection of service logic within the network.		
	Details	<p>Implementation Info:</p> <p>Telecom Italia: Digits extracted from the Address Signal subfield of the Called Party Number parameter of an InitialDP operation.</p>		
<b>7.7.1.17 (1)</b>	Field	<b>locationNumAddress.telno</b>	Spec Ref	-
	Definition	The Address Signal subfield of the Location Number parameter.		
	Details	<p>Implementation Info:</p> <p>This Digits should be extracted from any message that contains the Location Number parameter.</p>		
<b>(2)</b>	Field	<b>locationNumAddress.natOfAddr_b</b>	Spec Ref	-
	Definition	The nature of address subfield of the Location Number parameter.		
	Details	<p>Implementation Info:</p> <p>See 7.7.1.17 (1).</p>		
<b>(3)</b>	Field	<b>locationNumAddress.numberingPlan_b</b>	Spec Ref	-
	Definition	The numbering plan subfield of the Location Number parameter.		
	Details	<p>Implementation Info:</p> <p>See 7.7.1.17 (1).</p>		
<b>7.7.1.18 (1)</b>	Field	<b>addCallingPartyAddress.telno</b>	Spec Ref	-
	Definition	The Address Signal subfield of the Additional Calling Party parameter.		
	Details	<p>Implementation Info:</p> <p>This Digits should be extracted from any message that contains the Additional Calling Party parameter.</p>		
<b>(2)</b>	Field	<b>addCallingPartyAddress.natOfAddr_b</b>	Spec Ref	-
	Definition	The nature of address subfield of the Additional Calling Party parameter.		
	Details	<p>Implementation Info:</p> <p>See 7.7.1.18 (1).</p>		
<b>(3)</b>	Field	<b>addCallingPartyAddress.numberingPlan_b</b>	Spec Ref	-
	Definition	The numbering plan subfield of the Additional Calling Party parameter.		
	Details	<p>Implementation Info:</p> <p>See 7.7.1.18 (1).</p>		
<b>7.7.1.19</b>	Field	<b>removed</b>	Spec Ref	

<b>7.7.1.20</b>	Field	<b>removed</b>	Spec Ref		
<b>7.7.1.21</b>	Field	<b>removed</b>	Spec Ref		
<b>7.7.1.22</b>	Field	<b>fwdCallInds_ba</b>	Spec Ref	ITU-T Q.763	
	Definition	The Forward Call Indicators Parameter. See also section 6.4.1.6.			
	Details	Implementation Info: This field should be extracted from any message that contains it.			
<b>7.7.1.23</b>	Field	<b>bckwdCallIndctrs_ba</b>	Spec Ref	ITU-T Q.763	
	Definition	The Backward Call Indicators Parameter. See also section 6.4.1.7.			
	Details	Implementation Info: This field should be extracted from any message that contains it.			
<b>7.7.1.24</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	ITU-T Q.763	
	Definition	The value of the first two octets of the Cause Indicators Parameter (excluding the identifier, length, and extension octet 1a if any).			
	Details	Implementation Info: This field should be extracted from any message that contains it.			
<b>7.7.1.25</b>	Field	<b>chargeParty_ba</b>	Spec Ref	Ericsson CS1+ INAP, P53	
	Definition	The chargeParty parameter in additionalBillingInfo of FCIBillingDetails.			
	Details	<p>Implementation Info: This field should be extracted from [Ericsson CS1+] Furnish Charging Information message.</p> <p>The chargeParty parameter is constructed ASN.1 CHOICE parameter. It's implemented as dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octets.</p> <p>If it's single party, the array length will be K_GG59_SINGLEPARTY_SIZE. The field should be extracted as the following:</p> <pre>chargeParty_ba[0] = K_GG59_SINGLEPARTY_TAG; chargeParty_ba[1] = (the enumerated value). One of: K_GG59_APARTYTOBECHARGED K_GG59_BPARTYTOBECHARGED K_GG59_CPARTYTOBECHARGED K_GG59_OTHERPARTYTOBECHARGED</pre> <p>If it's distributed party, the array length will be K_GG59_DISTRIBPARTY_SIZE. The field should be extracted as the following:</p> <pre>chargeParty_ba[0] = K_GG59_DISTRIBUTEDPARTY_TAG; chargeParty_ba[1] = (the percentage of a); chargeParty_ba[2] = (the percentage of b); chargeParty_ba[3] = (the percentage of c); chargeParty_ba[4] = (the percentage of other parties).</pre>			

<b>7.7.1.26 (1)</b>	Field	<b>genericDigits.telno</b> <b>(Synonym:</b> <b>genericChargingDigits)</b>	Spec Ref	Ericsson CS1+ INAP, P56	
	Definition	The Address Signal subfield of the [Ericsson CS1+ INAP] FCI genericChargingDigits -> GenericDigitsSet -> GenericDigits.			
	Details	Implementation Info: This Digits should be extracted from [Ericsson CS1+] Furnish Charging Information message. The field is implemented as multiple-value s_gg61_addr address. All the instances of the field should be extracted.			
<b>(2)</b>	Field	<b>genericDigits.natOfAd</b> <b>dr_b</b>	Spec Ref	Ericsson CS1+ INAP, P56	
	Definition	The type of digits subfield of the [Ericsson CS1+ INAP] FCI genericChargingDigits -> GenericDigitsSet -> GenericDigits.			
	Details	Implementation Info: See 7.7.1.26 (1).			
<b>(3)</b>	Field	<b>genericDigits.encoding</b> <b>Scheme_b</b>	Spec Ref	Ericsson CS1+ INAP, P56	
	Definition	The encoding scheme subfield of the [Ericsson CS1+ INAP] FCI genericChargingDigits -> GenericDigitsSet -> GenericDigits.			
	Details	Implementation Info: See 7.7.1.26 (1).			

<b>7.7.1.27 (1)</b>	Field	<b>genericAddress.telno</b>	Spec Ref	Ericsson CS1+ INAP, P57
	Definition	The Address Signal subfield of the [Ericsson CS1+ INAP] FCI genericChargingNumbers -> GenericNumberSet -> GenericNumber.		
	Details	<p>Implementation Info:            The Digits should be extracted from [Ericsson CS1+] Furnish Charging Information message.</p> <p>The field was originally defined as static s_gg61_addr address. It is changed from static to multiple-value (dynamic) field according to CDR requests. All the instances of the field should be extracted.</p>		
<b>(2)</b>	Field	<b>genericTypeOfAddress_b</b>	Spec Ref	Ericsson CS1+ INAP, P57
	Definition	The Type of Address subfield of the Generic Address parameter. For [Ericsson CS1+], the parameter is the Number Qualifier Indicator subfield of the [Ericsson CS1+ INAP] FCI genericChargingNumbers -> GenericNumberSet -> GenericNumber.		
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) This field should be extracted from [Ericsson CS1+] Furnish Charging Information message.</li> <li>(2) The field was originally defined as single-value int32. It is changed to multiple-value int32 field according to CDR requests. All the instances of the field should be extracted.</li> <li>(3) The 2 fields genericAddress and genericTypeOfAddress_b are always present at the same time. Protocol Breakouts should ensure the 2 multi-value fields to be extracted at the same time. Applications should keep synchronization when accessing the 2 multi-value fields.</li> </ul>		
<b>(3)</b>	Field	<b>genericAddress.natOfAddr_b</b>	Spec Ref	Ericsson CS1+ INAP, P57
	Definition	The nature of address subfield of the [Ericsson CS1+ INAP] FCI genericChargingNumbers -> GenericNumberSet -> GenericNumber.		
	Details	Implementation Info: See 7.7.1.27 (1).		
<b>(4)</b>	Field	<b>genericAddress.numberingPlan_b</b>	Spec Ref	Ericsson CS1+ INAP, P57
	Definition	The numbering plan subfield of the [Ericsson CS1+ INAP] FCI genericChargingNumbers -> GenericNumberSet -> GenericNumber.		
	Details	Implementation Info: See 7.7.1.27 (1).		
<b>7.7.1.28</b>	Field	<b>removed</b>	Spec Ref	
<b>7.7.1.29</b>	Field	<b>removed</b>	Spec Ref	
<b>7.7.1.30</b>	Field	<b>removed</b>	Spec Ref	

<b>7.7.1.31</b>	Field	<b>BCSMEventType_m</b>	Spec Ref	-
	Definition	The enumerated value of eventTypeBCSM field.		
	Details	<p>Implementation Info: This field should be extracted from any message that contains it. Notes: The eventTypeBCSM parameter could be present in InitialDP, EventReportBCSM, RequestReportBCSMEvent, [ITU-ETSI CS-2] CallGap, or [Ericsson CS1+] HandOver. In RequestReportBCSMEvent, bcsmEvents is SEQUENCE SIZE(1..20) OF BCSMEvent. As subparameter of BCSMEvent, the eventTypeBCSM parameter is also repeatable. CDR is the first application to request this field and CDR only has interests of eventTypeBCSM in EventReportBCSM. So we only define the field as single value, not multiple value. If there are more than one instances in single one message, the last instance will overwrite the previous instances. One TCAP message could contain more than one components. The current gg59 did not support this function well. It's a known issue of gg59 and acceSS7 system. This field could not support the function well either.</p>		
<b>7.7.1.32</b>	Field	<b>removed</b>	Spec Ref	
<b>7.7.1.33</b>	Field	<b>removed</b>	Spec Ref	
<b>7.7.1.34 (1)</b>	Field	<b>chargeNum.telno</b>	Spec Ref	-
	Definition	The Address Signal subfield of the Charge Number parameter.		
	Details	<p>Implementation Info: This Digits should be extracted from any message that contains the Charge Number parameter.</p>		
	(2)	<b>chargeNum.natOfAddr_b</b>	Spec Ref	-
	Definition	The nature of address subfield of the Charge Number parameter.		
	Details	<p>Implementation Info: See 7.7.1.34(1).</p>		
	(3)	<b>chargeNum.numberingPlan_b</b>	Spec Ref	-
<b>7.7.1.35</b>	Definition	The numbering plan subfield of the Charge Number parameter.		
	Details	<p>Implementation Info: See 7.7.1.34(1).</p>		
	Field	<b>inapType_m</b>	Spec Ref	-
	Definition	The filed denotes the INAP protocol is being used. It's implemented for TI only.		
	Details	<p>Implementation Info: This field should be set for TI CS INAP as the following: K_GG59_TI_INAPTYPE_PPISDN if USI Information Parameter (encapsulation of PP ISDN) is present in TI CS INAP; K_GG59_TI_INAPTYPE_INAP if USI Information Parameter is not present in TI CS INAP.</p>		

<b>7.7.1.36</b>	Field	<b>chargedPartyId_m</b>	Spec Ref	ETS 300 374-1, page 196
	Definition	The Party To Charge parameter. It indicates the party in the call to which the ApplyCharging operation should be applied.		
	Details	<p>Implementation Info:</p> <p>Populate for TI only. This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_TI_SENDSIDE</li> <li>K_GG59_TI_RECEIVESIDE</li> </ul>		
<b>7.7.1.37</b>	Field	<b>applicationId_m</b>	Spec Ref	2.3.105 Section 4.2.4, P34
	Definition	Each general application supported by the SCF can be assigned a unique application number (1..255).		
	Details	<p>Implementation Info:</p> <p>This field should ONLY be extracted from [Ericsson CS1+ INAP] any message that contains it. It will NOT be extracted from other INAP protocols (ERIC.V2.INAP, ITU-ETSI.CS.IN etc).</p>		
<b>7.7.1.38</b>	Field	<b>MSCNo</b>	Spec Ref	2.3.134 SINAP7M+, p149
	Definition	This field refers to the ISDN number of the Mobile Services Switching Centre (MSC) to which a call is about to be handed over.		
	Details	<p>Implementation Info:</p> <p>The field should be extracted from any message that contains it.</p>		
<b>7.7.1.39</b>	Field	<b>VLRNo</b>	Spec Ref	2.3.133 SINAP7M+, p149
	Definition	This field refers to the ISDN number of the Visitor Location register.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>		

## 7.7.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7535_hashAddSCCPAddr	
<b>7.7.2.1</b>	Query Packages	n/a	See Section 7.1.2.1 (Generic TCAP)
<b>7.7.2.2</b>	Conversation Packages	n/a	See Section 7.1.2.2 (Generic TCAP)
<b>7.7.2.3</b>	Response Package	n/a	See Section 7.1.2.3 (Generic TCAP)

### 7.7.3 Call Trace Assistance

Call Trace Assistance																	
<b>7.7.3.1</b>	Initial Detection Point	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
	Initial Detection Point with eventType-BCSM set to origAttemptAuthorized	CALLED	X				X	X									
		CALLING	X				X	X									
		IMSI	X				X	X	X								
		OCN (if present)	X				X										
		RN (if present)					X										
	PCOTIDSSN	As per generic requirements for the package type															
	DPCRTIDSSN	As per generic requirements for the package type															
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u										
				0													
	Cross Triggers	Local				Global											
						X											
	State of Call	CTState					CTEnhState										
							'Initial Detection Point' 'Origination Attempt Authorized'										

Call Trace Assistance											
7.7.3.2	Initiate Call Attempt	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
		CALLED	X				X	X			
			PCOTIDSSN	As per generic requirements for the package type							
		DPCRTIDSSN	As per generic requirements for the package type								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
					5						
		Cross Triggers	Local				Global				
							X				
		State of Call	CTState				CTEnhState				
							'Initiate Call Attempt'				
7.7.3.3	Connect ConnectSMS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CHARGING	X				X				
		CALLING	X				X				
		TX	X				X				
			PCOTIDSSN	Generic requirements + FIRSTUSEBACK if dataset exists							
		DPCRTIDSSN	Generic requirements + FIRSTUSEBACK if dataset exists								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
					5 <sup>b</sup>				5000		
		Cross Triggers	Local				Global				
							X				
		State of Call	CTState				CTEnhState				
							'Destination Number returned', 'Destination Subscriber Number Returned'				

Call Trace Assistance														
<b>7.7.3.4</b>	Assist Request Instructions	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			TX				X	X						
		PCOTIDSSN	Generic requirements + FIRSTUSEBACK if dataset exists											
			Generic requirements + FIRSTUSEBACK if dataset exists											
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u								
							5			5000				
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
							'Assist Request Instructions'							
<b>7.7.3.5</b>	Connect To Resource Establish Temporary Connection Select Route Select Facility	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			TX	X			X							
		PCOTIDSSN	As per generic requirements for the package type											
			As per generic requirements for the package type											
		DPCRTIDSSN	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u								
							5			5000				
		Time Outs	Local				Global							
							X							
		Cross Triggers												
							CTEnhState							
		State of Call					'Connect To Resource' 'Establish Temporary Connection' 'Select Route' 'Select Facility'							
<b>7.7.3.6</b>	Continue	State of Call	CTState				CTEnhState							
							'Continue'							
<b>7.7.3.7</b>	ReleaseCall	State of Call	CTState				CTEnhState							
							'Release Call'							
<b>7.7.3.8</b>	CollectInformation	State of Call	CTState				CTEnhState							
							'Collect Information'							

Call Trace Assistance																	
<b>7.7.3.9</b>	ConnectAssociation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		TX	X				X										
		PCOTIDSSN	Generic requirements + FIRSTUSEBACK if dataset exists														
		DPCRTIDSSN	Generic requirements + FIRSTUSEBACK if dataset exists														
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u									
				5				5000									
		Cross Triggers	Local				Global										
							X										
		State of Call	CTState				CTEnhState										
							'Destination Number Returned'										
<b>7.7.3.10</b>	InitialAssociationDP	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		CALLED	X				X	X									
		CALLING	X				X	X									
		PCOTIDSSN	As per generic requirements for the package type														
		DPCRTIDSSN	As per generic requirements for the package type														
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u									
				5													
		Cross Triggers	Local				Global										
							X										
		State of Call	CTState				CTEnhState										
							'Initial Association DP'										
NB: serviceKey present																	

Call Trace Assistance													
<b>7.7.3.11</b>	Initiate Association	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X	X					
		PCOTIDSSN	As per generic requirements for the package type										
		DPCRTIDSSN	As per generic requirements for the package type										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u						
				5									
		Cross Triggers	Local				Global						
							X						
		State of Call	CTState				CTEnhState						
							'Initiate Association'						
<b>7.7.3.12</b>	ActivationReceived and Authorised  AssociationRelease Requested  ComponentReceived	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
		CALLING	X				X	X					
			PCOTIDSSN	As per generic requirements for the package type									
		DPCRTIDSSN	As per generic requirements for the package type										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u						
				5									
		Cross Triggers	Local				Global						
							X						
		State of Call	CTState				CTEnhState						
							'Activation Received and Authorised' 'Association Release Requested' 'Component Received'						

Call Trace Assistance																		
<b>7.7.3.13</b>	Initial DP SMS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH								
							X	X										
		CALLED																
							X											
		CALLING	X															
		IMSI	X				X											
		PCOTIDSSN	As per generic requirements for the package type															
		DPCRTIDSSN	As per generic requirements for the package type															
<b>7.7.3.14</b>	Initial DP GPRS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH								
		CALLING					X	X										
		IMSI					X	X										
		PCOTIDSSN	As per generic requirements for the package type															
		DPCRTIDSSN	As per generic requirements for the package type															
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u											
				0														
<b>7.7.3.15</b>	Activity Test	Cross Triggers	Local				Global											
							X											
		State of Call	CTState				CTEnhState											
							“Initial Detection Point SMS”											
		PCOTIDSSN	As per generic requirements for the package type															
			As per generic requirements for the package type															
		DPCRTIDSSN	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u											
				0														
		Time Outs	Local				Global											
							X											
		IMSI	CTState				CTEnhState											
							“Initial Detection Point GPRS”											
		Cross Triggers																
							X											
		State of Call	CTState				CTEnhState											
							“Initial Detection Point GPRS”											
		PCOTIDSSN																
							‘Activity Test’											
		DPCRTIDSSN																
							‘Activity Test’											
		Time Outs																
							‘Activity Test’											
		IMSI																
							‘Activity Test’											
		Cross Triggers																
							‘Activity Test’											
		State of Call																
							‘Activity Test’											
		PCOTIDSSN																
							‘Activity Test’											
		DPCRTIDSSN																
							‘Activity Test’											
		Time Outs																
							‘Activity Test’											
		IMSI																
							‘Activity Test’											
		Cross Triggers																
							‘Activity Test’											
		State of Call																
							‘Activity Test’											
		PCOTIDSSN																
							‘Activity Test’											
		DPCRTIDSSN																
							‘Activity Test’											
		Time Outs																
							‘Activity Test’											
		IMSI																
							‘Activity Test’											
		Cross Triggers																
							‘Activity Test’											
		State of Call																
							‘Activity Test’											
		PCOTIDSSN																
							‘Activity Test’											
		DPCRTIDSSN																
							‘Activity Test’											
		Time Outs																
							‘Activity Test’											
		IMSI																
							‘Activity Test’											
		Cross Triggers																
							‘Activity Test’											
		State of Call																
							‘Activity Test’											
		PCOTIDSSN																
							‘Activity Test’											
		DPCRTIDSSN																
							‘Activity Test’											
		Time Outs																
							‘Activity Test’											
		IMSI																
							‘Activity Test’											
		Cross Triggers																
							‘Activity Test’											
		State of Call																
							‘Activity Test’											
		PCOTIDSSN																
							‘Activity Test’											

<b>Call Trace Assistance</b>				
<b>7.7.3.16</b>	Activity Test GPRS	State of Call	CTState	CTEnhState
				'Activity Test GPRS'
<b>7.7.3.17</b>	Activity Test SMS Removed	State of Call	CTState	CTEnhState
				'Activity Test SMS'
<b>7.7.3.18</b>	Apply Charging	State of Call	CTState	CTEnhState
				'Apply Charging'
<b>7.7.3.19</b>	ApplyChargingGPRS	State of Call	CTState	CTEnhState
				'Apply Charging GPRS'
<b>7.7.3.20</b>	ApplyChargingReport	State of Call	CTState	CTEnhState
				'Apply Charging Report'
<b>7.7.3.21</b>	Apply Charging Report GPRS	State of Call	CTState	CTEnhState
				'Apply Charging Report GPRS'
<b>7.7.3.22</b>	Call Gap	State of Call	CTState	CTEnhState
				'Call Gap'
<b>7.7.3.23</b>	Call Information Report	State of Call	CTState	CTEnhState
				'Call Information Report'
<b>7.7.3.24</b>	Call Information Request	State of Call	CTState	CTEnhState
				'Call Information Request'
<b>7.7.3.25</b>	Cancel	State of Call	CTState	CTEnhState
				'Cancel'
<b>7.7.3.26</b>	Cancel GPRS	State of Call	CTState	CTEnhState
				'Cancel GPRS'
<b>7.7.3.27</b>	Continue GPRS	State of Call	CTState	CTEnhState
				'Continue GPRS'

Call Trace Assistance					
<b>7.7.3.28</b>	Continue SMS	State of Call	CTState		CTEnhState
					'Continue SMS'
<b>7.7.3.29</b>	Disconnect Forward Connection	State of Call	CTState		CTEnhState
					'Disconnect Forward Connection'
<b>7.7.3.30</b>	Entity Released GPRS	State of Call	CTState		CTEnhState
					'Entity Released GPRS'
<b>7.7.3.31</b>	Event Report BCSM	State of Call	CTState		CTEnhState
					'Event Report BCSM'
<b>7.7.3.32</b>	Event Report GPRS	State of Call	CTState		CTEnhState
					'Event Report GPRS'
<b>7.7.3.33</b>	Event Report SMS	State of Call	CTState		CTEnhState
					'Event Report SMS'
<b>7.7.3.34</b>	Furnish Charging Information	State of Call	CTState		CTEnhState
					'Furnish Charging Information'
<b>7.7.3.35</b>	Furnish Charging Information GPRS	State of Call	CTState		CTEnhState
					'Furnish Charging Information GPRS'
<b>7.7.3.36</b>	Furnish Charging Information SMS	State of Call	CTState		CTEnhState
					'Furnish Charging Information SMS'
<b>7.7.3.37</b>	Play Announcement	State of Call	CTState		CTEnhState
					'Play Announcement'
<b>7.7.3.38</b>	Prompt and Collect User Information	Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u
				0	
		State of Call	CTState		CTEnhState
					'Prompt and Collect User Information'
<b>7.7.3.39</b>	Release GPRS	State of Call	CTState		CTEnhState
					'Release GPRS'

Call Trace Assistance				
<b>7.7.3.40</b>	Release SMS	State of Call	CTState	CTEnhState
				'Release SMS'
<b>7.7.3.41</b>	Request Report BCSM Event	State of Call	CTState	CTEnhState
				'Request Report BCSM Event'
<b>7.7.3.42</b>	Request Report GPRS Event	State of Call	CTState	CTEnhState
				'Request Report GPRS Event'
<b>7.7.3.43</b>	Request Report SMS Event	State of Call	CTState	CTEnhState
				'Request Report SMS Event'
<b>7.7.3.44</b>	Reset Timer	State of Call	CTState	CTEnhState
				'Reset Timer'
<b>7.7.3.45</b>	Reset Timer GPRS	State of Call	CTState	CTEnhState
				'Reset Timer GPRS'
<b>7.7.3.46</b>	Reset Timer SMS	State of Call	CTState	CTEnhState
				'Reset Timer SMS'
<b>7.7.3.47</b>	Send Charging Information	State of Call	CTState	CTEnhState
				'Send Charging Information'
<b>7.7.3.48</b>	Send Charging Information GPRS	State of Call	CTState	CTEnhState
				'Send Charging Information GPRS'
<b>7.7.3.49</b>	Specialized Resource Report	State of Call	CTState	CTEnhState
				'Specialized Resource Report'

Call Trace Assistance												
<b>7.7.3.50</b>	Continue with Argument	CTFlags Critter  CHARGE (if present)  PCOTIDSSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
			X				X					
			Generic requirements for the package type									
		DPCRTIDSSN	Generic requirements for the package type									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
				5								
		Cross Triggers	Local				Global					
							X					
		State of Call	CTState				CTEnhState					
							'Continue'					

a. The FIRSTUSE flag on OCN should be set for all INAP protocols. For the implementation effort considerations, only part of protocols ([Ericsson CS1+]) set the flag.

b. For Finnet9 INAP, Telecom Italia CS based INAP, TelecomItaliaMobile INAP(TIM.94.INAP) Nokia INAP(NOKIA.CS.IN), Ericsson Proprietary CS-1+ INAP this value shall be CTPANSTimeOut\_u = 0, otherwise, the value shall be CTPANSTimeOut\_u = 5.

## 7.7.4 Generic INAP Package Flags

Call Trace Assistance															
<b>7.7.4.1</b>	Begin Packages <sup>a</sup>	CTFlags Critter  PCOTIDSSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X												
			Generic requirements for the package type												
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u							
		Cross Triggers	Local				Global								

Call Trace Assistance												
<b>7.7.4.2</b>	Continue Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN		X								
		PCOTIDSSN	X	X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
		Cross Triggers	Local				Global					
										X		
<b>7.7.4.3</b>	End Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN		X		X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
			2[K_GG59_DPCRTIDSSN]									
		State of Call	CTState				CTEnhState					
							'Dialog with SCP terminated'					
<b>7.7.4.4</b>	Abort Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN		X		X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
			2[K_GG59_DPCRTIDSSN]									
		State of Call	CTState				CTEnhState					
							'Abort received from SCP'					

a. Note: The Call Trace Assistance set for Begin messages only apply to Begin packages contained in SCCP UDT/XUDT messages. For Begin packages contained in UDTs, XUDTs see generic TCAP section (see 7.1).

## 7.8 TI INAP

This defines the requirements additional to the basic TCAP requirements (see 7.1) and the Generic INAP requirements (see 7.7)..

The following fields should be extracted from all messages which contain them, unless stated otherwise. References are to Operations, parameters and errors for the application entity SSP SASCN S-1265/5 rev5.0.3 [2.3.49].

### 7.8.1 Fields

MSU Breakout Fields					
7.8.1.1	Field	terminationInds_b	Spec Ref	2.2.39	
	Definition	Extracted from the Termination Indicators parameter value. This parameter is included in SSP responses to SCP requests for termination information. This parameter indicates if the call was answered and if an error was encountered.			
	Details	n/a			

<b>7.8.1.2 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	2.2.14
	Definition	Extracted from the Nature of Address of all messages containing a Digits Parameter where the type of digits is one of: SCP Received Number, SMD Call, CM Internal Call , Directory Number or NP_DONOR_DN.		
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- If the MSU contains Service Key Digits of type SMD Update or CM Internal Call, as well as a Digits Parameter of type SCP Received Number, then do NOT extract SCP Received Number into the Called Party Address.</li> <li>- CM Internal Call Digits are placed in the Called Party Address AND the Calling Party Address.</li> </ul> <p>Telecom Italia has a 'Cordless Mobility' service which gives the subscriber one number for both fixed and mobile line. 'CM Internal Call Digits' is used to allow calls between the fixed and mobile line of the same subscriber. Hence, it is both 'calling' and 'called'.</p> <ul style="list-style-type: none"> <li>- No ISUP mapping is required for Nature Of Address.</li> <li>- If both NP_DONOR_DN and Directory Number are present in the Provide Instruction Start operation then NP_DONOR_DN takes precedence.</li> </ul>		
<b>(2)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	2.2.14
	Definition	Extracted from the Numbering Plan of all messages containing a Digits Parameter where the type of digits is one of: SCP Received Number, SMD Call, CM Internal Call , Directory Number or NP_DONOR_DN		
	Details	<p>Implementation Info:</p> <p>See 7.8.1.2 (1).</p>		
<b>(3)</b>	Field	<b>calledParty.encodingScheme_b</b>	Spec Ref	2.2.14
	Definition	Extracted from the Encoding Scheme of all messages containing a Digits Parameter where the type of digits is one of: SCP Received Number, SMD Call, CM Internal Call , Directory Number or NP_DONOR_DN		
	Details	<p>Implementation Info:</p> <p>See 7.8.1.2 (1).</p>		
<b>(4)</b>	Field	<b>calledParty.telno</b>	Spec Ref	2.2.14
	Definition	Extracted from the Digit Field of all messages containing a Digits Parameter where the type of digits is one of: SCP Received Number, SMD Call, CM Internal Call , Directory Number or NP_DONOR_DN		
	Details	<p>Implementation Info:</p> <p>See 7.8.1.2 (1).</p> <p>A trailing non-numeric digits ('a' - 'f') should be removed.</p>		
<b>(5)</b>	Field	<b>calledParty.telnoType_b</b>	Spec Ref	2.2.14
	Definition	The Telno Type subfield of the called party number. It indicates the raw field name information.		
	Details	<p>Implementation Info:</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_SCPRECNUM (for SCP received number)</li> <li>K_GG59_TELNOTYPE_DIRNUM (for Directory Number)</li> <li>K_GG59_TELNOTYPE_NPDN (for NP_DONOR_DN Number)</li> <li>K_GG59_TELNOTYPE_SMDCALL (for SMD Call number)</li> <li>K_GG59_TELNOTYPE_CMINTERALCALL (for CM Internal Call number)</li> </ul>		

<b>7.8.1.3 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Nature of Address of the Digits Parameter (type Calling Line Identity, SMD Update or CM Internal Call).			
	Details	Implementation Info: No ISUP mapping required.			
<b>(2)</b>	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Numbering Plan of the Digits Parameter (type Calling Line Identity, SMD Update or CM Internal Call).			
	Details	n/a			
<b>(3)</b>	Field	<b>callingParty.encodingScheme_b</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Encoding Scheme of the Digits Parameter (type Calling Line Identity, SMD Update or CM Internal Call).			
	Details	n/a			
<b>(4)</b>	Field	<b>callingParty.telno</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Digit Field of the Digits Parameter (type Calling Line Identity, SMD Update or CM Internal Call).			
	Details	Implementation Info: A trailing non-numeric digits ('a' - 'f') should be removed.			
<b>(5)</b>	Field	<b>callingParty.telnoType_b</b>	Spec Ref	2.2.14	
	Definition	The Telno Type subfield of the calling party number. It indicates the raw field name information.			
	Details	Implementation Info: The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CALLINGLINEID (for calling line identity) K_GG59_TELNOTYPE_SMDUPDATE (for SMD Update Number)			

<b>7.8.1.4 (1)</b>	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Nature of Address of the Digits Parameter (type Alternate Billing Number).			
	Details	Implementation Info: No ISUP mapping required.			
<b>(2)</b>	Field	<b>chargeNum.numberingPlan_b</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Numbering Plan of the Digits Parameter (type Alternate Billing Number).			
	Details	n/a			
<b>(3)</b>	Field	<b>chargeNum.encodingScheme_b</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Encoding Scheme of the Digits Parameter (type Alternate Billing Number).			
	Details	n/a			
<b>(4)</b>	Field	<b>chargeNum.telno</b>	Spec Ref	2.2.14	
	Definition	Extracted from the Digit Field of the Digits Parameter (type Alternate Billing Number).			
	Details	Implementation Info: A trailing non-numeric digits ('a' - 'f') should be removed.			

<b>7.8.1.5 (1)</b>	Field	<b>txNum[].natOfAddr_b</b>	Spec Ref	2.2.14
	Definition	Extracted from the Nature of Address of the Digits Parameter (type Routing number, Roaming Number, STC Number, B-number, Backup number , Forwarding Number, NP_RN, Caller Interaction, Calling Routing Number, NP_GW, NP_Cg_DN, AURL Number, Alternate Charging Number, ACG on SCP Received Number, ACG on Calling Line Identity).		
	Details	Implementation Info: No ISUP mapping required.		
<b>(2)</b>	Field	<b>txNum[].numberingPlan_b</b>	Spec Ref	2.2.14
	Definition	Extracted from the Nature of Address of the Digits Parameter (type Routing number, Roaming Number, STC Number, B-number, Backup number , Forwarding Number, NP_RN, Caller Interaction, Calling Routing Number, NP_GW, NP_Cg_DN, AURL Number, Alternate Charging Number, ACG on SCP Received Number, ACG on Calling Line Identity).		
	Details	n/a		
<b>(3)</b>	Field	<b>txNum[].encodingScheme_b</b>	Spec Ref	2.2.14
	Definition	Extracted from the Nature of Address of the Digits Parameter (type Routing number, Roaming Number, STC Number, B-number, Backup number , Forwarding Number, NP_RN, Caller Interaction, Calling Routing Number, NP_GW, NP_Cg_DN, AURL Number, Alternate Charging Number, ACG on SCP Rece).		
	Details	n/a		
<b>(4)</b>	Field	<b>txNum[].telno</b>	Spec Ref	2.2.14
	Definition	Extracted from the Nature of Address of the Digits Parameter (type Routing number, Roaming Number, STC Number, B-number, Backup number , Forwarding Number, NP_RN, Caller Interaction, Calling Routing Number, NP_GW, NP_Cg_DN, AURL Number, Alternate Charging Number, ACG on SCP Received Number, ACG on Calling Line Identity).		
	Details	Implementation Info: A trailing non-numeric digits ('a' - 'f') should be removed.		
<b>(5)</b>	Field	<b>txNum[0].telnoType_b</b>	Spec Ref	2.2.14
	Definition	The Telno Type subfield of the Digits Parameter. It indicates the raw field name information.		
	Details	Implementation Info: The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_ROUTINGNUM (for Routing Number) K_GG59_TELNOTYPE_ROAMINGNUM (for Roaming Number) K_GG59_TELNOTYPE_FORWNUM (for Forward Number) K_GG59_TELNOTYPE_NPRN (for NP_RN Number) K_GG59_TELNOTYPE_STCNUM (for STC Number) K_GG59_TELNOTYPE_BNUM (for B-Number) K_GG59_TELNOTYPE_BACKUPNUM (for Back-up Number) K_GG59_TELNOTYPE_CALLINGROUTINGNUM (for Calling Routing Number) K_GG59_TELNOTYPE_NPGW (for NP_GW) K_GG59_TELNOTYPE_NPCGDN (for NP_Cg_DN) K_GG59_TELNOTYPE_AURLNUM (for AURL Number) K_GG59_TELNOTYPE_ALTCARGINGNUM (for Alternate Charging Number) K_GG59_TELNOTYPE_AGCSCPNUM (for ACG on SCP Received Number) K_GG59_TELNOTYPE_ACGCALLINGLINEID (for ACG on Calling Line Identity)		

<b>7.8.1.6</b>	Field	<b>echoField_m</b>	Spec Ref	2.2.16
	Definition	The Echo Data parameter type provides data to be echoed in response to an invoke operation.		
	Details	<p>Implementation Info:            The TI-INAP Echo Data parameter is a 6 byte field!            So, for now, echoField_m should be not set, until echoField_m is extended to 6 bytes.            N.B. Example Call Models seem to imply that this information is sent back as part of the transaction and not as a separate unidirectional. So, for CT, separate tracing may not be required anyway.</p>		
<b>7.8.1.7</b> (1)	Field	<b>TMServiceID_b</b>	Spec Ref	n/a
	Definition	See 7.1.1.9 (2).		
	Details	<p>Implementation Info:            This should be set to K_GG59_TINAPSERVNUM</p>		
	(2)	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref 2.3
		Definition	See 7.1.1.9 (1).	
		Details	<p>Implementation Info:            If the message contains a local error code, this should be set to            K_GG59_BASETIINAP_ERRORCODE + tcapErrorCode_b (see 7.1.1.9 (1)).</p>	
<b>7.8.1.8</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10.		
	Details	<p>Implementation Info:            This should be set to K_GG59_USTCAP_INFO</p>		
<b>7.8.1.9</b>	Field	<b>serviceKey_digits</b>	Spec Ref	2.2.26
	Definition	Information for selection of service logic within the network.		
	Details	<p>Implementation Info:            Digits extracted from the Digits subfield of the Digits parameter of the Service Key parameter of the Provide Instruction Start operation.</p>		
<b>7.8.1.10</b> (1)	Field	<b>collectedDigits.telno</b>	Spec Ref	2.2.14
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Caller Interaction.		
	Details	<p>Implementation Info:            Extracted from the Digit Field of all messages containing a Digits Parameter where the type of digits is "Caller Interaction".</p>		
	(2)	Field	<b>collectedDigits.natOfAddr_b</b>	Spec Ref 2.2.14
		Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter.	
		Details	<p>Implementation Info:            See 7.8.1.2 (1)</p>	

<b>7.8.1.11</b>	Field	<b>announcementSet_m</b>	Spec Ref	2.2.18.1
	Definition	The Announcement Set information indicates the Set in which the announcement resides.		
	Details	<p>Implementation Info: This should be extracted from all messages that contain it in the same form as stored in the message.</p>		
<b>7.8.1.12</b>	Field	<b>announcementID_m</b>	Spec Ref	2.2.18.2
	Definition	The Announcement ID information denotes an individual announcement within the specified announcement set.		
	Details	<p>Implementation Info: This should be extracted from all messages that contain it in the same form as stored in the message.</p>		
<b>7.8.1.13</b>	Field	<b>inapType_m</b>	Spec Ref	N/A
	Definition	The field denotes the INAP protocol is being used.		
	Details	<p>Implementation Info: This should be set at the entry of TI.5_0_3.INAP protocol, the value is K_GG59_TI_INAPTYPE_ASERI.</p>		
<b>7.8.1.14</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	2.3.106 Section 4.2.11, P38
	Definition	The Calling Party Category parameter.		
	Details	<p>Implementation Info: This field should be extracted from any message that contains it.</p>		

## 7.8.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>7.8.2.1</b>	Begin Packages	calledParty.telno	See section 7.1.2.1 (Generic TCAP)
<b>7.8.2.2</b>	Continue Packages	n/a	See section 7.1.2.2 (Generic TCAP)
<b>7.8.2.3</b>	End Packages	n/a	See section 7.1.2.3 (Generic TCAP)
<b>7.8.2.4</b>	Abort Packages	n/a	See section 7.1.2.4 (Generic TCAP)

### 7.8.3 Call Trace Assistance

Call Trace Assistance										
7.8.3.1	Begin Package with Provide Instructions/ Start operation code.	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			X				X	X		
			X				X	X		
			X							
		MATCHRULE	AND							
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a	0		n/a		n/a		
		Cross Triggers	Local			Global				
			X							
		State of Call	CTState			CTEnhState				
			n/a			with Service Key - CLI:- 'Begin (CLI)' with Service Key - SMD Call:- 'Begin (SMD Call)' with Service Key - CM Internal Call:- 'Begin (CM Internal Call)' with Service Key - SMD Update:- 'Begin (SMD Update)' with Service Key - SCP Received Number:- 'Begin (SCP Received Number)' otherwise:- 'Begin'.				

Call Trace Assistance															
<b>7.8.3.2</b>	Begin Package with Provide Instructions/ Assist operation code.	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED					X	X							
		CALLING					X								
		PCOTIDSSN	X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		0		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			n/a				'Begin Assist'								
<b>7.8.3.3</b>	All Continue Packages, <i>[Set for ALL Continue packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		PCOTIDSSN	X	X											
		DPCRTIDSSN		X											
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		0 (de-activate since transaction may exist over several calls)		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			n/a				with Connection Control/Disconnect operation 'Continue - Disconnect', with Connection Control/Forward Disconnect 'Continue - Forward Disconnect', with Connection Control/Queue Call operation 'Continue - Queue Call', with Caller Interaction (except Cancel) operation 'Continue - Caller Interaction', with Return Error Component: 'Continue - Return Error', otherwise 'Continue'.								

Call Trace Assistance																	
<b>7.8.3.4</b>	<p>Continue with Charging/Charging Bill Call operation code and with 1st Digits Parameter (type Alternate Billing Number).</p> <p><i>[These setting are in addition to or overwrite 7.8.3.3]</i></p>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		CALLED [if present]	X				X										
		CALLING [if present]	X				X										
		CHARGING					X										
		DPCRTIDSSN		X	X												
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			n/a		0 (de-activate since transaction may exist over several calls)		n/a	5000msec									
<b>7.8.3.5</b>	<p>Continue with Connection Control/[Temporary] Connect operation codes.</p> <p><i>[These setting are in addition to or overwrite 7.8.3.3]</i></p>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		CALLING					X										
		CALLED [if present]	X				X										
		TX	X				X										
		DPCRTIDSSN		X	X												
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			n/a		0 (de-activate since transaction may exist over several calls)		n/a	5000 (msec)									
		Cross Triggers	Local				Global										
							X										
		State of Call	CTState				CTEnhState										
			n/a				with Connection Control Connect operation 'Continue - Connect', with Connection Control Temporary Connect 'Continue - Temporary Connect'.										

Call Trace Assistance															
<b>7.8.3.6</b>	All End Packages, unless stated otherwise below. <i>[Set for ALL Continue packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		DPCRTIDSSN		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			DPCRTIDSSN = 2		0		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			n/a				with Connection Control Disconnect operation 'End - Disconnect', with Return Error Component 'End - Return Error', with Reject Component 'End - Reject', otherwise 'End'.								
<b>7.8.3.7</b>	End with Charging/Charging Bill Call operation code and with 1st Digits Parameter (type Alternate Billing Number).  <i>[These setting are in addition to or overwrite 7.8.3.6]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED [if present]	X				X								
		CALLING [if present]	X				X								
		CHARGING					X								
		DPCRTIDSSN		X	X	X									
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			2[DPCRTIDSSN]		0 (unless stated otherwise below)		n/a		5000msec						

Call Trace Assistance																
<b>7.8.3.8</b>	End with Connection Control/ Connect operation code  [These setting are in addition to or over-write 7.8.3.6]	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLING					X									
		TX	X				X									
		DPCRTIDSSN		X	X	X										
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			DPCRTIDSSN = 2		5		n/a	5000 (msec)								
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				'End - Connect'									
<b>7.8.3.9</b>	All packages which include invoke or return result operation code Caller Interaction/Play Script	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLED(if present)					X	X	X							
		CALLING(if present)					X	X	X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
			n/a		0		7	n/a								
		Cross Triggers	Local				Global									
			X													
		State of Call	CTState				CTEnhState									
			n/a				"Caller Interaction - Play Script " within invoke "Caller Interaction - Play Script Result " within return result									

Call Trace Assistance														
7.8.3.10	Abort Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			DPCRTIDSSN	X		X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			DPCRTIDSSN = 2		0		n/a		n/a					
		Cross Triggers	Local				Global							
			X											
		State of Call	CTState				CTEnhState							
			n/a				'Abort received'							

Note 1: All the Call Trace Assistance is done in relation to Package Types. In the case where more than one component exists in a package type;

- (1) The CTFlags should be **ORed** for all the different instances except for MATCHRULE which should use the last instance seen
- (2) The Call Trace Assistance variables should use the last instance of the Call Trace Assistance variables seen in the package (this includes CTFinalUseTimeout\_b, CTPANSTimeout\_b, CTMaxCallAge\_u, trawlBackTime\_u, CTState, CTEnhState. **Note:** CTPANSTimeout\_b is a little different in that if last value encountered is 0 and the value before that is 5 for example, then the last value encountered is not used and 5 is the value set!
- (3) Cross Triggers should be **ORed**

## 7.9 IS41B (Obsolete)

The requirement for IS41B was obsolete and removed in version 05.00. The latest version requirement for IS41B can be viewed in version 04.90.

The requirement for IS41B was superceded by IS41 SS (see 7.10).

## 7.10 IS41 SS

This defines the requirements additional to the basic TCAP requirements (see

7.1). In this section, specific IS41 messages are defined as follows

References in italic text are to TIA/EIA IS41-A, December 1990 (see 2.3.44). References in normal text are to EIA/TIA/IS-41.5-B (see 2.3.30).

References in bold text are to TIA/EIA IS41.5-C, February 1996 (see 2.3.45).

References in underline are to ANSI/TIA/EIA-41-D-1997, November 1997 (see 2.3.60). References in italic underline are to TIA/EIA/IS-751, February 1998 (see 2.3.61).

### 7.10.1 Fields

MSU Breakout Fields						
7.10.1.1 (1)	Field	Spec Ref	[6.5.2.58] [6.5.2.131]			
	Definition	Either the Digits (dialled) parameter or the SMS_OriginalDestinationAddress parameter. The Digits parameter is based on the the Digits parameter defined in Section 3 of ANSI T1.114-1988.				
	Details	Implementation Info: Extracted from the Digits parameter if the Type of Digits is 'Dialled Number'. Extracted from the digits of the SMS_OriginalDestinationAddress parameter. It is extracted from any operation carrying it.				
(2)	Field	Spec Ref	See 7.10.1.1(1)			
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.				
	Details	Implementation Info: See 7.10.1.1(1). The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CALLEDPARTYNUM (for Called Party Number) K_GG59_TELNOTYPE_SMSORGDESTNUM (for SMS_OriginalDestinationAddress)				

<b>7.10.1.2 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	<b>[6.5.2.58] [6.5.2.133] [6.5.2.21]</b>
	Definition	Either the Digits (calling) parameter or the SMS_OriginalOriginatingAddress parameter. The Digits parameter is based on the the Digits parameter defined in Section 3 of ANSI T1.114-1988.		
	Details	<p>Implementation Info:  Extracted from the Digits parameter, if the Type of Digits is ‘Calling’.  Extracted from the digits of the SMS_OriginalOriginatingAddress parameter. It is extracted from any operation carrying it.  It should also be breakout if the digit is encoded in IA5.</p>		
<b>(2)</b>	Field	<b>callingParty.telnoType_b</b>	Spec Ref	See 7.10.1.2(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	<p>Implementation Info:  See 7.10.1.2(1).  The telnoType_b subfield should be set as the following:  K_GG59_TELNOTYPE_CALLINGPARTYNUM (for Calling Party Number)  K_GG59_TELNOTYPE_SMSORGORNUM (for SMS_OriginalOriginatingAddress)  K_GG59_TELNOTYPE_CLGNUMDIGITS1 (for CallingPartyNumberDigits1)</p>		
<b>7.10.1.3</b>	Field	<b>MIN.telno</b>	Spec Ref	<b>[6.5.2.81]</b>
	Definition	The MobileIdentificationNumber (MIN) is a 10-digit representation of the MS’s MIN, coded in BCD form.		
	Details	<p>Implementation Info:  Extracted from the Mobile Identification Number of any operation carrying it.</p>		
<b>7.10.1.4</b>	Field	<b>MSN.telno</b>	Spec Ref	<b>[6.5.2.63]</b>
	Definition	The ElectronicSerial Number (ESN) parameter is used to indicate the unique 32-bit electronic serial number of an MS.		
	Details	<p>Implementation Info:  Extracted from the Mobile/Electronic Serial Number of any operation carrying it.  When extracting nibble swap the digits i.e. the octets 0x12,0x34,0x56,0x78 would be extracted as 21436587.  Note: MSN stands for Mobile Serial Number, however in IS41 Rev C this changed to ESN but it still has the same function and structure and is therefore mapped to MSN field.    If both ESN and MEID are found in one message the ESN must be a pseudo-ESN and it should be extracted into MSN.telno.</p>		

<b>7.10.1.5 (1)</b>	Field	<b>txNum[].telno</b>	Spec Ref	[8.2.19][ <b>6.5.2.58</b> ] [6.5.2.114] [TR-45.2 PN-3980 6.4.2.g.2]
	Definition	The Digits parameter is based on the the Digits parameter defined in Section 3 of ANSI T1.114-1988.		
	Details	<p>Implementation Info:            Extracted from the Digits parameter, if the Type of Digits is 'Destination Number' or 'Routing Number' or from the Routing Digits parameter or from DesitinationDigits parameter. It is extracted from any operation carrying it. Copy into the telno field of the first slot of txNum[] in the same form as stored in the message.</p>		
<b>(2)</b>	Field	<b>txNum[].telnoType_b</b>	Spec Ref	See 7.10.1.5(1)
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	<p>Implementation Info:            See 7.10.1.5(1).            The telnoType_b subfield should be set as the following:            K_GG59_TELNOTYPE_DESTNUM (for Destination Number)            K_GG59_TELNOTYPE_ROUTINGNUM (for Routing Number)            K_GG59_TELNOTYPE_DESTDIGITS (for DestinationDigits)            K_GG59_TELNOTYPE_ROUTINGDIGITS (for RoutingDigits)</p>		
<b>7.10.1.6</b>	Field	<b>TMServiceID_b</b>	Spec Ref	[7.2.2][ <b>5.1.2</b> ]
	Definition	The Traffic Monitor supports a set of Service Assurance measurements on different services. Userdata decodes set TMServiceId_b. The Traffic Monitor resource file maps 1 or more TMServiceId_b values onto each 'Traffic Monitor service'. Thus, if appropriate, multiple SSNs can be mapped to one service (or different messages with the same SSN can be mapped onto different 'Traffic Monitor services'). This mechanism also make Traffic Monitor independent of particular SSN Values.		
	Details	<p>Implementation Info:            This is set depending on the called/calling SSN (the calling SSN takes preference):            (i) called/calling SSN = 5 then set TMServiceId_b =K_GG59_IS41MAPSERVNUM            (ii) called/calling SSN = 6 then set TMServiceId_b =K_GG59_IS41HLRSERVNUM            (iii) called/calling SSN = 7 then set TMServiceId_b =K_GG59_IS41VLRSERVNUM            (iv) called/calling SSN = 8 then set TMServiceId_b =K_GG59_IS41MSCSERVNUM            (v) called/calling SSN = 9 then set TMServiceId_b =K_GG59_IS41EIRSERVNUM            (vi) called/calling SSN = 10 then set TMServiceId_b =K_GG59_IS41ACSERVNUM            (vii) called/calling SSN = 11 then set TMServiceID_b=K_GG59_IS41SMSSENVNUM            (vii) Neither SSN matches any value above then set TMServiceId_b=K_GG59_IS41MAPSERVNUM</p>		
<b>7.10.1.7</b>	Field	<b>opCode_ba, numOpCodes_b</b>	Spec Ref	[8.1.1][ <b>6.4.1.2</b> ]
	Definition	The Operation Code array and the number of Operation codes listed in the array.		
	Details	Implementation Info: see 7.1.1.4 & 7.1.1.5. However, in this case the private Operation Code ID is used.		

<b>7.10.1.8</b>	Field	<b>MSCcircuitID_ba</b>	Spec Ref	[8.2.4][ <b>6.5.2.72</b> ]
	Definition	The InterMSCCircuitID (IMSCCID) parameter is used to identify a specific trunk in a dedicated trunk group between two MSCs. This number consists of a trunk group number and a member number.		
	Details	<p>Implementation Info: This is a 2-byte array where the bytes should be extracted in the same order as found in the message.</p>		
<b>7.10.1.9</b>	Field	<b>IS41Reason_u</b>	Spec Ref	[8.2.8][ <b>6.5.2.111</b> ]
	Definition	The ReleaseReason (RELREASON) parameter is used to indicate the reason for requesting that allocated resources be released (i.e., via the invocation of the FacilitiesRelease operation).		
	Details	<p>Implementation Info: Extracted from the ReleaseReason parameter of any operation carrying it.</p>		
<b>7.10.1.10</b>	Field	<b>IS41TargetCellId_u</b>	Spec Ref	[8.2.2][ <b>6.5.2.148</b> ]
	Definition	The TargetCellId (TCELLID) parameter specifies the ID of the target cell site to be used in this transaction.		
	Details	<p>Implementation Info: Extracted from the TargetCellId parameter of any operation carrying it.</p>		
<b>7.10.1.11</b>	Field	<b>IS41ServingCellId_u</b>	Spec Ref	[8.2.2][ <b>6.5.2.117</b> ]
	Definition	The ServingCellId (SCELLID) parameter specifies the ID of the serving cell site to be used in this transaction.		
	Details	<p>Implementation Info: Extracted from the ServingCellId parameters of any operation carrying it.</p>		
<b>7.10.1.12</b>	Field	<b>IS41MSCID_m</b>	Spec Ref	[8.2.20][ <b>6.5.2.82</b> ]
	Definition	The MSC ID parameter indicates the ID of the specified system.		
	Details	<p>Implementation Info: Extracted from the MSCID parameter of any operation carrying it.</p>		

<b>7.10.1.13</b>	<b>Field</b>	<b>IS41AuthDenied_b</b>	<b>Spec Ref</b>	[8.2.11][6.5.2.13]
	<b>Definition</b>	The AuthorisationDenied (AUTHDEN) parameter is used to indicate that the MS is not authorized.		
	<b>Details</b>	<p>Implementation Info:</p> <p>Extracted from the AuthorisationDenied parameter of any operation carrying it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_AUTHDEN_NOTUSED (0)</li> <li>K_GG59_AUTHDEN_DELINQUENT_ACCOUNT (1)</li> <li>K_GG59_AUTHDEN_INVALID_SERIAL (2)</li> <li>K_GG59_AUTHDEN_STOLEN_UNIT (3)</li> <li>K_GG59_AUTHDEN_DUPLICATE_UNIT (4)</li> <li>K_GG59_AUTHDEN_UNASSIGNED_DIRNUM (5)</li> <li>K_GG59_AUTHDEN_UNSPECIFIED (6)</li> <li>K_GG59_AUTHDEN_MULTIPLE_ACCESS (7)</li> <li>K_GG59_AUTHDEN_NOT_AUTHED_FOR_MSC (8)</li> <li>K_GG59_AUTHDEN_MISSING_AUTH_PARAMS (9)</li> <li>K_GG59_AUTHDEN_TERMTYPE_MISMATCH (10)</li> <li>K_GG59_AUTHDEN_SERVCODE_NOT_SUPPORTED (11)</li> </ul>		
<b>7.10.1.14</b>	<b>Field</b>	<b>IS41HandoffReason_b</b>	<b>Spec Ref</b>	[8.2.29][6.5.2.70]
	<b>Definition</b>	The HandoffReason (HANDREASON) parameter is sent to the target system from the serving system to indicate the reason for the handoff.		
	<b>Details</b>	<p>Implementation Info:</p> <p>Extracted from the HandoffReason parameter of any operation carrying it.</p>		
<b>7.10.1.15</b>	<b>Field</b>	<b>appLevel_b</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	See 7.2.1.10		
	<b>Details</b>	<p>Implementation Info:</p> <p>This should be set to K_GG59_IS41MAP_INFO.</p>		
<b>7.10.1.16</b>	<b>Field</b>	<b>IMSI.telno</b>	<b>Spec Ref</b>	[6.5.2bu]
	<b>Definition</b>	The IMSI refers to the International Mobile Subscriber Identity		
	<b>Details</b>	<p>Implementation Info:</p> <p>Extracted from the International Mobile Subscriber Identity of any operation carrying it.</p>		
<b>7.10.1.17</b>	<b>Field</b>	<b>redirectingNum.telno</b>	<b>Spec Ref</b>	[6.5.2.107]
	<b>Definition</b>	Extracted from the redirectingNumberDigits parameter.		
	<b>Details</b>	<p>Implementation Info:</p> <p>n/a</p>		
<b>7.10.1.18</b>	<b>Field</b>	<b>smsCauseCode_u</b>	<b>Spec Ref</b>	[6.5.2.125]
	<b>Definition</b>	Indicates a reason for not delivering an SMS message.		
	<b>Details</b>	<p>Implementation Info:</p> <p>The SMS_CauseCode parameter is extracted from any message which contains it. The symbolic value K_GG59_IS41_SMS_CAUSE_CODE is added to the value extracted from the parameter.</p>		

<b>7.10.1.19</b>	Field	<b>smsAccessDeniedReason_u</b>	Spec Ref	[6.5.2.122]
	Definition	Indicates why short message delivery is not currently allowed to an MS-based SME.		
	Details	<p>Implementation Info:            The SMS_AccessDeniedReason parameter is extracted from any message which contains it.            The symbolic value K_GG59_IS41_SMS_ACCESS_DENIED is added to the value extracted from the parameter.</p>		
<b>7.10.1.20</b>	Field	<b>deregistrationType_m</b>	Spec Ref	[6.5.2.55]
	Definition	The DeregistrationType parameter is used to request that an MS be deregistered when an MS is reported as Inactive. This allows deregistration and Inactive reporting to be separated.		
	Details	<p>Implementation Info:            Extracted from the DeregistrationType parameter of any operation carrying it. One of:            K_GG59_IS41_DT_NOTUSED (0x00)            K_GG59_IS41_DT_UNSPECIFIEDREASON (0x01)            K_GG59_IS41_DT_ADMINISTRATIVEREASON (0x02)            K_GG59_IS41_DT_MSPOWERDOWN (0x03)</p>		
<b>7.10.1.21</b>	Field	<b>accessDeniedReason_m</b>	Spec Ref	[6.5.2.1]
	Definition	The AccessDeniedReason parameter indicates the reason access cannot be given to the called MS.		
	Details	<p>Implementation Info:            Extracted from the AccessDeniedReason parameter of any operation carrying it. One of:            K_GG59_IS41_ADR_NOTUSED (0x00)            K_GG59_IS41_ADR_UNASSIGNEDNN (0x01)            K_GG59_IS41_ADR_INACTIVE (0x02)            K_GG59_IS41_ADR_BUSY (0x03)            K_GG59_IS41_ADR_TERMINATIONDENIED (0x04)            K_GG59_IS41_ADR_NOPAGERESPONSE (0x05)            K_GG59_IS41_ADR_UNAVAILABLE (0x06)            K_GG59_IS41_ADR_SERVREJECTEDBYMS (0x07)            K_GG59_IS41_ADR_SERVREJECTEDBYSYS (0x08)            K_GG59_IS41_ADR_SERVICTYPEMISMATCH (0x09)            K_GG59_IS41_ADR_SERVICEDENIED (0xa)</p>		
<b>7.10.1.22</b>	Field	<b>billingId_ba</b>	Spec Ref	[6.5.2.16]
	Definition	The BillingID parameter is initially assigned at the Anchor MSC for originating and terminating calls involving radio contact. It's primarily intended for billing record correlation, but may be used for other purposes such as identifying the Anchor MSC, etc. It's also assigned at the Originating MSC for incoming calls.		
	Details	<p>Implementation Info:            Extracted from the BillingID parameter of any operation carrying it.            It's dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet.            The following Macros can be used to get the 4 subfields of billingId:            (1) "Anchor or Originating MarketID": M_GG59_Get_IS41_BID_Anch_OrigMarketID(gg59);            (2) "Anchor or Originating Switch Number":            M_GG59_Get_IS41_BID_Anch_OrigSwitchNO(gg59);            (3) "ID Number": M_GG59_Get_IS41_BID_IDNumber(gg59); and            (4) "Segment Counter": M_GG59_Get_IS41_BID_SegmentCounter(gg59).</p>		

<b>7.10.1.23</b>	Field	<b>callingPtyAddPresRestrInd_m</b>	Spec Ref	TIA/EIA-41 6.5.2.21
	Definition	This is the "Presentation" bit in "Nature of Number" of "Calling Party Number Digits1" parameter. It indicates that if Calling Party would like to display his number to Called Party.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.10.1.24</b>	Field	<b>ocn.telno</b>	Spec Ref	TIA/EIA-41 6.5.2.80
	Definition	The MobileDirectoryNumber (MDN) parameter.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.10.1.25</b>	Field	<b>TMSI.telno</b>	Spec Ref	<b>TIA/EIA/IS-735 6.5.2.bl</b>
	Definition	The TMSI Code defines a 32-bit MS temporary identification in one TMSI Zone.		
	Details	Implementation Info: Extracted from the TMSI Code of the Network TMSI parameter of any operation carrying it.		
<b>7.10.1.26</b>	Field	<b>MEID.telno</b>	Spec Ref	<b>X.S0008-0 Sec. 3.2.2.3</b>
	Definition	Mobile Equipment Identifiers (MEIDs) are globally unique numbers identifying a physical piece of CDMA mobile station equipment.		
	Details	Implementation Info: Extracted the Hex octets of the MEID parameter of any operation carrying it. - nibble swap the digits i.e. the octets 0x12,0x34,0xa6,0x78 would be extracted as 21436a87 - all-zero value MEID will NOT be broken out.		
<b>7.10.1.27</b>	Field	<b>oneTimeFeatureIndicator_ba</b>	Spec Ref	X.S0004-550-E v2.0, Sec. 2.178
	Definition	The OneTimeFeatureIndicator (OTFI) parameter defines the modifications to feature processing that are in effect for a designed MS until the time of the next call release by the MS.		
	Details	Implementation Info: It's dynamic varaiable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The array length will be 3 in IS41.		
<b>7.10.1.28</b>	Field	<b>redirectionReason_m</b>	Spec Ref	X.S0004-550-E v2.0, Sec. 2.212
	Definition	The RedirectionReason (REDREASON) parameter indicates the reason for redirection		
	Details	Implementation Info: This field is implemented as a single-value field and will be extracted from any message that contains it.		
<b>7.10.1.29 (1)</b>	Field	<b>genericDigits.telno</b>	Spec Ref	[6.5.2.63] [6.5.2.81]
	Definition	The ElectronicSerialNumber or MobileIdentificationNumber subfield of TerminationList parameter (6.5.2.156).		
	Details	Implementation Info: This Digits should be extracted from any message that contains TerminationList. The field is multiple-value s_gg61_addr address. All the instances of the field should be extracted. See 7.10.4 for Context Assistance requirement for this field.		
<b>(2)</b>	Field	<b>genericDigits.telnoType_b</b>	Spec Ref	n/a
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		

	Details	Implementation Info: See 7.10.1.29(1). The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_TERMLIST_ESN (for ElectronicSerialNumber) K_GG59_TELNOTYPE_TERMLIST_MIN (for MobileIdentificationNumber)		
<b>7.10.1.30</b>	Field	<b>DMHRedirectionIndicator_m</b>	Spec Ref	[6.5.2.62]
	Definition	The DMH_RedirectionIndicator (REDIND) parameter indicates the reason for extending an incoming call for recording purposes.		
	Details	Implementation Info: This field is implemented as a single-value field and will be extracted from any message that contains it.		

## 7.10.2 Capture Buffer Indices

In addition to generic TCAP section (see 7.1.2):

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.10.2.1</b>	Messages which contain a MIN	MIN.telno	
<b>7.10.2.2</b>	Messages which contain an MSN/ESN	MSN.telno	
<b>7.10.2.3</b>	Messages which contain callingParty	callingParty.telno	
<b>7.10.2.4</b>	Messages which contain calledParty	calledParty.telno	
<b>7.10.2.5</b>	Messages which contain an IMSI	IMSI.telno	
<b>7.10.2.6</b>	Messages which contain a MDN	ocn.telno	

Capture Buffer Indices									
<b>7.10.2.7</b>	Messages which contain an TMSI			TMSI.telno					
<b>7.10.2.8</b>	Messages which contain an MEID			MEID.telno					

### 7.10.3 Call Trace Assistance

Please note that the following Call Trace definition is not only based on a ‘per package type’ but on a combination of package type, component type and operation types.

Call Trace Assistance												
<b>7.10.3.1</b>	Query Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		PCOTIDSSN	X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
						90						
		Cross Triggers	Local				Global					
			X									
<b>7.10.3.2</b>	Response Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN		X	X	X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
			PCOTIDSSN = 2			0			5000mS			
		Cross Triggers	Local				Global					
			X									

Call Trace Assistance													
7.10.3.3	Conversation Packages	CTFlags Critter PCOTIDSSN DPCRTIDSSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X	X									
				X									
			Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
						20							
			Cross Triggers	Local			Global						
				X									
			Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
						0							
			Abort Packages	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
7.10.3.5		CTFlags Critter DPCRTIDSSN		X			X						
			Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
				2									
			Cross Triggers	Local			Global						
				X									
			Packages containing Invoke component	State of Call		CTState		CTEnhState					
7.10.3.6		State of Call						'Unknown query'					
			Packages containing ReturnResult component	CTState				CTEnhState					
				'Response received'									
7.10.3.8		State of Call	Packages containing ReturnError component	CTState				CTEnhState					
				'Error returned'									
7.10.3.9		State of Call	Packages containing Reject component	CTState				CTEnhState					
				'Reject component'									
7.10.3.10	Valid operations containing a MIN parameter	CTFlags Critter MIN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X						

Call Trace Assistance													
<b>7.10.3.11</b>	Valid operations containing an MSN/ESN parameter	CTFlags Critter MSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X						
<b>7.10.3.12</b>	Valid operations containing a Digits ( dialled) parameter or an SMS_OriginalDestinationAddress parameter	CTFlags Critter CALLED	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X	X					
<b>7.10.3.13</b>	Valid operations containing a Digits ( calling) parameter or an SMS_OriginalOriginatingAddress parameter	CTFlags Critter CALLING	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X						
<b>7.10.3.14</b>	Valid operations containing parameters: Digits (destination or routing); or Routing Digits	CTFlags Critter TX	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u				
						5							
			Cross Triggers	Local			Global						
							X						
<b>7.10.3.15</b>	AuthenticationDirective operation	State of Call	CTState				CTEnhState						
							'Auth Directive'						
<b>7.10.3.16</b>	AuthenticationDirectiveForward operation	State of Call	CTState				CTEnhState						
							'Auth Directive Forward'						
<b>7.10.3.17</b>	AuthenticationFailureReport operation	State of Call	CTState				CTEnhState						
							'Auth Failure Report'						
<b>7.10.3.18</b>	AuthenticationRequest operation	State of Call	CTState				CTEnhState						
							'Auth Request'						
<b>7.10.3.19</b>	AuthenticationStatusReport operation	State of Call	CTState				CTEnhState						
							'Auth Status Report'						
<b>7.10.3.20</b>	BaseStationChallenge operation	State of Call	CTState				CTEnhState						
							'Base Station Challenge'						

Call Trace Assistance				
<b>7.10.3.21</b>	CallDataRequest operation	State of Call	CTState	CTEnhState
				'Call Data Request'
<b>7.10.3.22</b>	CountRequest operation	State of Call	CTState	CTEnhState
				'Count Request'
<b>7.10.3.23</b>	CSSInactive (Rev A/B) MSInactive (Rev C)	State of Call	CTState	CTEnhState
				'MS Inactive'
<b>7.10.3.24</b>	FacilitiesDirective operation	State of Call	CTState	CTEnhState
				'Facilities Directive'
<b>7.10.3.25</b>	FacilitiesDirective2 operation	State of Call	CTState	CTEnhState
				'Facilities Directive2'
<b>7.10.3.26</b>	FacilitiesRelease operation	State of Call	CTState	CTEnhState
				'Facilities Release'
<b>7.10.3.27</b>	FlashRequest operation	State of Call	CTState	CTEnhState
				'Flash Request'
<b>7.10.3.28</b>	HandoffBack operation	State of Call	CTState	CTEnhState
				'Handoff Back'
<b>7.10.3.29</b>	HandoffBack2 operation	State of Call	CTState	CTEnhState
				'Handoff Back2'
<b>7.10.3.30</b>	HandoffToThird operation	State of Call	CTState	CTEnhState
				'Handoff To Third'
<b>7.10.3.31</b>	HandoffToThird2 operation	State of Call	CTState	CTEnhState
				'Handoff To Third2'
<b>7.10.3.32</b>	InformationDirective operation	State of Call	CTState	CTEnhState
				'Information Directive'
<b>7.10.3.33</b>	InformationForward operation	State of Call	CTState	CTEnhState
				'Information Forward'
<b>7.10.3.34</b>	IntersystemAnswer operation	State of Call	CTState	CTEnhState
				'Intersystem Answer'

Call Trace Assistance											
<b>7.10.3.35</b>	IntersystemPage operation	State of Call	CTState				CTEnhState				
							'Intersystem Page'				
<b>7.10.3.36</b>	IntersystemPage2 operation	State of Call	CTState				CTEnhState				
							'Intersystem Page2'				
<b>7.10.3.37</b>	IntersystemSetup operation	State of Call	CTState				CTEnhState				
							'Intersystem Setup'				
<b>7.10.3.38</b>	LocationRequest operation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
		CALLED	CTState				CTEnhState				
		Cross Triggers					'Location Request'				
<b>7.10.3.39</b>	MobileOnChannel operation	State of Call	CTState				CTEnhState				
							'Mobile on Channel'				
<b>7.10.3.40</b>	NumberPortabilityRequest operation	State of Call	CTState				CTEnhState				
							'LNP Request'				
<b>7.10.3.41</b>	OriginationRequest operation	State of Call	CTState				CTEnhState				
							'Origination Request'				
<b>7.10.3.42</b>	QualificationDirective operation	State of Call	CTState				CTEnhState				
							'Qualification Directive'				
<b>7.10.3.43</b>	QualificationRequest operation	State of Call	CTState				CTEnhState				
							'Qualification Request'				
<b>7.10.3.44</b>	RedirectionDirective operation	State of Call	CTState				CTEnhState				
							'Redirection Directive'				
<b>7.10.3.45</b>	RedirectionRequest operation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X	X		
		CALLED	CTState				CTEnhState				
		CROSS TRIGGERS					'Redirection Request'				
<b>7.10.3.46</b>	RegistrationCancellation operation	State of Call	CTState				CTEnhState				
							'Registration Cancellation'				

Call Trace Assistance											
<b>7.10.3.47</b>	RegistrationNotification operation	State of Call	CTState				CTEnhState				
							'Registration Notification'				
<b>7.10.3.48</b>	RemoteFeatureControlRequest (Rev A/B) FeatureRequest (Rev C) operation	State of Call	CTState				CTEnhState				
							'Feature Request'				
<b>7.10.3.49</b>	RoutingRequest operation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		OCN	X				X	X			
		Cross Triggers	CTState				CTEnhState				
							'Routing Request'				
<b>7.10.3.50</b>	ServiceProfileDirective operation	State of Call	CTState				CTEnhState				
							'Service Profile Directive'				
<b>7.10.3.51</b>	ServiceProfileRequest operation	State of Call	CTState				CTEnhState				
							'Service Profile Request'				
<b>7.10.3.52</b>	Service Request Operation	State of Call	CTState				CTEnhState				
							'Service Request'				
<b>7.10.3.53</b>	SMSDeliveryBackward operation	State of Call	CTState				CTEnhState				
							'SMS Delivery Backward'				
<b>7.10.3.54</b>	SMSDeliveryForward operation	State of Call	CTState				CTEnhState				
							'SMS Delivery Forward'				
<b>7.10.3.55</b>	SMSDeliveryPointToPoint operation	State of Call	CTState				CTEnhState				
							'SMS Delivery Point To Point'				
<b>7.10.3.56</b>	SMSNotification operation	State of Call	CTState				CTEnhState				
							'SMS Notification'				
<b>7.10.3.57</b>	SMSRequest operation	State of Call	CTState				CTEnhState				
							'SMS Request'				
<b>7.10.3.58</b>	TransferToNumberRequest operation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		MIN	X				X	X			
		Cross Triggers	CTState				CTEnhState				
							'Transfer To Number Request'				

Call Trace Assistance														
7.10.3.59	Unsolicited Response operation	State of Call	CTState				CTEnhState							
							'Unsolicited Response'							
7.10.3.60	Valid operations containing an IMSI parameter	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI	X				X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					20									
		Cross Triggers	Local				Global							
							X							
7.10.3.61	Valid operations containing an MDN parameter	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		OCN	X				X	X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					20									
		Cross Triggers	Local				Global							
							X							
7.10.3.62	Valid operations containing a callingPartyNumberDigits1 parameter	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CALLING	X				X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					20									
		Cross Triggers	Local				Global							
							X							
7.10.3.63	Valid operations containing a callingPartyNumberDigits2 parameter	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CHARGING	X				X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					20									
		Cross Triggers	Local				Global							
							X							

Call Trace Assistance										
<b>7.10.3.64</b>	Valid operations containing a redirectingNumber-Digits parameter  (Copied from IS41B 7.9.3.11)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			X				X			
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
					20					
		Cross Triggers	Local			Global				X
<b>7.10.3.65</b>	Response/Return-Result which contains an AuthorisationDenied parameter  (Copied from IS41B 7.9.3.11)	State of Call	CTState				CTEnhState			
Auth Denied Value -----> Message				K_ANLS_NOCHANGE						
<b>7.10.3.66</b>	ORREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		CALLING	X				X		X	
		MSN	X				X		X	
		MIN	X				X		X	
			X				X		X	
		TMSI	X				X		X	
		PCOTIDSSN	X							
		State of Call	CTState			CTEnhState				
							"OriginationRequest"			

Call Trace Assistance											
<b>7.10.3.67</b>	FLASHREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			MSN	X			X				
			MIN	X			X				
			IMSI	X			X				
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
								"FlashRequest"			
<b>7.10.3.68</b>	ISPOSREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			CALLING	X			X	X	X		
			CALLED	X			X	X	X		
			MSN	X			X	X	X		
			IMSI	X			X	X	X		
		TMSI	MIN	X			X	X	X		
			TMSI	X			X	X			
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
								"InterSystemPositionRequest"			
<b>7.10.3.69</b>	ISPOSREQFWD (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			MSN	X			X	X	X		
			IMSI	X			X	X	X		
			MIN	X			X	X	X		
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
								"InterSystemPositionRequestForward"			

Call Trace Assistance												
7.10.3.70	CTRPT (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		MSN	X				X	X	X			
		IMSI	X				X	X	X			
		MIN	X				X	X	X			
		TMSI	X				X	X	X			
		PCOTIDSSN	X									
		State of Call	CTState				CTEnhState					
			"Call Termination Report"									
7.10.3.71	GPOSREQ(in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		MSN	X				X	X	X			
		MIN	X				X	X	X			
		IMSI	X				X	X	X			
		TMSI	X				X	X	X			
		PCOTIDSSN	X									
		State of Call	CTState				CTEnhState					
			"GeoPositionRequest"									
7.10.3.72	GPOSDIR (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		MSN	X				X	X	X			
		IMSI	X				X	X	X			
		MIN	X				X	X	X			
		TMSI	X				X	X	X			
		PCOTIDSSN	X									
		State of Call	CTState				CTEnhState					
			"GeoPositionDirective"									

Call Trace Assistance											
<b>7.10.3.73</b>	SMDPP (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			MSN	X				X	X	X	
			MIN	X				X	X	X	
			IMSI	X				X	X	X	
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
<b>7.10.3.74</b>	SMDFWD (in addition to those requirements of an IS41 Query)	CTFlags Critter	n/a					"SMSDeliveryPointToPoint"			
			MSN	X				X	X		
			MIN	X				X	X		
			IMSI	X				X	X		
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
				n/a				"SMSDeliveryForward"			
<b>7.10.3.75</b>	SMDBACK (in addition to those requirements of an IS41 Query)	CTFlags Critter	n/a					"SMSDeliveryBackward"			
			MSN	X				X	X	X	
			MIN	X				X	X	X	
			IMSI	X				X	X	X	
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
				n/a							

Call Trace Assistance												
<b>7.10.3.76</b>	orreq falsreq isposreq isposreqfwd ctrpt gposreq gposdir smdpp smdfwd smdback lpreq pen	CTFlags Critter  DPCRTIDSSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
			(as per the IS41 Response package)									
		State of Call	CTState					CTEnhState				
<b>7.10.3.77</b>	LREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CALLING	X				X	X	X			
		State of Call	CTState					CTEnhState				
								"LCS Parameter Request "				
<b>7.10.3.78</b>	PEN (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		IMSI	X				X	X	X			
		MIN	X				X	X	X			
		State of Call	CTState					CTEnhState				
								"Position Event Notification "				
<b>7.10.3.79</b>	AnalyzedInformation operation	State of Call	CTState					CTEnhState				
								'Analyzed Information'				
<b>7.10.3.80</b>	BulkDisconnection operation	State of Call	CTState					CTEnhState				
								'Bulk Disconnection'				
<b>7.10.3.81</b>	CallControlDirective operation	State of Call	CTState					CTEnhState				
								'Call Control Directive'				
<b>7.10.3.82</b>	CallRecoveryReport operation	State of Call	CTState					CTEnhState				
								'Call Recovery Report'				
<b>7.10.3.83</b>	ConnectionFailureReport operation	State of Call	CTState					CTEnhState				
								'Connection Failure Report'				
<b>7.10.3.84</b>	ConnectResource operation	State of Call	CTState					CTEnhState				
								'Connect Resource'				
<b>7.10.3.85</b>	DisconnectResource operation	State of Call	CTState					CTEnhState				
								'Disconnect Resource'				

Call Trace Assistance				
		State of Call	CTState	CTEnhState
<b>7.10.3.86</b>	FacilitySelect-edAndAvailable operation			`Facility Selected and Available'
<b>7.10.3.87</b>	InstructionRe-quest operation	State of Call	CTState	CTEnhState
				`Instruction Request'
<b>7.10.3.88</b>	Modify operation	State of Call	CTState	CTEnhState
				`Modify'
<b>7.10.3.89</b>	OAnswer opera-tion	State of Call	CTState	CTEnhState
				`O Answer'
<b>7.10.3.90</b>	ODisconnect opera-tion	State of Call	CTState	CTEnhState
				`O Disconnect'
<b>7.10.3.91</b>	ResetTimer opera-tion	State of Call	CTState	CTEnhState
				`Reset Timer'
<b>7.10.3.92</b>	Search operation	State of Call	CTState	CTEnhState
				`Search'
<b>7.10.3.93</b>	SeizeResource opera-tion	State of Call	CTState	CTEnhState
				`Seize Resource'
<b>7.10.3.94</b>	SRFDirective opera-tion	State of Call	CTState	CTEnhState
				`SRF Directive'
<b>7.10.3.95</b>	TAnswer opera-tion	State of Call	CTState	CTEnhState
				`T Answer'
<b>7.10.3.96</b>	TBusy opera-tion	State of Call	CTState	CTEnhState
				`T Busy'
<b>7.10.3.97</b>	TDisconnect opera-tion	State of Call	CTState	CTEnhState
				`T Disconnect'
<b>7.10.3.98</b>	TNoAnswer opera-tion	State of Call	CTState	CTEnhState
				`T No Answer'
<b>7.10.3.99</b>	UnreliableCall-Data opera-tion	State of Call	CTState	CTEnhState
				`Unreliable Call Data'

Call Trace Assistance										
<b>7.10.3 .100</b>	BulkDeregistration FeatureRequest MSInactive QualificationDirective QualificationRequest RegistrationNotification RegistrationCancellation RedirectionRequest RoutingRequest SMSDeliveryPointToPoint SMSNotification TransferToNumberRequest UnreliableRoamerDataDirective	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			IMSI	X			X	X	X	

## 7.10.4 Context Assistance

Context Assistance		
<b>7.10.4.1</b>	TerminationList ESN/MIN	The context bits (mask with K_GG59_CTXTMASK_IS41_TERMLIST 0x000000ff) will be used to indicate the index of TerminationList parameter and mark its relevant ESN/MIN. The index number should start from 1 and increase by 1 for next TerminationList.

## 7.11 BSSAP

BSSAP (Base Station Subsystem Application Part) messages can carry one of 2 different protocols, either BSSMAP (BSS Management Part) or DTAP (Direct Transfer Application Part) depending on the value of the Discrimination Flag.

As a result, the breakout requirements are described in the following 3 sections, the first describing the extraction of the Discrimination Flag, then the second and third describing the requirements for BSSMAP and DTAP respectively. However, a single BSSAP breakout should be implemented which covers all three sections.

### 7.11.1 Fields

MSU Breakout Fields																			
7.11.1.1	Field	bssapProt_b		Section 6.3															
	Definition	If there is a BSSAP protocol present then a Discrimination Flag is present in the MSU to indicate which type of BSSAP protocol is present. If the BSSAP protocol is DTAP then a Protocol Discriminator field is present. This indicates which DTAP protocol is present.																	
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) If the Discrimination Indicator is BSSMAP then this field is set to K_GG59_BSSMAP.</li> <li>(2) If the Discrimination Indicator is DTAP then the Protocol Discriminator is extracted into this field, regardless of its value.</li> <li>(3) If the Discrimination Indicator is BSSMAP and the message contains a “Layer 3 Information” information element (GSM 08.08 section 3.2.2.24), then this field is overwritten with the DTAP Protocol Discriminator contained in that IE.</li> <li>(4) The following #defines are provided for known valid Protocol Discriminator values:</li> </ol> <table> <thead> <tr> <th>Value</th> <th>Meaning</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>no BSSAP protocol present</td> </tr> <tr> <td>K_GG59_BSSMAP</td> <td>BSSMAP message present</td> </tr> <tr> <td>K_GG59_DTAP_CC</td> <td>DTAP Call Control message present</td> </tr> <tr> <td>K_GG59_DTAP_MM</td> <td>DTAP Mobility Management message present</td> </tr> <tr> <td>K_GG59_DTAP_SMS</td> <td>DTAP Short Message Service message present</td> </tr> <tr> <td>K_GG59_DTAP_NCRSS</td> <td>DTAP non-call related Supplementary Service message present</td> </tr> <tr> <td>K_GG59_DTAP_TST</td> <td>DTAP test procedure message present</td> </tr> </tbody> </table>			Value	Meaning	0	no BSSAP protocol present	K_GG59_BSSMAP	BSSMAP message present	K_GG59_DTAP_CC	DTAP Call Control message present	K_GG59_DTAP_MM	DTAP Mobility Management message present	K_GG59_DTAP_SMS	DTAP Short Message Service message present	K_GG59_DTAP_NCRSS	DTAP non-call related Supplementary Service message present	K_GG59_DTAP_TST
Value	Meaning																		
0	no BSSAP protocol present																		
K_GG59_BSSMAP	BSSMAP message present																		
K_GG59_DTAP_CC	DTAP Call Control message present																		
K_GG59_DTAP_MM	DTAP Mobility Management message present																		
K_GG59_DTAP_SMS	DTAP Short Message Service message present																		
K_GG59_DTAP_NCRSS	DTAP non-call related Supplementary Service message present																		
K_GG59_DTAP_TST	DTAP test procedure message present																		
7.11.1.2	Field	appLevel_b		n/a															
	Definition	See 7.2.1.10																	
	Details	Implementation Info: This should be set to K_GG59_BSSAP_INFO.																	

### 7.11.2 Capture Buffer Indices

Not Applicable

### **7.11.3 Call Trace Assistance**

Not Applicable

## 7.12 BSSMAP

This defines the requirements additional to the basic TCAP requirements (see 7.1). References are to GSM 08.08 (See 2.3.18 & 2.3.19).

### 7.12.1 Fields

If bssapProt\_b = K\_GG59\_BSSMAP, the following fields should be extracted from all messages which contain them.

<b>7.12.1.1</b>	Field	<b>bssmapMsgType_b</b>		Section 3.2.2.1
	Definition	This is the BSSMAP Message Type field. This is a protocol independent message type.		
	Details	n/a		
<b>7.12.1.2</b>  (1)	Field	<b>bssmapCIC_u</b>		Section 3.2.2.2
	Definition	This is the Circuit Identity Code Field.		
	Details	<p>Implementation Info:            This field should be extracted from the following messages:</p> <ul style="list-style-type: none"> <li>- Block [3.2.1.4]</li> <li>- Circuit Group Block [3.2.1.41]</li> <li>- Circuit Group Unblock [3.2.1.43]</li> <li>- Reset Circuit [3.2.1.38]</li> <li>- Unblock [3.2.1.6]</li> <li>- Unequipped Circuit [3.2.1.47]</li> <li>- Assignment Request [3.2.1.1]</li> <li>- Reset Circuit Acknowledge [3.2.1.39]</li> <li>- Circuit Group Block Acknowledge [3.2.1.42]</li> <li>- Circuit Group Unblock Acknowledge [3.2.1.44]</li> <li>- Change Circuit Acknowledge [3.2.1.67]</li> <li>- vgcs/vbs assignment request [3.2.1.53]</li> <li>- vgcs/vbs assignment result [3.2.1.54]</li> </ul>		
<b>(2)</b>	Field	<b>bssmapCICListRange_b</b>		Section 3.2.2.31
	Definition	This is the Circuit Identity Code List Field. This element defines in conjunction with a CIC a list of terrestrial channels.		
	Details	<p>Implementation Info:            This field should be extracted from the following messages:</p> <ul style="list-style-type: none"> <li>- Circuit Group Block [3.2.1.41]</li> <li>- Circuit Group Block Acknowledge [3.2.1.42]</li> <li>- Circuit Group Unblock [3.2.1.43]</li> <li>- Circuit Group Unblock Acknowledge [3.2.1.44]</li> <li>- Unequipped Circuit [3.2.1.47]</li> </ul>		

<b>7.12.1.3</b>	Field	<b>IMSI.telno</b>		Section 3.2.2.6
	Definition	This is the International Mobile Subscriber Identity field.		
	Details	<p>Implementation Info:</p> <p>This should be extracted from the following message:</p> <ul style="list-style-type: none"> <li>- Paging [3.2.1.19]</li> </ul>		
<b>7.12.1.4</b>	Field	<b>TMSI.telno</b>		Section 3.2.2.7
	Definition	This is the Temporary Mobile Subscriber Identity field.		
	Details	<p>Implementation Info:</p> <p>This should be extracted from the following message, when present:</p> <ul style="list-style-type: none"> <li>- Paging [3.2.1.19]</li> </ul>		
<b>7.12.1.5</b>	Field	<b>bssmapServingCellId_ba</b>		Section 3.2.2.17
	Definition	This is the Serving Cell Identifier Field. This uniquely identifies a cell within a BSS.		
	Details	<p>Implementation Info:</p> <p>This is the Serving Cell Identifier Field and should be extracted from the following messages:</p> <ul style="list-style-type: none"> <li>- Handover Performed [3.2.1.25]</li> <li>- Handover Command [3.2.1.11]</li> <li>- Handover Candidate Enquiry [3.2.1.14]</li> <li>- Handover Candidate Response [3.2.1.15]</li> <li>- Overload [3.2.1.26]</li> <li>- Complete Layer 3 Info [3.2.1.32]</li> <li>- Handover Request [3.2.1.8]</li> <li>- Emergency Reset Indication [3.2.1.76]</li> </ul>		
<b>7.12.1.6</b>	Field	<b>bssmapTargetCellId_ba</b>		Section 3.2.2.17
	Definition	This is the Target Cell Identifier Field. This uniquely identifies a cell within a BSS.		
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This is the Target Cell Identifier Field and should be extracted from the following messages: <ul style="list-style-type: none"> <li>- Handover Request [3.2.1.8]</li> </ul> </li> <li>(2) The first entry from the Cell Identifier List Field [see 3.2.2.27] should be extracted into here when the cell identification discriminator indicates that it contains a Location Area Id (0100) from the following message: <ul style="list-style-type: none"> <li>- Paging [3.2.1.19]</li> <li>- Load Indication [3.2.1.49]</li> </ul> </li> </ol>		
<b>7.12.1.7 (1)</b>	Field	<b>bssmapCellIdList_ba</b>		Section 3.2.2.27
	Definition	This is the Cell Identifier List Field.		
	Details	<p>Implementation Info:</p> <p>This should be extracted when the cell identification discriminator indicates that it contains a Location Area Code (0101). Up to K_GG59_MAXCELLIDS should be stored. This should be extracted for the following messages:</p> <ul style="list-style-type: none"> <li>- Paging [3.2.1.19]</li> <li>- Load Indication [3.2.1.49]</li> </ul>		

<b>(2)</b>	Field	<b>bssmapNumCellIds_b</b>		n/a
	Definition	This contains the number of Cell Identifiers present in bssmapCellIdList_ba.		
	Details	n/a		
<b>7.12.1.8</b>	Field	<b>bssmapDLCI_b</b>		Section 3.2.2.25
	Definition	This is the DLCI Field. This is a fixed length element indicating the radio interface SAPI.		
	Details	<p>Implementation Info:            This should be extracted from the following messages:</p> <ul style="list-style-type: none"> <li>- SAPI “n” Reject [3.2.1.34]</li> <li>- Suspend (overload situation) [3.2.1.64]</li> <li>- Resume (no overload) [3.2.1.65]</li> </ul>		
<b>7.12.1.9</b>	Field	<b>bssmapNumberOfMobiles_b</b>		Section 3.2.2.8
	Definition	This is the Number of MSs Field.		
	Details	<p>Implementation Info:            This should be extracted from the following messages:</p> <ul style="list-style-type: none"> <li>- Handover Candidate Enquiry [3.2.1.14],</li> <li>- Handover Candidate Response [3.2.1.15]</li> </ul>		

<b>7.12.1.10</b>	Field	<b>bssmapCauseValue_u</b>		Section 3.2.2.5														
(1)	Definition	<p>This is the BSSMAP Cause Value within the Cause Element. This contains a ‘protocol independent’ cause value which is mapped onto a NLS message in file a7BSSMAPCause.h.</p> <p>The raw value breakout field see also 7.12.1.15</p>																
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) Within an Assignment Failure there are two possible cause fields; Cause (mandatory), RR Cause (optional). We only look at Cause. This is to avoid the possibility of counting two causes for the one error.</li> <li>(2) If the extension bit of the Cause Value is set to zero then the first octet of the Cause field represents the class and Cause Value.</li> <li>(3) if the first octet of the Cause field is 1XXX0000, bssmapCauseValue_u should be set to “reserved for national applications” (K_GNLS_RES_NAT_APPS)</li> <li>(4) Where values are defined as “reserved for National/International Use”, the following mappings should apply:</li> <li>(5) We map "Radio interface message failure" (cause value 0) to 128 for NLS. See IQ00308439.</li> </ol>																
<b>BSSMAP Cause Values reserved for National use</b>																		
<table border="1"> <thead> <tr> <th>Cause Value</th><th>bssmapCauseValue_u</th></tr> </thead> <tbody> <tr><td>001 1000 - 001 1111</td><td>512 + Cause Value</td></tr> <tr><td>010 1010 - 010 1111</td><td>512 + Cause Value</td></tr> <tr><td>100 1000 - 100 1111</td><td>512 + Cause Value</td></tr> <tr><td>101 1000 - 101 1111</td><td>512 + Cause Value</td></tr> <tr><td>110 1000 - 110 1111</td><td>512 + Cause Value</td></tr> <tr><td>111 1000 - 111 1111</td><td>512 + Cause Value</td></tr> </tbody> </table>					Cause Value	bssmapCauseValue_u	001 1000 - 001 1111	512 + Cause Value	010 1010 - 010 1111	512 + Cause Value	100 1000 - 100 1111	512 + Cause Value	101 1000 - 101 1111	512 + Cause Value	110 1000 - 110 1111	512 + Cause Value	111 1000 - 111 1111	512 + Cause Value
Cause Value	bssmapCauseValue_u																	
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111 1000 - 111 1111	512 + Cause Value																	
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<table border="1"> <thead> <tr> <th>Cause Value</th><th>bssmapCauseValue_u</th></tr> </thead> <tbody> <tr><td>001 0000 - 001 0111</td><td>K_GNLS_RES_INTL_USE</td></tr> <tr><td>011 0100 - 011 1111</td><td>K_GNLS_RES_INTL_USE</td></tr> <tr><td>100 0001 - 100 0111</td><td>K_GNLS_RES_INTL_USE</td></tr> <tr><td>101 0110 - 101 0111</td><td>K_GNLS_RES_INTL_USE</td></tr> <tr><td>110 0010 - 110 0111</td><td>K_GNLS_RES_INTL_USE</td></tr> <tr><td>111 0000 - 111 0111</td><td>K_GNLS_RES_INTL_USE</td></tr> </tbody> </table>					Cause Value	bssmapCauseValue_u	001 0000 - 001 0111	K_GNLS_RES_INTL_USE	011 0100 - 011 1111	K_GNLS_RES_INTL_USE	100 0001 - 100 0111	K_GNLS_RES_INTL_USE	101 0110 - 101 0111	K_GNLS_RES_INTL_USE	110 0010 - 110 0111	K_GNLS_RES_INTL_USE	111 0000 - 111 0111	K_GNLS_RES_INTL_USE
Cause Value	bssmapCauseValue_u																	
001 0000 - 001 0111	K_GNLS_RES_INTL_USE																	
011 0100 - 011 1111	K_GNLS_RES_INTL_USE																	
100 0001 - 100 0111	K_GNLS_RES_INTL_USE																	
101 0110 - 101 0111	K_GNLS_RES_INTL_USE																	
110 0010 - 110 0111	K_GNLS_RES_INTL_USE																	
111 0000 - 111 0111	K_GNLS_RES_INTL_USE																	
(2)	Field	<b>bssmapAbnormalFlag_b</b>		Section 3.2.2.5														
	Definition	<p>This is a boolean which if set to TRUE indicates an Abnormal release, otherwise normal.</p>																
	Details	<p>Implementation Info: bssmapAbnormalFlag_b is set to TRUE (abnormal) for all cause values except those with classes 000 or 001 which will be set to FALSE.</p>																

<b>7.12.1.11</b>	Field	<b>TMServiceId_b</b>		n/a
	Definition	See 7.1.1.9 (2)		
	Details	Implementation Info: This should be set to K_GG59_BSSMAPSERVNUM.		
<b>7.12.1.12</b>	Field	<b>layer3Info.string_pb</b> <b>layer3Info.length</b>		3GPP TS 44.018, Section 3.2.2.24
	Definition	This is the Layer 3 Information IE.		
	Details	Implementation Info: This is extracted from any BSSMAP message containing Layer 3 Information, including the case when the BSSMAP message is carried within the BSS APU of a MAP-E interface message e.g. MAP Prepare Handover Response. The pointer is set to first octet after the length octet.  <b>Limitation:</b> For the implementation effort considerations, only 3GPP.BSSMAP extracted the field. See 2.4.4 for the latest implementation status.		
<b>7.12.1.13</b>	Field	<b>aggregateCellId</b>		3GPP TS 48.008, Section 3.2.2.17 & 3.2.2.27
	Definition	This is a list of aggregate and unified Cell Identifier fields, including Cell Identifier, Cell Identifier (Serving), Cell Identifier (Target), and every instance of Cell Identifier List.		
	Details	Implementation Info: (1) This field is implemented as multi-value field. It should be extracted from any message that contains it. (2) The subfield a7CellIdType_b indicates the type of Cell Identifier. One of: K_GG59_A7_CITYPE_NOTYPE (default) K_GG59_A7_CITYPE_SERVING (for Cell Identifier (Serving)) K_GG59_A7_CITYPE_TARGET (for Cell Identifier (Target)) K_GG59_A7_CITYPE_BSSMAPCILIST (for BSSMAP Cell Identifier List) (3) The subfield discriminator_b indicates the detail coding format of Cell identification. The detail coding format should refer to 3GPP TS 48.008, Section 3.2.2.17 & 3.2.2.27. One of: K_GG59_CIDISC_CGI K_GG59_CIDISC_LAC_CI K_GG59_CIDISC_CI K_GG59_CIDISC_NON E K_GG59_CIDISC_LAI K_GG59_CIDISC_LAC K_GG59_CIDISC_ALLCELLSONBSIDED (none) K_GG59_CIDISC_PLMNID_LAC_RNCID K_GG59_CIDISC_RNCID K_GG59_CIDISC_LAC_RNCID K_GG59_CIDISC_SAI (4) The subfields value.string_ba[] and value.length_m indicate the Cell identification value.		
<b>7.12.1.14</b>	Field	<b>IMEI.telno</b>		Section 3.2.2.86
	Definition	This is the unique IMEI for the MS.		
	Details	Implementation Info: The IMEI is extracted from any message that contains it.		
<b>7.12.1.15</b>	Field	<b>bssmapRawCauseValue_m</b>		Section 3.2.2.5

	Definition	<p>This is the raw value of the Cause Element.</p> <p>In VFNL, customer needs the actual value for "Reserved for National/International Use" – we will not do any mapping (defined in 7.12.1.10).</p>
	Details	<p>Implementation Info:</p> <p>The whole raw value will be extracted, including the extension bit and the extension octet if it presents.</p> <p>If the raw value is single octet, the cause will be extracted to the lowest byte. i.e. spare spare spare cause</p> <p>If the cause is two octets, the cause value will be extracted to the lower two byte, i.e. spare spare cause  cause </p>

## 7.12.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>7.12.2.1</b>	Messages which contain a SLR	n/a	See section 6.3.2.1 (SCCP)
<b>7.12.2.2</b>	Messages which contain a DLR	n/a	See section 6.3.2.2 (SCCP)
<b>7.12.2.3</b>	Paging Message	IMSI.telno TMSI.telno, if present	n/a

### 7.12.3 Call Trace Assistance

Call Trace Assistance															
<b>7.12.3.1</b>	Paging Message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED					
		IMSI	X				X	X	X	X					
		TMSI	X				X	X	X	X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
					15										
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
							'Paging'								
<b>7.12.3.2</b>	Assignment Request	State of Call	CTState				CTEnhState								
							'Assignment Request'								
<b>7.12.3.3</b>	Assignment Complete	State of Call	CTState				CTEnhState								
							'Assignment Complete'								
<b>7.12.3.4</b>	Assignment Failure	State of Call	CTState				CTEnhState								
							'Assignment Failure'								
<b>7.12.3.5</b>	Clear Request	State of Call	CTState				CTEnhState								
							'Clear Request'								
<b>7.12.3.6</b>	Clear Command	State of Call	CTState				CTEnhState								
							'Clear Command'								
<b>7.12.3.7</b>	Clear Complete	State of Call	CTState				CTEnhState								
							'Clear Complete'								
<b>7.12.3.8</b>	Handover Performed	State of Call	CTState				CTEnhState								
							'Handover Performed'								
<b>7.12.3.9</b>	Handover Failure	State of Call	CTState				CTEnhState								
							'Handover Failure'								

Call Trace Assistance				
<b>7.12.3.10</b>	Handover Required	State of Call	CTState	CTEnhState
				'Handover Required'
<b>7.12.3.11</b>	Handover Required Reject	State of Call	CTState	CTEnhState
				'Handover Required Reject'
<b>7.12.3.12</b>	Handover Command	State of Call	CTState	CTEnhState
				'Handover Command'
<b>7.12.3.13</b>	Trace Invocation	State of Call	CTState	CTEnhState
				'Trace Invocation'
<b>7.12.3.14</b>	MSC Invoke Trace	State of Call	CTState	CTEnhState
				'MSC Invoke Trace'
<b>7.12.3.15</b>	BSS Invoke Trace	State of Call	CTState	CTEnhState
				'BSS Invoke Trace'
<b>7.12.3.16</b>	Classmark Update	State of Call	CTState	CTEnhState
				'Classmark Update'
<b>7.12.3.17</b>	Classmark Request	State of Call	CTState	CTEnhState
				'Classmark Request'
<b>7.12.3.18</b>	Cipher Mode Command	State of Call	CTState	CTEnhState
				'Cipher Mode Command'
<b>7.12.3.19</b>	Cipher Mode Complete	State of Call	CTState	CTEnhState
				'Cipher Mode Complete'
<b>7.12.3.20</b>	Cipher Mode Reject	State of Call	CTState	CTEnhState
				'Cipher Mode Reject'
<b>7.12.3.21</b>	Queuing Indication	State of Call	CTState	CTEnhState
				'Queuing Indication'
<b>7.12.3.22</b>	SAPI "n" Reject	State of Call	CTState	CTEnhState
				'SAPI "n"Reject'
<b>7.12.3.23</b>	SAPI "n" Clear Command	State of Call	CTState	CTEnhState
				'SAPI "n" Clear Command'

Call Trace Assistance				
<b>7.12.3.24</b>	SAPI "n" Clear Complete	State of Call	CTState	CTEnhState
				'SAPI "n" Clear Complete'
<b>7.12.3.25</b>	Confusion	State of Call	CTState	CTEnhState
				'Confusion'
<b>7.12.3.26</b>	Handover succeeded	State of Call	CTState	CTEnhState
				'Handover succeeded'
<b>7.12.3.27</b>	Load indication	State of Call	CTState	CTEnhState
				'Load indication'
<b>7.12.3.28</b>	Vgcs/vbs setup	State of Call	CTState	CTEnhState
				'Vgcs/vbs setup'
<b>7.12.3.29</b>	Vgcs/vbs setup ack	State of Call	CTState	CTEnhState
				'Vgcs/vbs setup ack'
<b>7.12.3.30</b>	Vgcs/vbs setup refuse	State of Call	CTState	CTEnhState
				'Vgcs/vbs setup refuse'
<b>7.12.3.31</b>	Vgcs/vbs assignment request	State of Call	CTState	CTEnhState
				'Vgcs/vbs assignment request'
<b>7.12.3.32</b>	Vgcs/vbs assignment result	State of Call	CTState	CTEnhState
				'Vgcs/vbs assignment result'
<b>7.12.3.33</b>	Vgcs/vbs assignment failure	State of Call	CTState	CTEnhState
				'Vgcs/vbs assignment failure'
<b>7.12.3.34</b>	Vgcs/vbs queuing indication	State of Call	CTState	CTEnhState
				'Vgcs/vbs queuing indication'
<b>7.12.3.35</b>	Uplink request	State of Call	CTState	CTEnhState
				'Uplink request'
<b>7.12.3.36</b>	Uplink request acknowledge	State of Call	CTState	CTEnhState
				'Uplink request acknowledge'
<b>7.12.3.37</b>	Uplink Request confirmation	State of Call	CTState	CTEnhState
				'Uplink Request confirmation'

Call Trace Assistance				
<b>7.12.3.38</b>	Uplink release indication	State of Call	CTState	CTEnhState
				'Uplink release indication'
<b>7.12.3.39</b>	Uplink reject command	State of Call	CTState	CTEnhState
				'Uplink reject command'
<b>7.12.3.40</b>	Uplink release command	State of Call	CTState	CTEnhState
				'Uplink release command'
<b>7.12.3.41</b>	Uplink seized command	State of Call	CTState	CTEnhState
				'Uplink seized command'
<b>7.12.3.42</b>	Suspend	State of Call	CTState	CTEnhState
				'Suspend (overload situation)'
<b>7.12.3.43</b>	Resume	State of Call	CTState	CTEnhState
				'Resume (no overload)'
<b>7.12.3.44</b>	Change circuit	State of Call	CTState	CTEnhState
				'Change circuit'
<b>7.12.3.45</b>	Change circuit acknowledg	State of Call	CTState	CTEnhState
				'Change circuit acknowledge'
<b>7.12.3.46</b>	LSA information	State of Call	CTState	CTEnhState
				'LSA information'

Call Trace Assistance				
7.12.3.47	Handover Request	State of Call	CTState	CTEnhState
	Handover Request Acknowledge			"Handover Request " "Handover Request Ack " "Handover Complete " "Handover Candidate Enquire " "Handover Candidate Response " "Handover Detect " "Reset " "Reset Ack " "Overload " "Reset Circuit " "Reset Circuit Ack " "Block " "Blocking Ack " "Unblock " "Unlocking Ack " "Circuit Group Block " "Circuit Group Blocking Ack " "Circuit Group Unblock " "Circuit Group Unblocking Ack " "Unequipped Circuit " "Resource Request " "Resource Indication " "Complete Layer 3 Information "
	Handover Complete			
	Handover Candidate Enquire			
	Handover Candidate Response			
	Handover Detect			
	Reset			
	Reset Acknowledge			
	Overload			
	Reset Circuit			
	Reset Circuit Acknowledge			
	Block			
	Blocking Acknowledge			
	Unblock			
	Unlocking Acknowledge			
	Circuit Group Block			
	Circuit Group Blocking Acknowledge			
	Circuit Group Unblock			
	Circuit Group Unblocking Acknowledge			
	Unequipped Circuit			
	Resource Request			
	Resource Indication			
	Complete Layer 3 Information			

## 7.13 DTAP MM/CC/SS

This defines the requirements additional to the basic TCAP requirements (see 7.1).

References in normal font are to GSM 04.08 Phase 1 & 2 (See 2.3.14 & 2.3.15)

References in *italic* font are to GSM 04.08 Phase 1 (See 2.3.14)

References in **bold** font are to GSM 04.08 Phase 2 (See 2.3.15)

References in underline font are to GSM 04.11 Revision 4.8.0

References with prefix "3GPP TS 24.008" are to 3GPP TS 24.008, V4.14.0, Release 4 (See 2.3.121).

### 7.13.1 Fields

BSSMAP MSU Breakout Fields					
7.13.1.1 (1)	Field	<b>dtapMsgType_b</b>		Section 10.4	
	Definition	This is the DTAP message Type field.			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) If the Discrimination Indicator is DTAP then the message type should be extracted from the message.</li> <li>(2) If the Discrimination Indicator is BSSMAP and the message contains a “Layer 3 Information” information element (GSM 08.08 section 3.2.2.24), then the message type should be extracted from the message contained in that IE.</li> </ol>			
(2)	Field	<b>dtapccMsgType_b</b>		Section 10.4, Table 10.5 & Table 10.3	
	Definition	This is the DTAP Call Control Message Type field. Call Control messages are DTAP messages which have a Protocol Discriminator of 3.			
	Details	<p>Implementation Info:</p> <p>If ( bssapProt_b = K_GG59_DTAP_CC), then message type should be extracted from the message.</p>			
(3)	Field	<b>dtapmmMsgType_b</b>		Section 10.4, Table 10.5 and Table 10.2	
	Definition	This is the DTAP Mobility Management Message Type field. Mobility Management messages are DTAP messages which have a Protocol Discriminator of 5 .			
	Details	<p>Implementation Info:</p> <p>If ( bssapProt_b = K_GG59_DTAP_MM), then message type should be extracted from the message.</p>			
7.13.1.2	Field	<b>dtapccCongestionLevel_b</b>		[10.5.4.12]	
	Definition	The Congestion Level field. This is an information element which describes the congestion status of a call.			
	Details	<p>Implementation Info:</p> <p>This should be extracted from the following message, if bssapProt_b = K_GG59_DTAP_CC: - Congestion Control [9.3.4]</p>			

<b>7.13.1.3</b>	Field	<b>dtapccCalledNumber.telno</b>		[10.5.4.7]
	Definition	This is the Called Party Number field.		
	Details	<p>Implementation Info:            This should be extracted from the following messages, if bssapProt_b = K_GG59_DTAP_CC:            - Setup (MS orig and MS term) [9.3.23].</p>		
<b>7.13.1.4</b>	Field	<b>dtapccCallState_b</b>		[10.5.4.6]
	Definition	This is the Call State Information Field. This describes the state of a call.		
	Details	<p>Implementation Info:            This should be extracted from the following messages, if bssapProt_b = K_GG59_DTAP_CC:            - Status [9.3.27]</p>		
<b>7.13.1.5</b>	Field	<b>dtapmmRejectCause_b</b>		[10.5.3.6]
	Definition	The Reject Cause Information field is used to indicate why a request from the mobile station is rejected by the network.		
	Details	<p>Implementation Info:            This should be extracted from the following messages, if bssapProt_b = K_GG59_DTAP_MM:            - CM Service Reject [9.2.1]            - Abort [9.2.8]            - Location Updating Reject [9.2.14]            - MM Status [9.2.16]</p>		
<b>7.13.1.6</b>	Field	<b>dtapmmCMServiceType_b</b>		[10.5.3.3]
	Definition	The CM Service Type Information field is used to indicate which service is requested from the network.		
	Details	<p>Implementation Info:            This should be extracted from the following messages, if bssapProt_b = K_GG59_DTAP_MM:            - CM Service Request [9.2.9]</p>		
<b>7.13.1.7</b>	Field	<b>dtapmmLocationAreaId_ba</b>		[10.5.1.3]
	Definition	The Location Area Id Information element is used to provide an unambiguous identification of location areas within an area covered by the GSM system.		
	Details	<p>Implementation Info:            This should be extracted from the following messages, if bssapProt_b = K_GG59_DTAP_MM:            - Location Updating Accept [9.2.13]            - Location Updating Request [9.2.15]            - CM Re-establishment Request [9.2.4]            - TMSI Reallocation Command [9.2.17]</p>		

<b>7.13.1.8</b>	Field	<b>identityType_m</b> (Synonym: dtapmmIdentityType_b)		[10.5.3.4]  [10.5.1.4]
	Definition	Either the Identity Type field or the type of identity field of the Mobile Identity field is broken out. The Mobile Identity is used to provide the IMSI, TMSI, IMEI or IMEEISV. The Identity Type is used to specify which identity is requested.		
	Details	<p>Implementation Info: If bssapProt_b = K_GG59_DTAP_MM:</p> <ul style="list-style-type: none"> <li>(1) This should be extracted from the Identity Type field [10.5.3.4] of the following messages: <ul style="list-style-type: none"> <li>- Identity Request [9.2.10]</li> </ul> </li> <li>(2) This should be extracted from the type of identity field of the Mobile Identity field of the following messages: <ul style="list-style-type: none"> <li>- Identity Response [9.2.11].</li> </ul> </li> </ul>		
<b>7.13.1.9</b>	Field	<b>dtapmmLUType_b</b>		[10.5.3.5]
	Definition	Location Updating Type field is used to indicate whether a normal updating, a periodic updating or an IMSI attach is wanted. It also indicate that a follow-on request has been received from the mobile station CM layer		
	Details	<p>Implementation Info: This should be extracted from the following messages, if bssapProt_b = K_GG59_DTAP_MM:</p> <ul style="list-style-type: none"> <li>- Location Updating Request [9.2.15]</li> </ul>		
<b>7.13.1.10</b>	Field	<b>dtapsmsErrorCause_b</b>		[8.1.4.2]
	Definition	The SMS Error Cause field.		
	Details	<p>Implementation Info: If dtapMsgType_b = K_GG59_DTAPSMS_CPERROR and bssapProt_b = K_GG59_DTAP_SMS (See also RES Section 8.26.1.4), then dtapsmsErrorCause_b is set to the Error Cause ( see Section 8.1.4.2 ).</p>		
<b>7.13.1.11</b>	Field	<b>IMSI.telno</b>		[10.5.1.4]
	Definition	This is the International Mobile Subscriber Identity field.		
	Details	<p>Implementation Info: This should be extracted from the following messages, when present and if bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:</p> <ul style="list-style-type: none"> <li>- LocationUpdateRequest [9.2.15]</li> <li>- LocationUpdateAccept [9.2.13]</li> <li>- TMSIReallocationCommand [9.2.17]</li> <li>- CMServiceRequest [9.2.9]</li> <li>- Setup (Phase 1 only)[9.3.23]</li> <li>- PagingResponse [9.1.25]</li> <li>- IMSIDetachIndication [9.2.12]</li> <li>- CMRe-establishmentRequest [9.2.4]</li> <li>- IdentityResponse [9.2.11]</li> <li>- Notification Response [9.2.20]</li> </ul>		

<b>7.13.1.12</b>	<b>Field</b>	<b>TMSI.telno</b>		[10.5.1.4]
	<b>Definition</b>	This is the Temporary Mobile Subscriber Identity field.		
	<b>Details</b>	<p>Implementation Info:            This should be extracted from the following messages, when present and if bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:</p> <ul style="list-style-type: none"> <li>- LocationUpdateRequest [9.2.15]</li> <li>- LocationUpdateAccept [9.2.13]</li> <li>- TMSIReallocationCommand [9.2.17]</li> <li>- CMServiceRequest [9.2.9]</li> <li>- Setup (Phase 1 only)[9.3.23]</li> <li>- PagingResponse [9.1.25]</li> <li>- IMSIDetachIndication [9.2.12]</li> <li>- CMRe-establishmentRequest [9.2.4]</li> <li>- IdentityResponse [9.2.11]</li> <li>- Notification Response [9.2.20]</li> </ul>		
<b>7.13.1.13</b>	<b>Field</b>	<b>IMEI.telno</b>		[10.5.1.4]
	<b>Definition</b>	This is the International Mobile Equipment Identity field.		
	<b>Details</b>	<p>Implementation Info:            This should be extracted from the following messages, when present and if bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:</p> <ul style="list-style-type: none"> <li>- PagingResponse [9.1.25]</li> <li>- CMRe-establishmentRequest [9.2.4]</li> <li>- IdentityResponse [9.2.11]</li> <li>- Notification Response [9.2.20]</li> <li>- CM Service Request [9.2.9]</li> </ul>		

<b>7.13.1.14</b>	<b>(1)</b>	Field	<b>calledParty.telno</b>		[10.5.4.7]	
		Definition	This is the Called Party field.			
		Details	<p>Implementation Info:            This should be extracted from the following messages, when present and:-</p> <ul style="list-style-type: none"> <li>- If bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:              - extract from CalledParty field of DTAP Setup [9.3.23]</li> <li>- If bssapProt_b = K_GG59_DTAP_SMS (See also Section RES 8.26.1.10):              - extract from TP-DA when TP-MTI is SMS-SUBMIT [GSM03.40, 9.2.2.2]</li> </ul>			
<b>7.13.1.15</b>	<b>(2)</b>	Field	<b>calledParty.natOfAddr_b</b>			
		Definition	The nature of address subfield.			
		Details	<p>Implementation Info:            If bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:              - extract from CalledParty field of DTAP Setup [9.3.23]</p> <p>If bssapProt_b = K_GG59_DTAP_SMS (See also Section RES 8.26.1.10):              - extract from TP-DA when TP-MTI is SMS-SUBMIT [GSM03.40, 9.2.2.2]</p>			
<b>7.13.1.15</b>	<b>(3)</b>	Field	<b>calledParty.numberingPlan_b</b>			
		Definition	The numbering plan subfield.			
		Details	<p>Implementation Info:            If bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:              - extract from CalledParty field of DTAP Setup [9.3.23]</p> <p>If bssapProt_b = K_GG59_DTAP_SMS (See also Section RES 8.26.1.10):              - extract from TP-DA when TP-MTI is SMS-SUBMIT [GSM03.40, 9.2.2.2]</p>			
<b>7.13.1.15</b>	<b>(1)</b>	Field	<b>callingParty.telno</b>		[10.5.4.9]	
		Definition	This is the Calling Party field.			
		Details	<p>Implementation Info:            This should be extracted from the following messages, when present and:-</p> <ul style="list-style-type: none"> <li>- If bssapProt_b = K_GG59_DTAP_CC, K_GG59_DTAP_MM OR K_GG59_DTAP_RR:              - extract from Setup [9.3.23]</li> <li>- If bssapProt_b = K_GG59_DTAP_SMS (See also RES Section 8.26.1.9):              - extract from TP-OA when TP-MTI is SMS-DELIVER [GSM03.40, 9.2.2.1]</li> </ul>			
<b>7.13.1.15</b>	<b>(2)</b>	Field	<b>callingParty.natOfAddr_b</b>			
		Definition	The nature of address subfield of the TP-OA.			
		Details	<p>Implementation Info:            If bssapProt_b = K_GG59_DTAP_SMS (See also RES Section 8.26.1.9):              - extract from TP-OA when TP-MTI is SMS-DELIVER [GSM03.40, 9.2.2.1]</p>			
<b>7.13.1.15</b>	<b>(3)</b>	Field	<b>callingParty.numberingPlan_b</b>			
		Definition	The numbering plan subfield of the TP-OA.			
		Details	<p>Implementation Info:            If bssapProt_b = K_GG59_DTAP_SMS (See also RES Section 8.26.1.9):              - extract from TP-OA when TP-MTI is SMS-DELIVER [GSM03.40, 9.2.2.1]</p>			

<b>7.13.1.16</b>	<b>(1)</b>	<b>Field</b>	<b>dtapccCauseValue_u</b>		<i>[Section 10.5.4.8] [Section 10.5.4.11]</i>													
		<b>Definition</b>	This is the DTAP Call Control Cause or Second Cause Value within the Cause Element. This contains a "protocol independent" cause value which is mapped onto a NLS message in file a7DTAPCause.h.															
		<b>Details</b>	<p>Implementation Info:            This field is changed to a multi-value field. Both the Cause and the Second Cause Value should be extracted as the following:</p> <ul style="list-style-type: none"> <li>(1) This should be extracted for DTAP CC and SS (if bssapProt_b == K_GG59_DTAP_CC or K_GG59_DTAP_NCRSS).</li> <li>(2) If the Coding Standard is not set to GSM PLMNS (ie. bits 7 and 6 = 11), dtapccCauseValue_u should be set to "interworking, unspecified" (value = 127).</li> <li>(3) If the Coding Standard is set to GSM PLMNS, dtapccCauseValue_u should be set to the Cause Value for all values defined.</li> <li>(4) Undefined Cause Values should be mapped to defined values as follows:</li> </ul> <table border="1"> <thead> <tr> <th>Cause Value <b>Undefined DTAP CAuse Values</b></th> <th>bssmapCauseValue_u</th> </tr> </thead> <tbody> <tr><td>0 - 31</td><td>31</td></tr> <tr><td>32 - 47</td><td>47</td></tr> <tr><td>48 - 63</td><td>63</td></tr> <tr><td>64 - 79</td><td>79</td></tr> <tr><td>80 - 95</td><td>95</td></tr> <tr><td>96 - 111</td><td>111</td></tr> <tr><td>112 - 127</td><td>127</td></tr> </tbody> </table>	Cause Value <b>Undefined DTAP CAuse Values</b>	bssmapCauseValue_u	0 - 31	31	32 - 47	47	48 - 63	63	64 - 79	79	80 - 95	95	96 - 111	111	112 - 127
Cause Value <b>Undefined DTAP CAuse Values</b>	bssmapCauseValue_u																	
0 - 31	31																	
32 - 47	47																	
48 - 63	63																	
64 - 79	79																	
80 - 95	95																	
96 - 111	111																	
112 - 127	127																	
<b>(2)</b>	<b>Field</b>	<b>dtapAbnormalFlag_b</b>			<i>[Section 10.5.4.8] [Section 10.5.4.11]</i>													
		<b>Definition</b>	This is a boolean which if set to TRUE indicates an Abnormal release, otherwise Normal.															
		<b>Details</b>	<p>Implementation Info:            This field is changed to a multi-value field. Both the Cause and the Second Cause Value should be extracted as the following:</p> <ul style="list-style-type: none"> <li>(1) bssmapAbnormalFlag_b is set to TRUE (abnormal) for all cause values except those with classes 000 or 001 which will be set to FALSE.</li> <li>(2) This should be set for DTAP CC and SS (if bssapProt_b == K_GG59_DTAP_CC or K_GG59_DTAP_NCRSS).</li> </ul>															
<b>7.13.1.17</b>	<b>Field</b>	<b>TMServiceId_b</b>			n/a													
		<b>Definition</b>	See 7.1.1.9 (2)															
		<b>Details</b>	<p>Implementation Info:            This should be set to K_GG59_DTAPSERVNUM, , if bssapProt_b = K_GG59_DTAP_CC</p>															

<b>7.13.1.18</b>	Field	<b>txNum[n].telno</b>		n/a	
	Definition	The destination number is extracted into this field.			
	Details	<p>Implementation Info: Extract deflectedToNumber from the following message:- - Call Deflection [GSM04.80, 4.2.2.22]</p>			
<b>7.13.1.19</b>	Field	<b>transIdFlag_m</b> <b>transIdValue_m</b>		3GPP TS 24.008, Section 10.3.2 3GPP TS 24.007, Section 11.2.3.1.3	
	Definition	The Transaction Identifier field.			
	Details	<p>Implementation Info: The 2 fields should be extracted from any CC or SS message that contains the Transaction identifier field. The field transIdFlag_m identifies who allocated the TI value for this transaction. One of: K_GG59_TIFLAG_FROM_ORIGINATOR K_GG59_TIFLAG_TO_ORIGINATOR</p> <p>TI value for CC or SS should have no extension. The field transIdValue_m should be binary value of bit7 to bit5 of octet1.</p>			
<b>7.13.1.20</b>	Field	<b>streamId_m</b>		3GPP TS 24.008, Section 10.5.4.28	
	Definition	This is the Stream Identifier field. It associates a particular call with a Radio Access Bearer (RAB), and identifies whether a new traffic channel shall be assigned within the interface controlled by these signalling procedures.			
	Details	<p>Implementation Info: n/a</p>			
<b>7.13.1.21</b>	Field	<b>fullNetworkName.string_pb</b> <b>fullNetworkName.length_u</b>		3GPP TS 24.008, Section 10.5.3.5a & 9.2.15a.1	
	Definition	This is the Full Name for Network field.			
	Details	<p>Implementation Info: This is extracted from any MM message that contains the Full name for network field. The pointer is set to first octet after the length octet.</p>			
<b>7.13.1.22</b>	Field	<b>shortNetworkName.string_pb</b> <b>shortNetworkName.length_u</b>		3GPP TS 24.008, Section 10.5.3.5a & 9.2.15a.2	
	Definition	This is the Short Name for Network field.			
	Details	<p>Implementation Info: This is extracted from any MM message that contains the Short name for network field. The pointer is set to first octet after the length octet.</p>			

<b>7.13.1.23</b>	Field	<b>emergencyServiceCategory_m</b>		3GPP TS 24.008, Section 10.5.4.33
	Definition	This is the includes Emergency Service Category field.		
	Details	<p>Implementation Info:            This field should be extracted from any CC message that contains it. The following bit flags are defined:</p> <ul style="list-style-type: none"> <li>K_GG59_ESC_POLICE</li> <li>K_GG59_ESC_AMBULANCE</li> <li>K_GG59_ESC_FIREBRIGADE</li> <li>K_GG59_ESC_MARINEGUARD</li> <li>K_GG59_ESC_MOUNTAINRESCUE</li> </ul>		
<b>7.13.1.24</b>	Field	<b>a7MiscInds_m</b>		3GPP TS 24.008, Section 10.5.4.11 & 10.5.4.27 3GPP TS 24.093, Section 4.2
	Definition	This is a list of "protocol independent" indicators. The indicators are set to indicate whether or not it is specifically indicated by message content that CCBS Activation is or is not possible by the subscriber.		
	Details	<p>Implementation Info:            The indicators should be set in CC Disconnect message. They are set based upon the following message content conditions:</p> <pre> CCBSPossible = (((CCCause == User-busy) or                   (CCCause == No-circuit/channel-available)) and                   (SSDiag == CCBSPossible)) or                   (Allowed-actions == CCBSPossible));  CCBSNotPossible = (((CCCause == User-busy) or                   (CCCause == No-circuit/channel-available)) and                   (SSDiag == CCBSNotPossible)) or                   (Allowed-actions == CCBSNotPossible)); </pre> <p>If the condition CCBSPossible is true then the field shall be set to its current value OR'ed with K_GG59_CCBSACT_POSSIBLE.            If the condition CCBSNotPossible is true then the field shall be set to its current value OR'ed with K_GG59_CCBSACT_NOTPOSSIBLE.</p>		
<b>7.13.1.25</b>	Field	bearerCapability.string_pb bearerCapability.length_u		3GPP TS 24.008, Section 10.5.4.5
	Definition	The Bear Capability parameter in CC		
	Details	This field is implemented as a multi-value field and extracted from any CC message that contains the Bear Capability parameter. The pointer is set to first octet of the parameter. The length should be the total length of the value part.		

## 7.13.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.13.2.1</b>	Messages which contain a SLR	n/a	See section 6.3.2.1 (SCCP)
<b>7.13.2.2</b>	Messages which contain a DLR	n/a	See section 6.3.2.2 (SCCP)
<b>7.13.2.3</b>	Messages containing IMSI	IMSI.telno	n/a
<b>7.13.2.4</b>	Messages containing TMSI	TMSI.telno	n/a
<b>7.13.2.5</b>	Messages containing Called Party Number	calledParty.telno	n/a
<b>7.13.2.6</b>	Messages containing Calling Party Number	callingParty.telno	n/a

### 7.13.3 Call Trace Assistance

Call Trace Assistance															
<b>7.13.3.0</b>	All message types (unless otherwise stated)	Timeouts	CTFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u									
			n/a	n/a	n/a	n/a									
		MATCHRULE	AND												
		Cross Triggers	Local				Global								
							X								
<b>7.13.3.1</b>	LocationUpdateRequest message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED					
		IMSI	X				X			X					
		TMSI	X				X			X					
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			'Location Updating'				'Location Updating Request'								
<b>7.13.3.2</b>	LocationUpdateAccept and TMSIReallocationCommand	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED					
		IMSI					X								
		TMSI					X								
		DPCDLR		X	X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
								5000							
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
							'Location Updating Accept' or 'TMSI Reallocation Command'								

Call Trace Assistance														
<b>7.13.3.3</b>	CMServiceRequest message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED				
			X				X			X				
			X				X			X				
							X							
				X	X									
										ttt				
			Cross Triggers	Local			Global							
							X							
			State of Call	CTState			CTEnhState							
				'Mobile Originated Call', 'Emergency Call Establishment', 'Mobile Originated SMS', or 'Supplementary Service Activation', dependent on value of CMServicType.			'CM Service Request'							
<b>7.13.3.4</b>	Setup message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED				
			IMSI				X							
			TMSI				X							
			CALLED	X			X	X						
			CALLING				X	X						
			DPCDLR (if carried in SCCP DT)		X	X								
			Time Outs	CTFinalUse Timeout_b		CTPANS Timeout_u		CTMaxCallAge_u	trawlBackTime_u					
									5000					
			Cross Triggers	Local			Global							
							X							
			State of Call	CTState			CTEnhState							
				'Mobile Terminated Call' "b			'Setup'							

Call Trace Assistance											
<b>7.13.3.5</b>	PagingResponse message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
		IMSI					X		X		
		TMSI					X		X		
		IMEI					X				
		DPCDLR (if carried in SCCP DT)		X	X						
		Cross Triggers	Local				Global				
		State of Call	CTState				CTEnhState				
							'Paging Response'				
<b>7.13.3.6</b>	IMSIDetachIndication message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
		IMSI					X				
		TMSI					X				
		State of Call	CTState				CTEnhState				
							'IMSI Detach Indication'				
<b>7.13.3.7</b>	CMRe-establishmentRequest message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
		IMSI	X				X	X	X	X	
		TMSI	X				X	X	X	X	
		IMEI					X				
		Cross Triggers	Local				Global				
							X				
		State of Call	CTState				CTEnhState				
							'CM Re-establishment Request'				

Call Trace Assistance											
<b>7.13.3.8</b>	IdentityResponse message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
			X				X				
			X				X				
							X				
				X	X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
										5000	
		State of Call	CTState				CTEnhState				
							'Identity Response'				
<b>7.13.3.9</b>	LocationUpdatingReject	State of Call	CTState				CTEnhState				
							'Location Updating Reject'				
<b>7.13.3.10</b>	AuthenticationReject	State of Call	CTState				CTEnhState				
							'Authentication Reject'				
<b>7.13.3.11</b>	AuthenticationRequest	State of Call	CTState				CTEnhState				
							'Authentication Request'				
<b>7.13.3.12</b>	AuthenticationResponse	State of Call	CTState				CTEnhState				
							'AuthenticationResponse'				
<b>7.13.3.13</b>	IdentityRequest	State of Call	CTState				CTEnhState				
							'Identity Request'				
<b>7.13.3.14</b>	TMSI-Reallocation-Complete	State of Call	CTState				CTEnhState				
							'TMSI-Reallocation Complete'				
<b>7.13.3.15</b>	CMServiceAccept	State of Call	CTState				CTEnhState				
							'CMService Accept'				
<b>7.13.3.16</b>	CMServiceReject	State of Call	CTState				CTEnhState				
							'CM Service Reject'				
<b>7.13.3.17</b>	CMServiceAbort	State of Call	CTState				CTEnhState				
							'CM Service Abort'				

Call Trace Assistance				
<b>7.13.3.18</b>	Abort	State of Call	CTState	CTEnhState
				'Abort'
<b>7.13.3.19</b>	MM-Status	State of Call	CTState	CTEnhState
				'MM-Status'
<b>7.13.3.20</b>	Alerting	State of Call	CTState	CTEnhState
				'Alerting'
<b>7.13.3.21</b>	CallConfirmed	State of Call	CTState	CTEnhState
				'Call Confirmed'
<b>7.13.3.22</b>	CallProceeding	State of Call	CTState	CTEnhState
				'Call Proceeding'
<b>7.13.3.23</b>	Connect	State of Call	CTState	CTEnhState
				'Connect'
<b>7.13.3.24</b>	ConnectAcknowledge	State of Call	CTState	CTEnhState
				'Connect Acknowledge'
<b>7.13.3.25</b>	EmergencySetup	State of Call	CTState	CTEnhState
				'Emergency Setup'
<b>7.13.3.26</b>	Progress	State of Call	CTState	CTEnhState
				'Progress'
<b>7.13.3.27</b>	Modify	State of Call	CTState	CTEnhState
				'Modify'
<b>7.13.3.28</b>	ModifyComplete	State of Call	CTState	CTEnhState
				'Modify Complete'
<b>7.13.3.29</b>	ModifyReject	State of Call	CTState	CTEnhState
				'Modify Reject'
<b>7.13.3.30</b>	UserInformation	State of Call	CTState	CTEnhState
				'User Information'
<b>7.13.3.31</b>	Disconnect	State of Call	CTState	CTEnhState
				'Disconnect'

Call Trace Assistance				
<b>7.13.3.32</b>	Release	State of Call	CTState	CTEnhState
				'Release'
<b>7.13.3.33</b>	ReleaseComplete	State of Call	CTState	CTEnhState
				'Release Complete'
<b>7.13.3.34</b>	CongestionControl	State of Call	CTState	CTEnhState
				'Congestion Control'
<b>7.13.3.35</b>	Notify	State of Call	CTState	CTEnhState
				'Notify'
<b>7.13.3.36</b>	StartDTMF	State of Call	CTState	CTEnhState
				'Start DTMF'
<b>7.13.3.37</b>	StartDTMFAcknowl-edge	State of Call	CTState	CTEnhState
				'Start DTMF Acknowledge'
<b>7.13.3.38</b>	StartDTMFReject,	State of Call	CTState	CTEnhState
				'Start DTMF Reject'
<b>7.13.3.39</b>	Status	State of Call	CTState	CTEnhState
				'Status'
<b>7.13.3.40</b>	StatusEnquiry	State of Call	CTState	CTEnhState
				'Status Enquiry'
<b>7.13.3.41</b>	StopDTMF	State of Call	CTState	CTEnhState
				'Stop DTMF'
<b>7.13.3.42</b>	StopDTMFAcknowl-edge	State of Call	CTState	CTEnhState
				'Stop DTMF Acknowledge'
<b>7.13.3.43</b>	Facility	State of Call	CTState	CTEnhState
				'Facility'
<b>7.13.3.44</b>	Hold	State of Call	CTState	CTEnhState
				'Hold'
<b>7.13.3.45</b>	HoldAcknowledge	State of Call	CTState	CTEnhState
				'Hold Acknowledge'

Call Trace Assistance													
<b>7.13.3.46</b>	HoldReject	State of Call	CTState				CTEnhState						
							'Hold Reject'						
<b>7.13.3.47</b>	Retrieve	State of Call	CTState				CTEnhState						
							'Retrieve'						
<b>7.13.3.48</b>	RetrieveAcknowl-edge	State of Call	CTState				CTEnhState						
							'Retrieve Acknowledge'						
<b>7.13.3.49</b>	RetrieveReject	State of Call	CTState				CTEnhState						
							'Retrieve Reject'						
<b>7.13.3.50</b>	HandoverCommand	State of Call	CTState				CTEnhState						
							'Handover Command'						
<b>7.13.3.51</b>	SMS-SUBMIT (See also RES Section 8.26.3.2)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED			
		CALLED	X				X						
		DPCDLR (Only if carried on SCCP)		X	X								
		NODETL-LIVAL (Only if carried on BSSGP)		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u				
									5000				
		State of Call	CTState				CTEnhState						
'SMS Submit'													

Call Trace Assistance															
<b>7.13.3.52</b>	SMS-DELIVER (See also RES Section 8.26.3.3)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED					
		CALLING	X				X	X							
		DPCDLR (Only if carried on SCCP)		X	X										
		NODETL-LIVAL (Only if carried on BSSGP)		X	X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
								5000							
		State of Call	CTState				CTEnhState								
							'SMS Deliver'								
<b>7.13.3.53</b>	CM Service Prompt	State of Call	CTState				CTEnhState								
							'CM Service Prompt'								
<b>7.13.3.54</b>	MM Information	State of Call	CTState				CTEnhState								
							'MM Information'								
<b>7.13.3.55</b>	MM Null	State of Call	CTState				CTEnhState								
							'MM Null'								
<b>7.13.3.56</b>	Notification Response	State of Call	CTState				CTEnhState								
							'Notification Response'								
<b>7.13.3.57</b>	CC-Establishment	State of Call	CTState				CTEnhState								
							'CC-Establishment'								
<b>7.13.3.58</b>	CC-Establishment Confirmed	State of Call	CTState				CTEnhState								
							'CC-Establishment Confirmed'								
<b>7.13.3.59</b>	Start CC	State of Call	CTState				CTEnhState								
							'Start CC'								
<b>7.13.3.60</b>	Explicit CT <sup>c</sup>	State of Call	CTState				CTEnhState								
							'Explicit CT'								
<b>7.13.3.61</b>	Access Register CC Entry <sup>c</sup>	State of Call	CTState				CTEnhState								
							'Access Register CC Entry'								

Call Trace Assistance														
<b>7.13.3.62</b>	Call Deflection <sup>c</sup>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED				
			X				X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
		State of Call	CTState			CTEnhState								
						'Call Deflection'								
<b>7.13.3.63</b>	User User Service <sup>c</sup>	State of Call	CTState			CTEnhState								
						'User User Service'								
<b>7.13.3.64</b>	Authentication Fail- ure	State of Call	CTState			CTEnhState								
						'Authentication Failure'								

a. This FIRSTUSERRELATED flag is set so to only relate the IMSI (can be seen within the CM Service Request message) with an entered Calling party number/MSISDN seen later in the MO-FwdSMS, presumably so to only tie in related FwdSMS messages and not rely on a commonly used Called party number to be entered by the user for tracing MO calls using the MSISDN.

b. Call Trace sets CTState to "Mobile Terminated Call" if the call was not started with a CM Service Request (CMServiceType = Mobile Originated Call). This is done by CT since the direction of the Setup message can not be determined by the breakout.

c. This operation is contained in a Facility message. Implementation is being done as if these were components in a MAP message. Please ensure none of the TCAP CT dataset flags are set.

## 7.13.4 Additional Access Routines

	Access Routine	Definition
<b>7.13.4.1</b>	<b>dtapccMsgType</b>	This wrapper will be maintained, but modified to return dtapMsgType
<b>7.13.4.2</b>	<b>dtapmmMsgType</b>	This wrapper will be maintained, but modified to return dtapMsgType;
<b>7.13.4.3</b>	<b>dtapMsgType</b>	This wrapper will be maintained, but modified to return dtapMsgType;

## 7.14 GSM 98 MAP

The following fields should be extracted from all messages which contain them. References are to  
-*italic font* are to MAP specification (GSM 09.02 version 3.8.0) - Phase I

-**bold font** are to MAP specification (GSM 09.02 version 4.9.0) - Phase II

-**bold and italic** to MAP specification (GSM 09.02 version 7.1.0) - Phase II+

-normal font are to both Phase I, II and II+.

For each message the requirements listed in the “Generic GSM Package Flags” sections 7.14.3.3.1 to 7.14.3.3.4 shall be implemented. On top of this the requirements for each operation code add to these requirements. For example a Send Routing Info for GPRS message in a continue package will have sections 7.14.3.3.2 and 7.14.3.1.18 implemented. This defines the requirements additional to the basic TCAP requirements (see 7.1). All requirements apply to Phases 1, 2 and 2+ unless there is an exception stated.

### 7.14.1 Fields

#### MSU Breakout Fields

<b>7.14.1.1 (1)</b>	<b>Field</b>	<b>calledParty.natOfAddr_b</b>		<i>[6.4.3.1.17] [5.6.2.17]</i>					
	<b>Definition</b>	The nature of address subfield of the MSISDN.							
	<b>Details</b>	<p>Implementation Info: See 7.14.1.1 (3).</p> <p>Also, these values should be mapped to the ISUP equivalents.</p> <ul style="list-style-type: none"> <li>- International (1) -&gt; K_GG59_INTLNATOFADDR (4)</li> <li>- National (2) -&gt; K_GG59_NSIGNATOFADDR (3)</li> <li>- Network Specific (3) -&gt; K_GG59_NTWKSPECNUM (14)</li> <li>- Subscriber Number (4) -&gt; K_GG59_SUBSCRIBENUM (1)</li> </ul> <p>All other values shall retain their original values.</p>							
	<b>(2)</b>	<b>Field</b>	<b>calledParty.numberingPlan_b</b>						
<b>(2)</b>	<b>Definition</b>	The numbering plan subfield of the MSISDN.							
	<b>Details</b>	<p>Implementation Info: See 7.14.1.1 (3).</p>							
	<b>(3)</b>	<b>Field</b>	<b>calledParty.telno</b>						
<b>(3)</b>	<b>Definition</b>	The MSISDN or B-Subscriber-Address or TranslatedB-Number is extracted into this field. It refers to the ISDN number of the mobile subscriber.							
	<b>Details</b>	<p>Implementation Info: The MSISDN is extarcted from any message that contains it.</p> <p>It will also be extracted from the digits of the SMS TP-Destination Address (DA) field of the following messages:-</p> <ul style="list-style-type: none"> <li>- MAP Phase 1 Forward Short Message</li> <li>- MAP Phase 2 Forward Short Message</li> <li>- MAP Phase2+ MO Foward SM</li> </ul> <p>The TP-DA is held inside the RP-User Data area when the TP-MTI is SMS-SUBMIT.</p> <p>The B-Subscriber-Address field of the MAPPROVIDE-SIWFS-NUMBER indication is extracted to this field.</p> <p>The TranslatedB-Number parameter will be extracted to this field if the replaceB-Number IE is present.</p>							
<b>(4)</b>	<b>Field</b>	<b>calledParty.telnoType_b</b>		See 7.14.1.1(3).					
<b>(4)</b>	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.							
	<b>Details</b>	<p>Implementation Info: See 7.14.1.1(3).</p> <p>The telnoType_b subfield should be set as the following:</p> <table style="margin-left: 20px;"> <tr> <td>K_GG59_TELNOTYPE_MSISDN</td> <td>(for MSISDN)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_BSUBADDR</td> <td>(for B Subscriber Address)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_TRANSLATEDBNUM</td> <td>(for Translated B Number)</td> </tr> </table>			K_GG59_TELNOTYPE_MSISDN	(for MSISDN)	K_GG59_TELNOTYPE_BSUBADDR	(for B Subscriber Address)	K_GG59_TELNOTYPE_TRANSLATEDBNUM
K_GG59_TELNOTYPE_MSISDN	(for MSISDN)								
K_GG59_TELNOTYPE_BSUBADDR	(for B Subscriber Address)								
K_GG59_TELNOTYPE_TRANSLATEDBNUM	(for Translated B Number)								

<b>7.14.1.2 (1)</b>	<b>Field</b>	<b>callingParty.natOfAddr_b</b>		<b>[03.40 9.2.3.7], [03.40 9.2.3.7]</b>			
	<b>Definition</b>	The nature of address subfield of Calling Party Number.					
	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (3).</p> <p>Also, these values should be mapped to the ISUP equivalents.</p> <ul style="list-style-type: none"> <li>- International (1) -&gt; K_GG59_INTLNATOFADDR (4)</li> <li>- National (2) -&gt; K_GG59_NSIGNATOFADDR (3)</li> <li>- Network Specific (3) -&gt; K_GG59_NTWKSPECNUM (14)</li> <li>- Subscriber Number (4) -&gt; K_GG59_SUBSCRIBENUM (1)</li> </ul> <p>All other values shall retain their original values.</p>					
	<b>(2)</b>	<b>Field</b>	<b>callingParty.numberingPlan_b</b>	<b>[03.40 9.2.3.7], [03.40 9.2.3.7]</b>			
<b>(3)</b>	<b>Definition</b>	The numbering plan subfield of Calling Party Number.					
	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (3).</p>					
	<b>Field</b>	<b>callingParty.telno</b>		<b>[03.40 9.2.3.7], [03.40 9.2.3.7]</b>			
	<b>Definition</b>	The address subfield of the TP-OA, MSISDN from RP-OA, or Calling Party Number.					
<b>(4)</b>	<b>Details</b>	<p>Implementation Info: Phase 2+:</p> <p>For MO Forward SM this will be the MSISDN from the RP-OA which is the address of the sending mobile.</p> <p>For MT Forward SM this will be the TP-OA which is the address of the mobile originating the SMS message</p> <p>For Phase 2 a single operation (Forward SM) is used for both MO and MT SMS transfer. Thus, breakouts must determine which address to extract:-</p> <p>For MO SMS Message:</p> <ul style="list-style-type: none"> <li>- the RP-OA will be an MSISDN</li> <li>- the TP-MTI is SMS-SUBMIT</li> <li>- the TP-OA is not present</li> </ul> <p>For MT SMS Message:</p> <ul style="list-style-type: none"> <li>- the RP-OA will be a Service Centre Address</li> <li>- the TP-MTI is SMS-DELIVER</li> <li>- the TP-OA is held inside the RP-User Data</li> </ul> <p>For any MAP operations, if the Calling Party Number field is present, it should be extracted into callingParty.</p>					
	<b>Field</b>	<b>callingParty.telnoType_b</b>		See 7.14.1.2(3).			
	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.					
	<b>Details</b>	<p>Implementation Info: See 7.14.1.2(3).</p> <p>The telnoType_b subfield should be set as the following:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">K_GG59_TELNOTYPE_MSISDN</td> <td style="width: 60%;">(for MSISDN)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_CALLINGPARTYNUM</td> <td>(for callingPartyNumber)</td> </tr> </table>			K_GG59_TELNOTYPE_MSISDN	(for MSISDN)	K_GG59_TELNOTYPE_CALLINGPARTYNUM
K_GG59_TELNOTYPE_MSISDN	(for MSISDN)						
K_GG59_TELNOTYPE_CALLINGPARTYNUM	(for callingPartyNumber)						

<b>7.14.1.3 (1)</b>	Field	<b>fwdNumOrMSRN_b</b>		<i>[6.4.3.1.19] [5.6.2.19]</i> <i>[6.4.3.1.25] [5.6.2.22]</i>
	Definition	This is a flag to distinguish whether the Forwarded to Number or the MSRN is broken into txNum.		
	Details	<p>Implementation Info: The flag fwdNumOrMSRN_b is set to K_GG59_MAPFWDTONUM (1) if it is forward-edtoNumber or K_GG59_MAPMSRN (2) if it is an MSRN.</p>		
	(2)	Field	<b>txNum[].natOfAddr_b</b>	<i>[6.4.3.1.19] [5.6.2.19]</i> <i>[6.4.3.1.25] [5.6.2.22]</i>
		Definition	The nature of address subfield of the Forwarded to Number or MSRN.	
<b>(3)</b>	Details	<p>Implementation Info: See 7.14.1.2 (4) Also, these values should be mapped to the ISUP equivalents.            - International (1) -&gt; K_GG59_INTLNATOFADDR (4)            - National (2) -&gt; K_GG59_NSIGNATOFADDR (3)            - Network Specific (3) -&gt; K_GG59_NTWKSPECNUM (14)            - Subscriber Number (4) -&gt; K_GG59_SUBSCRIBENUM (1)            All other values shall retain their original values.</p>		
	Field	<b>txNum[].numberingPlan_b</b>		<i>[6.4.3.1.19] [5.6.2.19]</i> <i>[6.4.3.1.25] [5.6.2.22]</i>
	Definition	The numbering plan subfield of the Forwarded to Number or MSRN.		
	Details	<p>Implementation Info: See 7.14.1.2 (4)</p>		
	(4)	Field	<b>txNum[].telno</b>	<i>[6.4.3.1.19] [5.6.2.19]</i> <i>[6.4.3.1.25] [5.6.2.22]</i>
		Definition	The MSRN or ForwardedtoNumber is extacted into this field. MSRN refers to the Mobile Subscribers Roaming Number; ForwardedToNumber refers to an address where the call is forwarded to. These numbers will be mutually exclusive i.e. if one is present then the other will not be present.	
<b>(5)</b>	Details	<p>Implementation Info: The MSRN or the ForwardedtoNumber is extracted from a message in the same form as it exists in the message. The flag fwdNumOrMSRN_b is set to 1 if it is forwardedtoNumber or 2 if it is an MSRN. This must be implemented for GSM Phase I and II. The SIWFS will be extracted from the MAP-PROVIDE-SIWFS-NUMBER response.</p>		
	Field	<b>txNum[].telnoType_b</b>		See 7.14.1.3(4).
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	<p>Implementation Info: See 7.14.1.3(4). The telnoType_b subfield should be set as the following:            K_GG59_TELNOTYPE_FORWTONUM (for Forwarded To Number)            K_GG59_TELNOTYPE_ROAMINGNUM (for Roaming Number)            K_GG59_TELNOTYPE_SIWFNUM (for SIWFS Number)</p>		

<b>7.14.1.4</b>	<b>Field</b>	<b>IMSI.telno</b>		[6.4.3.1.2] [5.6.2.1].
	<b>Definition</b>	The IMSI refers to the International Mobile Subscriber Identity.		
	<b>Details</b>	Note that phase 1 supplementary service messages (e.g. register, erase and interrogate etc.) have the IMSI encoded in the Begin Subscriber Activity component of the message [5.3.5], whereas in phase 2 the IMSI is encoded in the MAP-OPEN service [5.3.1].		
<b>7.14.1.5</b>	<b>Field</b>	<b>IMEI.telno</b>		[6.4.3.1.4] [5.6.2.3]
	<b>Definition</b>	The IMEI refers to the International Mobile Equipment Identity.		
	<b>Details</b>	n/a		
<b>7.14.1.6</b>	<b>Field</b>	<b>LMSI.telno</b>		[6.4.3.1.16] [5.6.2.16]
	<b>Definition</b>	The LMSI refers to the Local Mobile Subscriber Identity.		
	<b>Details</b>	n/a		
<b>7.14.1.7</b>	<b>Field</b>	<b>TMSI.telno</b>		[6.4.3.1.3] [5.6.2.2]
	<b>Definition</b>	The TMSI refers to the Temporary Mobile Subscriber Identity.		
	<b>Details</b>	n/a		
<b>7.14.1.8</b>	<b>Field</b>	<b>MSCNo (Synonym: mapMSCNo)</b>		[6.4.3.1.11] [5.6.2.11] [6.4.3.1.12] [5.6.2.12]
	<b>Definition</b>	This is extracted from the MSC Number Field and the Target MSC Number. This field refers to the ISDN number of the Mobile Services Switching Centre or the MSC to which a call is about to be handed over.		
	<b>Details</b>	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.14.1.9</b>	<b>Field</b>	<b>mapHLRNo</b>		[6.4.3.1.10], [5.6.2.13], [7.6.2.13]
	<b>Definition</b>	The Originating Entity Number Field or the HLR Number Field. This identifier refers to an application level identification of a system component, which is currently it's associated ISDN number, ie. the HLR ISDN number.		
	<b>Details</b>	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.14.1.10</b>	<b>Field</b>	<b>VLRNo (Synonym: mapVLRNo)</b>		[6.4.3.1.14] [5.6.2.13]
	<b>Definition</b>	The VLR number refers to the ISDN number of the Visitor's Location register.		
	<b>Details</b>	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.14.1.11</b>	<b>Field</b>	<b>mapServingCellId_ba</b>		[6.4.3.1.9]
	<b>Definition</b>	The Servicing Cell ID refers to the identity of a serving cell.		
	<b>Details</b>	This should be extracted from the Serving Cell id Field of the following messages: - Perform Handover [6.2.1 Figure 6.2/7 ], - Perform Subsequent Handover [6.2.1 Figure 6.2/7 ].		

<b>7.14.1.12</b>	Field	<b>mapTargetCellId_ba</b>		[6.4.3.1.8] [ <b>5.6.2.8</b> ]	
	Definition	The Target Cell ID refers to the identity of a cell on which a call is to be handed over.			
	Details	This should be extracted from the Target Cell id Field of the following messages: - Perform/Prepare Handover [6.2.1 Figure 6.2/7 & <b>6.4.1</b> ], - Perform/Prepare Subsequent Handover [6.2.1 Figure 6.2/7 & <b>6.4.5</b> ].			
<b>7.14.1.13</b>	Field	<b>serviceCentreAddress</b> (Synonym: mapServiceCentreAddress)		[6.4.3.7.6] [ <b>5.6.2.27</b> ]	
	Definition	The Service Centre Address refers to the network address of a short message service centre.			
	Details	This should be extracted from the Service Centre Address Field of the following messages: - Report SM Delivery Status [6.2.1 Figure 6.2/13 & <b>10.3</b> ], - Send Routing Info for Short Message [6.2.1 Figure 6.2/13 & <b>10.1</b> ], - Forward Short Message (from SM RP DA [6.4.3.7.1 & <b>5.6.8.1</b> ] or SM RP OA [6.4.3.7.2 & <b>5.6.8</b> ] if either of these contain a Service Centre Address parameter) [6.2.1 Figure 6.2/13 & <b>10.2</b> ].			
<b>7.14.1.14</b>	Field	<b>mapSScode_b</b>		[6.4.3.3.2] [ <b>5.6.4.1</b> ]	
	Definition	The SS Code refers to the code which identifies a supplementary service or a group of supplementary services.			
	Details	This should be extracted from the SS-Code Field of the following messages: - Register_SS [6.2.1 Figure 6.2/4 & <b>9.1</b> ]. - Activate_SS [6.2.1 Figure 6.2/4 & <b>9.3</b> ], - Deactivate_SS [6.2.1 Figure 6.2/4 & <b>9.4</b> ].			
<b>7.14.1.15</b>	Field	<b>mapSMDeliveryOutcome_b</b>		[ <b>5.6.8.6</b> ]	
	Definition	This parameter indicates the cause for setting the message waiting data.			
	Details	This should be extracted from the SM Delivery Outcome Field (Phase2 only) of the following messages: - Report SM Delivery Status [10.3 (Phase2 only)].			
<b>7.14.1.16 (1)</b>	Field	<b>mapRequestParams_ba</b>		[Figure 6.4/11 & 6.4.3.8.2]	
	Definition	The Request Parameters identifier refers to a set of subscriber related information requested by a system component, which includes, IMSI, AUthentication Set, Subscriber Data, CUG information and Ki.			
	Details	It should be broken out from SendParameters requests.			
	Field	<b>mapSentParamLength_b</b>		[Figure 6.4/11 & 6.4.3.8.3]	
	Definition	This is the length of the sentParameters field.			
	Details	It should be broken out from SendParameters response messages.			

(3)	Field	<b>mapSentParamsAddr_pb</b>		[Figure 6.4/11 & 6.4.3.8.3]	
	Definition	The Request Parameters identifier refers to a set of subscriber related information sent by a system component in response to an associated query, which includes, IMSI, AAuthentication Set, Subscriber Data, CUG information and Ki.			
	Details	This is a pointer to the start of the information contained within a SentParameters response. It should point to the octet immediately following SentParameters Length.			
	Field	<b>authSetListInfo_pb</b>	Spec Ref	[14.7.1]	
7.14.1.17	Definition	This is a pointer to the length field of the AuthenticationSetList of the Send Authentication Information Response. The AuthenticationSetList is a sequence of size 1 to 5 of Authentication-Set which contains the rand, sres and Kc.			
	Details	Implementation Info: This is a pointer to the length field of the AuthenticationSetList of the Send Authentication Information Response is broken out. This is implemented for Phase 2 only as it does not exists in Phase 1.			
	Field	<b>numOffForward_b</b>	Spec Ref	[Figure 6.2/5 & 6.4/6], [8.3]	
7.14.1.18	Definition	The NumberOfForwarding parameter contains the number of times a call has been forwarded and is received from ISUP and transparently passed to the HLR. NumberOfForwarding := INTEGER (1..5)			
	Details	Implementation Info: This value should be extracted from the Send Routing Information Invoke operation. This must be implemented for GSM Phase I and II.			
	Field	<b>basicService_b, bearerOrTele_b</b>	Spec Ref	[Figure 6.2/4] [14.7.8]	
7.14.1.19	Definition	The basicservice parameter type refers to a basic service (tele or bearer service) involved in a call or supplementary service handling. basicService is made up of a choice of bearerService(1 octet) or teleservice(1 octet).			
	Details	Implementation Info: This value must be extracted from the following operations in the same form as it exists in the message: - RegisterSS Invoke bearerOrTele_b is set to 1 if it is bearerService or 2 if it is TeleService. This must be implemented for GSM Phase I and II.			
	Field	<b>equipStatus_b</b>	Spec Ref	[Figure 6.2/11, 6.4/4] [14.6.1, 14.7.1]	
7.14.1.20	Definition	The equipmentStatus parameter refers to the status of the mobile equipment, ie. whether it is greylisted, blacklisted or whitelisted. It is an ENUMERATED type of black, white, grey listed			
	Details	Implementation Info: This value should be extracted from the following operations in the same form as it exists in the message: - checkIMEI response This must be implemented for GSM Phase I and II.			
	Field	<b>appLevel_b</b>		n/a	
7.14.1.21	Definition	See 7.2.1.10			
	Details	This should be set to K_GG59_GSMMAP_INFO.			

<b>7.14.1.22 (1)</b>	Field	<b>TMServiceId_b</b>		n/a
	Definition	See 7.1.1.9 (2)		
	Details	<p>This is set depending on the combination of SSN, and message direction.</p> <p>Except for messages carried in UDTS/XUDTS SCCP message types, called SSN ( sccp-Called.SSN_b ) is used for messages carried in TCAP Begin packages, calling SSN is used for messages carried in other TCAP package types.</p> <p>For messages carried in UDTS/XUDTS SCCP message types (messageType_b = K_GG59_SCCP_UDTS, or K_GG59_SCCP_XUDTS), calling SSN is used.</p> <p>Having selected the appropriate SSN to use, SSNs are mapped to TMServiceId_b as follows:</p> <ul style="list-style-type: none"> <li>-SSN = 5 then set TMServiceId_b = K_GG59_MAPSERVNUM</li> <li>-SSN = 6 then set TMServiceId_b = K_GG59_HLRSERVNUM</li> <li>-SSN = 7 then set TMServiceId_b = K_GG59_VLRSERVNUM</li> <li>-SSN = 8 then set TMServiceId_b = K_GG59_MSCSERVNUM</li> <li>-SSN = 9 then set TMServiceId_b = K_GG59_EIRSERVNUM</li> <li>-SSN = 10 then set TMServiceId_b = K_GG59_ACSERVNUM</li> <li>-SSN = any other value, then set TMServiceId_b = K_GG59_MAPSERVNUM</li> </ul>		
<b>(2)</b>	Field	<b>TMServiceAssFailCode_u</b>		[Figure 6.5] [14.5]
	Definition	See 7.1.1.9 (1)		
	Details	The base for Private/Local error codes is K_GG59_BASEGSMMAP_ERRORCODE.		
<b>7.14.1.23 (1)</b>	Field	<b>smsTimestamp</b>		GSM 03.40 [9.2.3.11], [9.2.3.11]
	Definition	<p>TP Service Centre Timestamp represents the local time and timezone. This field deals with the timestamp portion.</p> <p>The TP-SCTS is a subparameter of SM-RP-UI.</p> <p>See also RES Section 8.26.1.11.</p>		
	Details	<p>The timestamp appears in the parameter in BCD format. The smsTimestamp structure is defined as unix 'timespec', therefore the breakout function must manipulate the BCD format into a format which conforms to the 'timespec' format.</p> <p>Only the timestamp portion of TP-SCTS must be populated into this field. This field should be extracted from the following operations:</p> <ul style="list-style-type: none"> <li>- ForwardSM (ph2)</li> <li>- MO-ForwardSM (ph2+)</li> <li>- MT-ForwardSM (ph2+)</li> </ul>		

(2)	Field	<b>smsTimezone_i</b>		GSM 03.40 [9.2.3.11], [9.2.3.11]
Definition		TP Service Centre Timestamp represents the local time and timezone. This field deals with the timezone portion. The TP-SCTS is a subparameter of SM-RP-UI. See also RES Section 8.26.1.11.		
Details		Only the timezone portion of TP-SCTS must be populated into this field. This field is defined in the specification as a signed BCD number and specifies the timezone in increments of 15 minutes. This should be extracted into smsTimezone_i as a signed integer depicting the timezone in increments of 1 minute only. For example, the timezone in the message may depict it as +2, but the information populated in smsTimezone_i should depict +30. The signed portion should reflect which side of GMT the timestamp comes from. This should be extracted from the following messages: - ForwardSM (ph2) - MO-ForwardSM (ph2+) - MT-ForwardSM (ph2+)		
<b>7.14.1.24</b>	Field	<b>authTriplets_sa</b>	Spec Ref	[7.6.7 & 8.5.2]
	Definition	An authentication triplet contains a random key (RAND), a signed response (SRES) and a ciphering key (Kc). The <i>authTriplets_sa</i> field is a array of authentication triplet structures containing these values.		
	Details	Implementation Info: <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 7.14.1.31 for the new field.</b> Authentication triplets should be broken out from the response of:  1) MAP_SEND_AUTHENTICATION_INFO. 2) MAP_SEND_PARAMETERS  For each authentication triplet the RAND, SRES and Kc should be broken out to the appropriate field in the next available array element. A maximum of K_GG59_AUTHTRIPLETS_NUM triplets may be broken out.		
<b>7.14.1.25</b>	Field	<b>numAuthTriplets_b</b>	Spec Ref	[8.5.2]
	Definition	The number of authentication triplets that are broken out of a MAP message.		
	Details	Implementation Info: <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 7.14.1.31 for the new field.</b> In MAP_SEND_AUTHENTICATION_INFO and MAP_SEND_PARAMETERS response there is no explicit identification of the number or triplets included in the response. This value is calculated from the number of triplets broken out of the response.		
<b>7.14.1.26</b>	Field	<b>smsTextLength_b</b>	Spec Ref	<b>GSM 03.40 [9.2.3.16]</b>
	Definition	TP-UDL contains the raw value for the length of the User Data field. The exact interpretation of this value depends upon the coding scheme of the user data and whether a user data header is present.		
	Details	Implementation Info: The raw value of TP-UDL is to be used to populate this field. It should only be extracted from an SMS-SUBMIT or an SMS-DELIVER message which is being transported in a MAP Phase 2+ message		

<b>7.14.1.27</b>	Field	<b>SGSNNo</b> (Synonym: mapSGSNNo)	Spec Ref	GSM 09.02 - section 7.6.2.38
	Definition	The ISDN number of an SGSN		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.14.1.28</b>	Field	<b>mapSGSNAddress</b>	Spec Ref	GSM 09.02 - section 7.6.2.39
	Definition	The IP-address of an SGSN		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.14.1.29</b>	Field	<b>mapGPRSDataList_pb</b> <b>mapGPRSDataListLen_u</b> <b>mapGPRSDataListSize_u</b>	Spec Ref	N/A
	Definition	Pointer to and Length of the GPRS Data List		
	Details	Implementation Info: These fields should be set as per the GPRS Data List for any element in which it appears. mapGPRSDataListLen_u should be set as per the length of the list in octets. mapGPRSDataListSize_u should be set as per the number of PDP Contexts referred to.		
<b>7.14.1.30</b>	Field	<b>mapLocationCancelType_b</b>	Spec Ref	<b>7.6.3.52</b>
	Definition	The Location cancellation Type		
	Details	Implementation Info: This field should be broken out from the cancellation Type I.E. found in any message.		
<b>7.14.1.31</b>	Field	<b>authVectorSet</b>	Spec Ref	3GPP TS 29.002, Section 7.6.7.1
	Definition	This is the set of Authentication Vectors.		
	Details	Implementation Info: This field should be extracted from any message that contains it. It is implemented as a multi-value structure field, each value being a single authentication vector. All the instances of authentication vectors should be extracted. The gg59 API getMValCount(tag) can be used to discover the actual number of authentication vectors extracted.		

<b>7.14.1.32 (1)</b>	Field	<b>MSISDN.telno</b>		GSM 09.02 v7.0.0, Section 7.6.2.17
	Definition	The Address Signal subfield of the MSISDN or StoredMSISDN field.		
	Details	<p>Implementation Info:            The Digits should be copied in the same form as stored in the message for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) MSISDN in any operation;</li> <li>(2) StoredMSISDN in any operation.</li> </ul>		
<b>(2)</b>	Field	<b>MSISDN.natOfAddr_b</b>		GSM 09.02 v7.0.0, Section 7.6.2.17
	Definition	The nature of address subfield of the MSISDN or storedMSISDN.		
	Details	<p>Implementation Info:            See 7.14.1.32 (1).</p>		
<b>(3)</b>	Field	<b>MSISDN.numberingPlan_b</b>		GSM 09.02 v7.0.0, Section 7.6.2.17
	Definition	The numbering plan subfield of the MSISDN or storedMSISDN.		
	Details	<p>Implementation Info:            See 7.14.1.32 (1).</p>		

## 7.14.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val (phase 1) hashAddSCCPAddr (phase 2 and phase 2+)	
<b>7.14.2.1</b>	Query packages (with & without permission)	n/a	Refer to generic TCAP, 7.1.2.1 (phase 1) 7.1.3.1 (phase 2 and phase 2+)
<b>7.14.2.2</b>	Conversation Packages	n/a	Refer to generic TCAP, 7.1.2.2 (phase 1) 7.1.3.2 (phase 2 and phase 2+)
<b>7.14.2.3</b>	Response and Abort Packages	n/a	Refer to generic TCAP, 7.1.2.3 (phase 1) 7.1.3.3/7.1.3.4 (phase 2 and phase 2+)
<b>7.14.2.4</b>	Messages which contain an IMSI	IMSI.telno	n/a
<b>7.14.2.5</b>	Messages which contain a Called Party number	calledParty.telno	n/a

## 7.14.3 Call Trace Assistance

This defines the requirements additional to the basic TCAP.

### 7.14.3.1 Operation Requests

Note that all operations use generic GSM MAP Package Flags (see 7.14.3.3).

Call Trace Assistance											
7.14.3.1.1	Requests for: MAP-SEND-IMSI, MAP-SET-MESSAGE- WAITING-DATA, MAP-REPORT-SM-DELIV- ERY-STATUS, MAP-ALERT-SERVICE- CENTRE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLED					X				
		State of Call	CTState					CTEnhState			
7.14.3.1.2	Requests for: MAP-SEND-ROUTING- INFO-FOR-SM,							'Send IMSI' 'Set Message Waiting Data', 'Report SMS Delivery Status', 'Alert Service Centre' respectively.			
	CALLED					X	X				
	State of Call	CTState					CTEnhState				
							'Send Routing Info For SMS'				
7.14.3.1.3	Request for: MAP-RESTORE-DATA	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		IMSI	X				X				
		LMSI					X				
		State of Call	CTState					CTEnhState			
								'Restore Data'			

Call Trace Assistance												
<b>7.14.3.1.4</b>	Request for: MAP-PURGE-MS, MAP-DELETE-SUB- SCRIBER-DATA, MAP-ERASE-SS, MAP-ACTIVATE-SS, MAP-DEACTIVATE-SS, MAP-INTERROGATE-SS, MAP-REGISTER-PASS- WORD, MAP-GET-PASSWORD, MAP-PROCESS- UNSTRUCTURED-SS- DATA, MAP-PROCESS- UNSTRUCTURED-SS- REQUEST, MAP-UNSTRUCTURED- SS-REQUEST, MAP-UNSTRUCTURED- SS-NOTIFY , MAP-BEGIN-SUB- SCRIBER-ACTIVITY, MAP-ACTIVATE-TRACE- MODE, MAP-DEACTIVATE- TRACE-MODE	CTFlags Critter  IMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
			X				X	X				
<b>7.14.3.1.5</b>	Requests for: MAP-SEND-IDENTIFICA- TION	CTFlags Critter  IMSI	CTState				CTEnhState					
							'Purge Mobile Subscriber', 'Delete Subscriber Data', 'Erase Supplementary Service', 'Activate Supplementary Service', 'Deactivate Supplementary Service', 'Interrogate Supplementary Service', 'Register Password', 'Get Password', 'Process Unstructured SS Data', 'Process Unstructured SS Request', 'Unstructured SS Request', 'Unstructured SS Notify', 'Begin Subscriber Activity', 'Activate Trace Mode', 'Deactivate Trace Mode' as appropriate.					
<b>7.14.3.1.6</b>	Requests for: MAP-CHECK-IMEI	CTFlags Critter  IMEI	CTState				CTEnhState					
							'Send Identification'					
<b>7.14.3.1.7</b>	Request for: MAP-REGISTER-CHARG- ING-INFORMATION	CTFlags Critter  IMSI	CTState				CTEnhState					
							'Check IMEI'					
		CALLED	CTState				CTEnhState					
							'Register Charging Information'					

Call Trace Assistance															
7.14.3.1.8	Request for: MAP-READY-FOR-SM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X								
		TMSI					X								
		State of Call	CTState					CTEnhState							
								'Ready For SMS'							
7.14.3.1.9	Request for: MAP-PROVIDE-ROAM- ING-NUMBER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X	X						
		LMSI					X								
							X	X							
		State of Call	CTState					CTEnhState							
								'Provide Roaming Number'							
7.14.3.1.10	Request for: MAP-FORWARD-SHORT- MESSAGE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X	X						
							X		X						
		CALLED	X				X	X							
							X								
		CALLING													
		PCOTIDSSN <sup>a</sup>	X	X	X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
					30 <sup>b</sup>										
		State of Call	CTState					CTEnhState							
								'MO Forward SM' or 'MT Forward SM' (see 7.14.1.2(3) for method of identifying direction)							

Call Trace Assistance															
7.14.3.1.11	Request for: MAP-REGISTER-SS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X	X							
		TX					X								
		State of Call	CTState				CTEnhState								
							'Register Supplementary Service'								
7.14.3.1.12	Requests for: MAP-ALERT-SERVICE-CENTRE-WITHOUT-RESULT, MAP-INFORM-SERVICE-CENTRE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED					X								
		PCOTIDSSN	X			X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			15 [K_GG59_PCOTIDSSN]		0										
		State of Call	CTState				CTEnhState								
							'Alert Service Centre Without Result', 'Inform Service Centre'								
7.14.3.1.13	Requests for: MAP-NOTE-MS-PRESENT, MAP-TRACE-SUBSCRIBER-ACTIVITY	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X								
		PCOTIDSSN	X			X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			15 [K_GG59_PCOTIDSSN]		0										
		State of Call	CTState				CTEnhState								
							'Note MS Present', 'Trace Subscriber Activity'								

Call Trace Assistance														
7.14.3.1.14	Requests for: MAP-FORWARD-SS- NOTIFICATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI					X							
		PCOTIDSSN	X			X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			30 [K_GG59_PCOTIDSSN]		0									
		State of Call	CTState				CTEnhState							
							'Forward Supplementary Service Notification'							
7.14.3.1.15	Request for: MAP-UPDATE-LOCATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI	X				X	X	X					
		LMSI					X							
							X							
		State of Call	CTState				CTEnhState							
							'Update Location'							
7.14.3.1.16	Request for: MAP-SEND-PARAME- TERS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI					X	X	X					
							X							
		TMSI												
		State of Call	CTState				CTEnhState							
							'Send Parameters'							
7.14.3.1.17	Request for: MAP-CANCEL-LOCA- TION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI					X	X	X					
							X							
		LMSI												
		State of Call	CTState				CTEnhState							
							'Cancel Location'							

Call Trace Assistance											
7.14.3.1.18	Request for: MAP-SEND-ROUTING- INFORMATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		IMSI	X		X		X		X		
		TMSI			X						
		CALLED	X				X		X		
		State of Call	CTState				CTEnhState				
							'Send Routing Information'				
7.14.3.1.19	Request for: MAP-UPDATE-GPRS- LOCATION MAP-SEND-ROUTING- INFO-FOR-GPRS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		IMSI	X				X	X	X		
		State of Call	CTState				CTEnhState				
							'Update GPRS Location' 'Send Routing Info for GPRS'				
7.14.3.1.20	Request for: MAP-PROVIDE-SUB- SCRIBER-INFORMATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		IMSI	X				X	X			
		LMSI					X				
		CALLED			X						
		State of Call	CTState				CTEnhState				
							'Provide Subscriber Information'				
7.14.3.1.21	Request for: MAP-FAILURE-REPORT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		IMSI					X		X		
		State of Call	CTState				CTEnhState				
							'Failure Report'				
7.14.3.1.22	Request for: MAP-NOTE-MS- PRESENT-FOR-GPRS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		IMSI					X	X	X		
		State of Call	CTState				CTEnhState				
							'Note MS Present for GPRS'				

Call Trace Assistance																
7.14.3.1.23	Request for: MAP-RESUME-CALL-HANDLING	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X									
		CALLED	X				X		X							
			X													
		TX														
		State of Call	CTState				CTEnhState									
							'Resume Call Handling'									
7.14.3.1.24	Request for: MAP-SET-REPORTING-STATE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X		X							
		LMSI	X				X									
		State of Call	CTState				CTEnhState									
							'Set Reporting State'									
		State of Call	CTState				CTEnhState									
							'Status Report'									
7.14.3.1.25	Request for: MAP-STATUS-REPORT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X	X	X							
		State of Call	CTState				CTEnhState									
							'Status Report'									
		State of Call	CTState				CTEnhState									
							'Remote User Free'									
7.14.3.1.26	Request for: MAP-REMOTE-USER-FREE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X	X	X							
		CALLED	X				X									
		Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
					600											
		State of Call	CTState				CTEnhState									
							'Remote User Free'									
7.14.3.1.27	Request for: MAP-REGISTER-CC-ENTRY	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLED					X	X								
		State of Call	CTState				CTEnhState									
							'Register CC Entry'									

Call Trace Assistance														
<b>7.14.3.1.28</b>	Explicit CT <i>moved to DTAP section</i>	State of Call	CTState				CTEnhState							
<b>7.14.3.1.29</b>	Access Register CC Entry <i>moved to DTAP section</i>	State of Call	CTState				CTEnhState							
<b>7.14.3.1.30</b>	Call Deflection <i>moved to DTAP section</i>	State of Call	CTState				CTEnhState							
<b>7.14.3.1.31</b>	User User Service <i>moved to DTAP section</i>	State of Call	CTState				CTEnhState							
<b>7.14.3.1.32</b>	Request for: MAP-INSERT-SUB-SCRIBER-DATA,	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI					X	X	X					
		CALLED					X							
		State of Call	CTState				CTEnhState							
							'Insert Subscriber Data'							
<b>7.14.3.1.33</b>	Request for: MAP-SEND-AUTHENTICATION-INFO.	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI	X				X	X	X					
		State of Call	CTState				CTEnhState							
							'Send Authentication Info.'							
<b>7.14.3.1.34</b>	Request for: MAP-ANY-TIME-INTERROGATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI	X				X	X	X					
		CALLED					X	X						
		Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					30									
		State of Call	CTState				CTEnhState							
							'Any Time Interrogation'							
<b>7.14.3.1.35</b>	Request for: MAP-PROVIDE-SIWFS-NUMBER	State of Call	CTState				CTEnhState							
							'Provide SIWFS Number'							
<b>7.14.3.1.36</b>	Request for: MAP-SIWFS-SIGNAL-LING-MODIFY	State of Call	CTState				CTEnhState							
							'SIWFS Signalling Modify'							

Call Trace Assistance														
<b>7.14.3.1.37</b>	Request for: MAP-PREPARE-GROUP-CALL	State of Call	CTState				CTEnhState							
							'Prepare Group Call'							
<b>7.14.3.1.38</b>	Request for: MAP-SEND-GROUP-CALL-END-SIGNAL	State of Call	CTState				CTEnhState							
							'Send Group Call End Signal'							
<b>7.14.3.1.39</b>	Request for: MAP-PROCESS-GROUP-CALL-SIGNALLING	State of Call	CTState				CTEnhState							
							'Process Group Call Signalling'							
<b>7.14.3.1.40</b>	Request for: MAP-FORWARD-GROUP-CALL-SIGNALLING	State of Call	CTState				CTEnhState							
							'Forward Group Call Signalling'							
<b>7.14.3.1.41</b>	Request for: MAP-ERASE-CC-ENTRY	State of Call	CTState				CTEnhState							
							'Erase CC-Entry'							
<b>7.14.3.1.42</b>	Request for: MAP-SS-INVOCATION-NOTIFICATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI					X	X						
		CALLED					X		X					
		Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					30									
		State of Call	CTState				CTEnhState							
							'SS Invocation Notification'							
<b>7.14.3.1.43</b>	Request for: MAP-PROCESS-UNSTRUCTUREDSS-REQUEST MAP-UNSTRUC-TUREDSS-REQUEST MAP-UNSTRUCTURED-SS-NOTIFY	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CALLED	X				X	X						
		State of Call	CTState				CTEnhState							

a. This is a special case and CT has been explicitly changed to check for FIRSTUSEBACK on PCOTIDSSN. The FIRSTUSEBACK is required only if MAP MO Forward Short Message is over TCAP Continue.

- b. This timer in the specifications is in the range 1 to 10 minutes. As this is too large, a value of 30 secs is used.
- c. This is the MSRN field in the LocationInfo parameter and is only in phase 1

### 7.14.3.2 Operation Responses

- 'Response' packages refer to packages in messages with component = returnResultLast or returnResultNotLast
- 'User Error' and 'Provider Error' refer to messages with component = returnError
- 'TCAP Error' refers to messages containing component = reject

Call Trace Assistance														
<b>7.14.3.2.1</b>	Response for: MAP-SEND-ROUTING- INFORMATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
		TX	X				X							
				X	X	X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					5				5000mSec					
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				'Send Routing Information Response Received'							
<b>7.14.3.2.2</b>	Response for: MAP-PROVIDE-ROAM- ING-NUMBER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
		DPCRTIDSSN		X	X	X								
			CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
				5				5000mSec						
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				'Provide Roaming Number Response Received'							
<b>7.14.3.2.3</b>	Response for: MAP-SEND-IDENTIFICA- TION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
							X							
		IMSI												
			X		X	X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					5				5000mSec					
		Cross Triggers	Local				Global							
							X							

Call Trace Assistance													
7.14.3.2.4	Response for: MAP-SEND-IMSI MAP-SEND-PARAMETERS	CTFlags Critter  IMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
							X						
				X	X	X							
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
										5000mSec			
		Cross Triggers	Local				Global				X		
7.14.3.2.5	Response for: MAP-REGISTER-SS MAP-ERASE-SS MAP-ACTIVATE-SS MAP-DEACTIVATE-SS MAP-INTERROGATE-SS	CTFlags Critter  TX <sup>a</sup>	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
							X						
				X	X	X							
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
										5000mSec			
		Cross Triggers	Local				Global				X		
7.14.3.2.6	Response for: MAP-SEND-ROUTING- INFO-FOR-SM  <i>[These setting are in addition to or overwrite 7.14.3.2.1]</i>	CTFlags Critter  IMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED			
			X				X						
										X			
		TMSI											
			X				X						
		TX <sup>b</sup>	X				X						
		DPCRTIDSSN		X	X	X							
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
						5				5000mSec			
		Cross Triggers	Local				Global				X		
		State of Call	CTState				CTEnhState						
			K_ANLS_NOCHANGE				'Send Routing Info For SMS Response Received'						

Call Trace Assistance														
7.14.3.2.7	Response for: MAP-REPORT-SM-DELIVERY-STATUS	CTFlags Critter  CALLED	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
							X							
			DPCRTIDSSN		X	X								
			Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
		Cross Triggers							5000mSec					
				Local			Global							
							X							
7.14.3.2.8	Response containing User Error or Provider Error	State of Call	CTState				CTEnhState							
			'Error Returned' unless an appropriate local value is in Table 1				K_ANLS_NOCHANGE							
7.14.3.2.9	Response is a TCAP Error	State of Call	CTState				CTEnhState							
			'TCAP Reject Indication'				K_ANLS_NOCHANGE							
7.14.3.2.10	Response contains a REJECT component	CTFlags Critter  DPCRTIDSSN	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
				X		X								
			Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
				2 [K_GG59_DPCRTIDSS N]										
		Cross Triggers		Local			Global							
							X							
		State of Call	CTState				CTEnhState							
			'Reject Received'				K_ANLS_NOCHANGE							
7.14.3.2.11	Response for: MAP-SEND-ROUTING-INFO-FOR-GPRS	State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				'Send Routing Info for GPRS Response Received'							

a.match against first three forward-to numbers in Forwarding Information parameter

b.This is only for MAP phase 1. It will either be the MSRN (from the locationInfo parameter) or the forwarded-to-number (from the forwardingData parameter)

### 7.14.3.3 Generic GSM MAP Package Flags

The Call Trace Assistance set for Begin messages only apply to Begin packages contained in SCCP UDT/XUDT messages. For Begin packages contained in UDTS, XUDTS see generic TCAP section 7.1.3.

7.14.3.3.1	Begin Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
7.14.3.3.2	Continue Packages	PCOTIDSSN	X							
7.14.3.3.3	End Packages	Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u	
7.14.3.3.4						30				
7.14.3.3.5		Cross Triggers	Local				Global			
7.14.3.3.6									X	
7.14.3.3.7		State of Call	CTState				CTEnhState			
7.14.3.3.8									'Begin Sent'	
7.14.3.3.9	Release Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
7.14.3.3.10		DPCRTIDSSN		X						
7.14.3.3.11		PCOTIDSSN	X	X						
7.14.3.3.12		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u	
7.14.3.3.13						30				
7.14.3.3.14		Cross Triggers	Local				Global			
7.14.3.3.15									X	
7.14.3.3.16	Release Packages	State of Call	CTState				CTEnhState			
7.14.3.3.17									'K_ANLS_NOCHANGE'	
7.14.3.3.18		CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
7.14.3.3.19		DPCRTIDSSN		X		X				
7.14.3.3.20		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u	
7.14.3.3.21	Release Packages		2[K_GG59_DPCRTIDSSN]			5				
7.14.3.3.22		State of Call	CTState				CTEnhState			
7.14.3.3.23							'Response received'			

<b>7.14.3.3.4</b>	Abort Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		DPCRTIDSSN		X		X				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u		
			2[K_GG59_DPCRTIDSSN]							
		State of Call	CTState			CTEnhState				'Abort received'

**Table 3: GSM MAP User or Provider Errors**

Local Value	Message	Local Value	Message
1	Unknown Subscriber	27	Absent Subscriber
2	Unknown Base Station	28	Incompatible Terminal
3	Unknown MSC	29	Short Term Denial
4	Unknown Loc Area	30	Long Term Denial
5	Unidentified Subscriber	31	Subscriber Busy for MT SMS
6	Unallocated Roaming Number	32	SMS Delivery Failure
7	Unknown Equipment	33	Message Waiting List Full
8	Roaming Not Allowed	34	System Failure
9	Illegal MS	35	Data Missing
10	Bearer Service Not Provisioned	36	Unexpected Data Value
11	Tele Service Not Provisioned	37	Password Registration Failure
12	Illegal Equipment	38	Negative Password Check
13	Call Barred	39	No Roaming Number Available
14	Forwarding Violation	40	Tracing Buffer Full
15	CUG Reject	43	Number of PW Attempt Violation
16	Illegal SS Operation	44	Number Changed
17	SS Error Status	45	Busy Subscriber
18	SS Not Available	46	No Subscriber Reply
19	SS Subscription Violation	47	Forwarding Failed
20	SS Incompatibility	48	OR-Not Allowed
21	Facility Not Supported	49	ATI-Not Allowed
23	Invalid Target Base Station	50	No Group Call Number Available

Local Value	Message	Local Value	Message
24	No Radio Resource Available	51	Resource Limitation
25	No Handover Number Available	71	Unknown Alphabet
26	Subsequent Handover Failure	72	USSD Busy

## 7.15 Sprint DINA

This defines the requirements additional to the basic TCAP requirements (see 7.1).

The following fields should be extracted from all messages which contain them, unless stated otherwise.

References are to both SSR07: and SSR09: AD5454: DINA - TCAP specification, unless stated otherwise (see 2.3.46 and 2.3.47).

### 7.15.1 Fields

MSU Breakout Fields				
7.15.1.1	Field	terminationInds_b	Spec Ref	1.9.1
	Definition	Extracted from the Termination Indicators parameter value. This parameter is included in SSP responses to SCP requests for termination information. This parameter indicates if the call was answered and if an error was encountered. This also includes a network management control list indicator.		
	Details	n/a		

<b>7.15.1.2 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	1.7.2.1	
	Definition	Extracted from the Nature of Number of the Digits Parameter (type Called Party Address).			
	Details	<p>Implementation Info: This value should be mapped to the ISUP equivalent i.e. International DINA (1) should be mapped to International ISUP (4), National DINA (2) should be mapped to National ISUP (3) and Network-Specific DINA should be mapped to Spare ISUP (255).</p>			
<b>(2)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	1.7.2.1	
	Definition	Extracted from the Numbering Plan of the Digits Parameter (type Called Party Address).			
	Details	n/a			
<b>(3)</b>	Field	<b>calledParty.encodingScheme_b</b>	Spec Ref	1.7.2.1	
	Definition	Extracted from the Encoding Scheme of the Digits Parameter (type Called Party Address).			
	Details	n/a			
<b>(4)</b>	Field	<b>calledParty.telno</b>	Spec Ref	1.7.2.1	
	Definition	Extracted from the Digit Field of the Digits Parameter (type Called Party Address).			
	Details	<p>Implementation Info: Digits parameters encoded using the TBCD encoding scheme (see 1.7.2 Digit Field (TBCD)), should convert any digits with value ‘a’ to value ‘0’.</p>			
<b>(5)</b>	Field	<b>calledParty.telnoType_b</b>	Spec Ref	See 7.15.1.2(4)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.15.1.2(4). The telnoType_b subfield should be set as the following: <code>K_GG59_TELNOTYPE_CALLEDPARTYNUM</code> (for Called Party Address)</p>			

<b>7.15.1.3 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	1.7.2.2	
	Definition	Extracted from the Nature of Number of the Digits Parameter (type Calling Party Address (ANI)).			
	Details	<p>Implementation Info: See 7.14.1.2 (1).</p> <p>This value should NOT be extracted from an ACG component ( operation code = network management/automatic code gap).</p>			
	(2) Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	1.7.2.2	
	Definition	Extracted from the Numbering Plan of the Digits Parameter (type Calling Party Address (ANI)).			
	Details	<p>Implementation Info: See 7.14.1.3 (1)</p>			
	(3) Field	<b>callingParty.encodingScheme_b</b>	Spec Ref	1.7.2.2	
	Definition	Extracted from the Encoding Scheme of the Digits Parameter (type Calling Party Address (ANI)).			
	Details	<p>Implementation Info: See 7.14.1.3 (1)</p>			
	(4) Field	<b>callingParty.telno</b>	Spec Ref	1.7.2.2	
	Definition	Extracted from the Digit Field of the Digits Parameter (type Calling Party Address (ANI)).			
	Details	<p>Implementation Info: See 7.14.1.3 (1).</p> <p>The first two digits (info digits) should be removed.</p> <p>Digits parameters encoded using the TBCD encoding scheme (see 1.7.2 Digit Field (TBCD)), should convert any digits with value ‘a’ to value ‘0’.</p>			
	(5) Field	<b>callingParty.telnoType_b</b>	Spec Ref	See 7.15.1.3(4)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.15.1.3(4).</p> <p>The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_CALLINGPARTYNUM (for Calling Party Address (ANI))</p>			

<b>7.15.1.4 (1)</b>	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	1.7.2	
	Definition	Extracted from the Nature of Number of the Digits Parameter (type Authorization Code or MCCSCARD number).			
	Details	<p>Implementation Info: See 7.14.1.2 (1).</p> <p>These values should be mutually exclusive i.e. both will not occur in the same MSU.</p> <p>This value should NOT be extracted from an ACG component ( operation code = network management/automatic code gap).</p>			
	(2)	Field	<b>chargeNum.numberingPlan_b</b>	Spec Ref   1.7.2	
		Definition	Extracted from the Numbering Plan of the Digits Parameter (type Authorization Code or MCCSCARD number).		
<b>(3)</b>	Details	<p>Implementation Info: See 7.14.1.4 (1)</p>			
	(3)	Field	<b>chargeNum.encodingScheme_b</b>	Spec Ref   1.7.2	
		Definition	Extracted from the Encoding Scheme of the Digits Parameter (type Authorization Code or MCCSCARD number).		
	(4)	Details	<p>Implementation Info: See 7.14.1.4 (1)</p>		
		Field	<b>chargeNum.telno</b>	Spec Ref   1.7.2	
<b>(4)</b>	Definition	Extracted from the Digit Field of the Digits Parameter (type Authorization Code or MCCSCARD number).			
	(4)	Details	<p>Implementation Info: See 7.14.1.4 (1).</p> <p>Digits parameters encoded using the TBCD encoding scheme (see 1.7.2 Digit Field (TBCD), should convert any digits with value 'a' to value '0'.</p>		
		Field	<b>chargeNum.telnoType_b</b>	Spec Ref   See 7.15.1.4(4)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.15.1.4(4).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_AUTHCODE (for Authorization Code)</li> <li>K_GG59_TELNOTYPE_MCCSCARDNUM (for MCCSCARD number)</li> </ul>			
<b>7.15.1.5</b>	Field	<b>errorCause_b</b>	Spec Ref	1.11.1.1	
	Definition	errorCause_b extracted from the value contained within the Error Cause parameter. This parameter is included in the Application Error String parameter. The error cause field contains the application error detected at the SSP.			
	Details	<p>Implementation Info: This field shall be extracted whenever present in the same format as stored in the message.</p>			

<b>7.15.1.6 (1)</b>	Field	<b>txNum[].natOfAddr_b</b>	Spec Ref	1.7.16 & 1.7.2.3	
	Definition	Extracted from the Nature of Number of the Digits Parameter (type Destination Number) from any Response.			
	Details	<p>Implementation Info: See 7.14.1.2 (1).</p> <p>There can be up to three destination parameters returned in one response from the SCP. The Nature of Address should be copied into txNum[], in the same order as stored in the message. The Digits Parameter must be within a Destination Parameter.</p>			
<b>(2)</b>	Field	<b>txNum[].numberingPlan_b</b>	Spec Ref	1.7.16 & 1.7.2.3	
	Definition	Extracted from the Numbering Plan of the Digits Parameter (type Destination Number) from any Response.			
	Details	<p>Implementation Info: There can be up to three destination parameters returned in one response from the SCP. The Numbering Plans should be copied into txNum[], in the same order as stored in the message. The Digits Parameter must be within a Destination Parameter.</p>			
<b>(3)</b>	Field	<b>txNum[].encodingScheme_b</b>	Spec Ref	1.7.16 & 1.7.2.3	
	Definition	Extracted from the Encoding Scheme of the Digits Parameter (type Destination Number) from any Response.			
	Details	<p>Implementation Info: There can be up to three destination parameters returned in one response from the SCP. The Encoding Schemes should be copied into txNum[], in the same order as stored in the message. The Digits Parameter must be within a Destination Parameter.</p>			
<b>(4)</b>	Field	<b>txNum[].telno</b>	Spec Ref	1.7.16 & 1.7.2.3	
	Definition	Extracted from the Digits Field of the Digits Parameter (type Destination Number) from any Response.			
	Details	<p>Implementation Info: There can be up to three destination parameters returned in one response from the SCP. The Digit Fields should be copied into txNum[], in the same order as stored in the message. Digits parameters encoded using the TBCD encoding scheme (see 1.7.2 Digit Field (TBCD)), should convert any digits with value ‘a’ to value ‘0’. The Digits Parameter must be within a Destination Parameter.</p>			
<b>(5)</b>	Field	<b>txNum[].telnoType_b</b>	Spec Ref	See 7.15.1.6(4)	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	<p>Implementation Info: See 7.15.1.6(4).</p> <p>The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_DESTNUM (for Destination Number)</p>			

<b>7.15.1.7 (1)</b>	<b>Field</b>	<b>lrn.natOfAddr_b</b>	<b>Spec Ref</b>	[SSR09 only] 1.7.16 & 1.7.2.11
	<b>Definition</b>	Extracted from the Nature of Number of the Digits Parameter (type LRN) from any Response.		
	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (1).</p> <p>There can be up to three destination parameters returned in one response from the SCP and, hence, in theory, up to three LRNs. Only the Nature of Number of the first LRN encountered should be stored.</p> <p>The Digits Parameter must be within a Destination Parameter.</p>		
	<b>Field</b>	<b>lrn.numberingPlan_b</b>	<b>Spec Ref</b>	[SSR09 only] 1.7.16 & 1.7.2.11
<b>(2)</b>	<b>Definition</b>	Extracted from the Numbering Plan of the Digits Parameter (type LRN) from any Response.		
	<b>Details</b>	<p>Implementation Info: There can be up to three destination parameters returned in one response from the SCP and, hence, in theory, up to three LRNs. Only the Numbering Plan of the first LRN encountered should be stored.</p> <p>The Digits Parameter must be within a Destination Parameter.</p>		
	<b>Field</b>	<b>lrn.encodingScheme_b</b>	<b>Spec Ref</b>	[SSR09 only] 1.7.16 & 1.7.2.11
	<b>Definition</b>	Extracted from the Encoding Scheme of the Digits Parameter (type LRN) from any Response.		
<b>(3)</b>	<b>Details</b>	<p>Implementation Info: There can be up to three destination parameters returned in one response from the SCP and, hence, in theory, up to three LRNs. Only the Encoding Scheme of the first LRN encountered should be stored.</p> <p>The Digits Parameter must be within a Destination Parameter.</p>		
	<b>Field</b>	<b>lrn.telno</b>	<b>Spec Ref</b>	[SSR09 only] 1.7.16 & 1.7.2.11
	<b>Definition</b>	Extracted from the Digits Field of the Digits Parameter (type LRN) parameter from any Response.		
	<b>Details</b>	<p>Implementation Info: There can be up to three destination parameters returned in one response from the SCP and, hence, in theory, up to three LRNs. Only the Digit Field of the first LRN encountered should be stored.</p> <p>The Digits Parameter must be within a Destination Parameter.</p>		
<b>7.15.1.8</b>	<b>Field</b>	<b>echoField_m</b>	<b>Spec Ref</b>	1.9.3
	<b>Definition</b>	The Echo Data parameter is used to associate the request with the response. This is done as calls can continue for long periods of time. The SCP would otherwise exhaust its invoke id resources if it had to store the ids for all calls currently in progress.		
	<b>Details</b>	<p>Implementation Info: The DINA Echo Data parameter is a 6 byte field! So, for now, echoField_m should not be set, until echoField_m is extended to 6 bytes.</p>		
<b>7.15.1.9 (1)</b>	<b>Field</b>	<b>TMServiceID_b</b>	<b>Spec Ref</b>	
	<b>Definition</b>	See 7.1.1.9 (2)		
	<b>Details</b>	<p>Implementation Info: This should be set to K_GG59_DINASERVNUM</p>		

(2)	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	1.11.1.1
	Definition	See 7.1.1.9 (1)		
	Details	<p>Implementation Info: If the component is carrying an Error Cause parameter, this should be set to K_GG59_BASEDINA_ERRORCAUSE + errorCause_b.</p>		
<b>7.15.1.10</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10		
	Details	<p>Implementation Info: This should be set to K_GG59_USTCAP_INFO</p>		
<b>7.15.1.11</b>	Field	<b>triggerIndex_u</b>	Spec Ref	1.7.20
	Definition	Trigger Index field		
	Details	<p>Implementation Info: This field should be extracted from any message that contains it. triggerIndex_u reuses the space of extEchoField_u in C.07.30 since extEchoField_u was not ever used and gg59 has size limitation.</p>		
<b>7.15.1.12</b>	Field	<b>clearCause_m</b>	Spec Ref	1.10.2.3
	Definition	The Clear Cause parameter.		
	Details	<p>Implementation Info: This field shall be extracted whenever present in the same format as stored in the message.</p>		
<b>7.15.1.13</b>	Field	<b>customizedAnnouncement_m</b>	Spec Ref	1.7.13
	Definition	The type of the Customized Announcement		
	Details	<p>Implementation Info: This Announcement Type field of the Customized Announcement parameter extracted whenever present in the message.</p>		

## 7.15.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCptTelno	I7524_hashAdd3Val	
<b>7.15.2.1</b>	Query Packages	calledParty.telNo callingParty.telNo	See section 7.1.2.1 (Generic TCAP)
<b>7.15.2.2</b>	Conversation Packages		See section 7.1.2.2 (Generic TCAP)
<b>7.15.2.3</b>	Response Packages		See section 7.1.2.3 (Generic TCAP)
<b>7.15.2.4</b>	Abort Packages		See section 7.1.2.4 (Generic TCAP)

### 7.15.3 Call Trace Assistance

Call Trace Assistance										
7.15.3.1	Query <sup>a</sup> (All Query Sequence Parameter is 1)  [Set for ALL Query packages including the Specific instances set below]	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		CALLED	X (if parm present)				X	X	X	
		CALLING	X (if parm present)				X	X	X	
		CHARGING (if present)					X			
		PCOTIDSSN	X							
		MATCHRULE	AND							
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
			n/a	5		5	n/a			
		Cross Triggers	Local				Global			
			X							
7.15.3.2	Query with Digits Parameter - MCCSCARD number  [These setting are in addition to or over-write 7.15.3.1]	State of Call	CTState				CTEnhState			
							'DINA Query with MCCSCARD Number'			
7.15.3.3	Query with Digits Parameter - Authorization Code  [These setting are in addition to or over-write 7.15.3.1]	State of Call	CTState				CTEnhState			
							'DINA Query with Authorization Code'			
7.15.3.4	All other Queries  [These setting are in addition to or over-write 7.15.3.1]	State of Call	CTState				CTEnhState			
							'DINA Query'			

Call Trace Assistance													
<b>7.15.3.5</b>	Query (Query Sequence Parameter is >1)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X (if parm present)				X		X				
			X (if parm present)				X		X				
							X						
			X										
			MATCHRULE	AND									
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u						
				n/a	5	n/a	n/a						
			Cross Triggers	Local			Global						
				X									
			State of Call	CTState			CTEnhState						
				n/a			as above						
<b>7.15.3.6</b>	Conversations <i>[Set for ALL Conversation packages including the Specific instances set below]</i>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			PCOTIDSSN	X	X								
					X								
			MATCHRULE	AND									
				Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u					
					n/a	120	n/a	n/a					
			Cross Triggers	Local			Global						
				X									
			State of Call	CTState			CTEnhState						
							'DINA Conv. with Send To Resource',						
<b>7.15.3.7</b>	Conversation with Caller Interaction/ Send To Resource <i>[These setting are in addition to or over- write 7.15.3.6]</i>	State of Call	CTState			CTEnhState							

Call Trace Assistance				
<b>7.15.3.8</b>	Conversation with Connect To Resource/Connect Resource <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Connect To Resource'
<b>7.15.3.9</b>	Conversation with Disconnect Resource/Disconnect and Hold <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Disconnect and Hold'
<b>7.15.3.10</b>	Conversation with Caller Interaction/Cancel Resource <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Cancel Resource'
<b>7.15.3.11</b>	Conversation with Connect To Resource/Connect Acknowledge <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Connect Acknowledge'
<b>7.15.3.12</b>	Conversation with Connect To Resource/Resource Requery <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Resource Requery'
<b>7.15.3.13</b>	Conversation with Disconnect Resource/Disconnect Complete <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Disconnect Complete'
<b>7.15.3.14</b>	Conversation with Caller Interaction/Resource Clear <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Resource Clear'
<b>7.15.3.15</b>	Conversation with Return Error Component <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conv. with Return Error'
<b>7.15.3.16</b>	All other Conversations <i>[These setting are in addition to or over-write 7.15.3.6]</i>	State of Call	CTState	CTEnhState
				'DINA Conversation'

Call Trace Assistance															
<b>7.15.3.17</b>	<p>Conversation with Caller Interaction/ Resource Clear operation code and with Digits Parameter (type Authorization Code or MCCSCARD number).</p> <p><i>[These setting are in addition to or overwrite 7.15.3.6]</i></p>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED					X								
		CHARGING (if present)					X								
		DPCRTIDSSN		X	X										
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		120		n/a		5000msec						
		State of Call	CTState				CTEnhState								
			n/a				'DINA Conv. with MCCSCARD/Auth. Code'								
<b>7.15.3.18</b>	<p>Responses</p> <p><i>[Set for ALL Response packages including this Specific instances set below]</i></p>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		DPCRTIDSSN		X		X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			DPCRTIDSSN = 2		0		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
<b>7.15.3.19</b>	<p>Response if Treatment Value Parameter present.</p> <p><i>[These setting are in addition to or overwrite 7.15.3.18]</i></p>	State of Call	CTState				CTEnhState								
							'DINA Response with Treatment Value'								
<b>7.15.3.20</b>	<p>Response with Return Error Component.</p> <p><i>[These setting are in addition to or overwrite 7.15.3.18]</i></p>	State of Call	CTState				CTEnhState								
							'DINA Response with Return Error'								
<b>7.15.3.21</b>	<p>Response with Reject Component</p> <p><i>[These setting are in addition to or overwrite 7.15.3.18]</i></p>	State of Call	CTState				CTEnhState								
							'DINA Response with Reject'								
<b>7.15.3.22</b>	<p>All other Responses</p> <p><i>[These setting are in addition to or overwrite 7.15.3.18]</i></p>	State of Call	CTState				CTEnhState								
							'DINA Response'								

Call Trace Assistance											
<b>7.15.3.23</b>	<p>Response, if Destination Parameter, with type Destination Number, present (ie NOT destination digits on their own).</p> <p><i>[These setting are in addition to or over-write 7.15.3.18]</i></p>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLING					X				
		TX	X				X				
		LRN (if present) [SSR09 only]	X				X				
		DPCRTIDSSN		X	X	X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			DPCRTIDSSN = 2	5 + (30 for each Destination number)			n/a		5000 (msec)		
		Cross Triggers	Local				Global				
							X				
		State of Call	CTState				CTEnhState				
			n/a				'DINA Response with Destination Parm(s)'				
<b>7.15.3.24</b>	<p>Abort Packages</p>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCRTIDSSN		X		X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			DPCRTIDSSN = 2								
		Cross Triggers	Local				Global				
			X								
		State of Call	CTState				CTEnhState				
							'Abort received'				

a. Note: The Call Trace Assistance set for Queries only apply to Query packages contained in SCCP UDT/XUDT messages. For Query packages contained in UDTS, XUDTS see generic TCAP section (see 7.1.3).

## 7.16 CNAM

This defines the requirements additional to the basic TCAP requirements (see 7.1). The following fields should be extracted from all messages which contain them.

References in normal text are to GR-954-CORE (see 2.3.32) unless otherwise stated.

References in italic text are to TR-NWT-001188 Iss.1 December 1991, (see 2.3.5).

Note, in this section, a Calling Name Delivery Query is defined as a Query with Permission package containing a 'Provide value' TCAP operation with parameter id 'Generic Name' (see 1.3.5 Tables 4 & 5).

### 7.16.1 Fields

MSU Breakout Fields				
<b>7.16.1.1 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.6 AD, 7.2.4 AD, 7.2.8 X
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is ANI (calling) digits.		
	Details	See 7.3.1.1 (2)		
(2)	Field	<b>callingParty.telno</b>	Spec Ref	7.1.3.2, 7.2.6 AD, 7.2.4 AD, 7.2.8 X <i>[Section 8 Tables 4 &amp;5 row 25]</i>
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is ANI (calling) digits. <a href="#">The Calling Party Number Field from a Calling Name Delivery Query</a>		
	Details	Implementation Info: - If a Digits parameter contains ANI (calling) digits (use Type of Digits to determine) then the digits should be copied into callingParty.telno in the same form as stored in the message. - If a Digits parameter contains CDN (Calling Directory Number) digits then the digits should be copied into callingParty.telno in the same form as stored in the message from the OLNS query. <a href="#">- Copied from the digits parameter of a 'Calling Name Delivery' Query.</a>		

<b>7.16.1.2 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.6 AA, 7.2.4 AG, 7.2.8 A	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is dialled (called) digits.			
	Details	See 7.3.1.2 (2).			
<b>(2)</b>	Field	<b>calledParty.telno</b>	Spec Ref	7.1.3.2, 7.2.6 AA, 7.2.4 AG, 7.2.8 A <i>[Section 8 Tables 4 &amp; 5 row 25 and 3.8 L]</i>	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is dialled (called) digits. <b>The Calling Party Number Field from a Calling Name Delivery Query</b>			
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- If a Digits parameter contains dialled (called) digits (use Type of Digits to determine) then the digits should be copied into callingParty.telno in the same form as stored in the message.</li> <li>- In the case of OLNS if this optional field is not present copy callingParty.telno here (see 7.4.1.2 Details (1)).</li> <li>- <b>Copied from the digits parameter of a ‘Calling Name Delivery’ Query. This is required to cover an interaction with the Automatic Callback feature where ‘Calling Name Delivery’ is used to look up the Called Number. (ref TR-NWT-001188 3.8 L).</b></li> </ul>			
<b>7.16.1.3</b>	Field	<b>callingName_ba</b>	Spec Ref	<i>Table 6 row 17 &amp; Fig.20</i>	
	Definition	<b>This is the character subfield carried within the Generic Name parameter.</b>			
	Details	<b>n/a</b>			
<b>7.16.1.4 (1)</b>	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	7.1.3.2, 7.2.6 AA, 7.2.4 AG, 7.2.8 A	
	Definition	The Nature of Address Indicator subfield of the Digits parameter, when Type of Digits is billing number or true billing number digits.			
	Details	See 7.3.1.3 (2).			
<b>(2)</b>	Field	<b>chargeNum.telno</b>	Spec Ref	7.1.3.2, 7.2.6 X, 7.2.4 X, 7.2.8 AD, 7.2.5.4 AR	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is billing number or true billing number digits.			
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- If a Digits parameter contains billing/true billing number digits (use Type of Digits to determine) then the digits should be copied into chargeNumParty.telno in the same form as stored in the message.</li> </ul>			

<b>7.16.1.5</b>	<b>(1)</b>	Field	<b>TMServiceId_b</b>	Spec Ref	n/a		
	Definition	See 7.1.1.9 (2)					
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- This should be set to K_GG59_LIDBSERVNUM, except for OLNS Queries and CNAM Responses, when it should be set to K_GG59_CNAMSERVNUM (where CNAM Responses = Responses containing Generic Name Parameter).</li> </ul>					
<b>(2)</b>	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	n/a			
	Definition	See 7.1.1.9 (1)					
	Details	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- If a RESPONSE package contains a RETURN ERROR component and a Private Error Code, set TMServiceAssFailCode_u to K_GG59_BASELIDB_ERRORCODE + tcapErrorCode_b.</li> <li>- If an Operation Code is present in the message and the family is Procedural and the specifier is</li> </ul>					
<b>7.16.1.6</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a			
	Definition	See 7.2.1.10					
	Details	<p>Implementation Info:</p> <p>This should be set to K_GG59_USTCAP_INFO.</p>					
<b>7.16.1.7</b>	Field	<b>CSDI_b</b>	Spec Ref	7.1.3.5, 7.2.5.Q,			
	Definition	The CCAN Service Denial Indicator indicates whether CC billing is allowed for CCAN.					
	Details	<p>Implementation Info:</p> <p>If Calling Card Account Number (CCAN) Service Denial Indicator is present then extract the value into CSDI_b field.</p>					
<b>7.16.1.8</b>	Field	<b>PSDI_b</b>	Spec Ref	7.1.3.13, 7.2.5.3 Q			
	Definition	The PIN Service Denial Indicator indicates whether or not a PIN can be used.					
	Details	<p>Implementation Info:</p> <p>If the PIN Service Denial Indicator is present then extract the value into PSDI_b field.</p>					
<b>7.16.1.9</b>	Field	<b>CCVIquery_b</b>	Spec Ref	7.2.4 R			
	Definition	This flag is set if a Calling Card Verification Information for a Type 1 Query is parsed.					
	Details	<p>Implementation Info:</p> <p>If Calling Card Verification Information for a Type 1 Query is present, then set CCVIquery_b to TRUE</p>					
<b>7.16.1.10</b>	Field	<b>CCSAN_b</b>	Spec Ref	7.1.3.6, 7.2.5.4 W			
	Definition	The Calling Card Subaccount Number contains a code used on customer bills to distinguish the various users of a CCAN, each associated with a different PIN.					
	Details	<p>Implementation Info:</p> <p>If Calling Card SubAccount Number (CCSAN) is present then extract the value into CCSAN_b field.</p>					

<b>7.16.1.11</b>	Field	<b>queryType_u</b>	Spec Ref	N/A
	Definition	This field indicates what Query Type has been parsed.		
	Details	<p>Implementation Info:            This field should be extracted in the same form as the Tag stored in the message. It should be extracted from the following:</p> <ul style="list-style-type: none"> <li>- Calling Card Verification Information identifier of the CC Query Type 1</li> <li>- BNS Information Identifier of the BNS Query</li> <li>- OLNS Information Identifier of the OLNS Query</li> </ul>		

## 7.16.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.16.2.1</b>	Query		See Section 7.1.2.1 (Generic TCAP)
<b>7.16.2.2</b>	OLNS or Calling Name Delivery Query	callingParty.telno calledParty.telno	
<b>7.16.2.3</b>	Response		See Section 7.1.2.3 (Generic TCAP)

### 7.16.3 Call Trace Assistance

Call Trace Assistance											
7.16.3.1	CC, BNS Query	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLED	X				X				
		CALLING	X				X				
		CHARGING	X				X				
		PCOTIDSSN	X								
		MATCHRULE	AND								
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u					
				5							
		Cross Triggers	Local			Global					
			X								
7.16.3.2	OLNS or Calling Name Delivery Query	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLED					X	X			
		CALLING					X	X			
		PCOTIDSSN	X								
		MATCHRULE	OR <sup>a</sup>								
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u					
				5		5					
		Cross Triggers	Local			Global					
			X								
		State of Call	CTState			CTEnhState					
						'Querying LIDB Database'					

Call Trace Assistance														
7.16.3.3	Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCRTIDSSN		X		X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[DPCRTIDSSN]		5									
		Cross Triggers	Local				Global							
			X											
		State of Call	CTState				CTEnhState							
							'Response Received from LIDB SCP' or 'Calling Name Delivered' if response contains Generic Name parameter							
7.16.3.4	Response Containing True Billing Number	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CHARGING	X				X							
				X	X	X								
		MATCHRULE	AND											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[DPCRTIDSSN]		5				5000mSec					
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
							'Response Received from LIDB SCP'							

a.Indicates that only one of Calling or Called need match (see 7.3.1.2).

## 7.17 CCBS

### 7.17.1 Fields

This defines the requirements in addition to the Generic TCAP requirements (see 7.1) unless they are over-ridden in this section.. All references are to Q.733.3 (06/97). By default this section also supports ETSI CCBS(ETSI 300 356-18)

MSU Breakout Fields					
7.17.1.1 (1)	Field	opCode_ba	Spec Ref	n/a	
	Definition	The Operation Code.			
	Details	<p>Implementation Info: The CCBS operation code is 7 octets in length. Only the 7th octet actually specifies the operation and this is the only octet which should be extracted. This should be extracted into row 0 of the opcode array.</p> <p><i>[B.07.00] A1 byte operation code is stored in row 1 and a 2 byte operation code is stored with MSB in row 0 LSB in row 1.</i></p>			
(2)	Field	numOpcodes_b	Spec Ref	n/a	
	Definition	This indicates the number of Operation Codes in opCode_ba.			
	Details	<p>Implementation Info: If there are more than K_GG59_MAXOPCODES in the package, this field should indicate the actual number.</p>			
(3)	Field	opcodeType_ba [B.07.00]	Spec Ref	n/a	
	Definition	<i>The Operation Code type indicates whether the operation code is Private or National for NA protocols, Global or Local for Bluebook, Whitebook protocols.[B.07.00]</i>			
	Details	<p><i>Implementation Info: This field is implemented as an array (as for opCode_ba above). This value should be extracted from all messages which contain it and in the same form as it exists in the message. The value in opcodeType_ba will be D0,D1,6 or 2 depending on whether it's National, Private, Global or Local. In CCBS case it is a global value.[B.07.00]</i></p>			

<b>7.17.1.2 (1)</b>	Field	<b>errorID_b</b>	Spec Ref	n/a
	Definition	This is the Error Code Identifier.		
	Details	<p>Implementation Info:            This field will indicate a national or private error code and should be mapped onto K_GG59_NATERROR (US: National Errors, ITU: Global Errors) or K_GG59_PRIVERROR (US: Private Errors, ITU: Local Errors) if different. Please note that the Error code within CCBS is 7 octets in length and the two defined Error Codes are global.</p>		
<b>(2)</b>	Field	<b>tcapErrorCode_b</b>	Spec Ref	n/a
	Definition	This field provides the reason why a specific operation could not be completed successfully. The meaning of this value will depend on errorID_b.		
	Details	<p>Implementation Info:            Please note that the Error code structure within CCBS is 7 octets in length, just extract the octet that specifies the error code.</p>		
<b>7.17.1.3 (1)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	The Nature of Address Indicator subfield of the Called Party parameter.		
	Details	<p>Implementation Info:            All the values are identical to ITU ISUP, hence no mapping is required.</p>		
<b>(2)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	The Numbering Plan Indicator subfield of the Called Party parameter.		
	Details	<p>Implementation Info:            This should be copied from a CCBS Request into calledParty.telno in the same form as stored in the message.</p>		
<b>(2)</b>	Field	<b>calledParty.telno</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	The Address Signal subfield of the Called Party parameter.		
	Details	<p>Implementation Info:            The digits should be copied from a CCBS Request into calledParty.telno in the same form as stored in the message.</p>		

<b>7.17.1.4 (1)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	The Nature of Address Indicator subfield of the Calling Party parameter.		
	Details	Implementation Info: All the values are identical to ITU ISUP, hence no mapping is required.		
<b>(2)</b>	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	The Numbering Plan Indicator subfield of the Calling Party parameter.		
	Details	Implementation Info: This should be copied from a CCBS Request into calledParty.telno in the same form as stored in the message.		
<b>(3)</b>	Field	<b>callingParty.telno</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	The Address Signal subfield of the Calling Party parameter.		
	Details	Implementation Info: The digits should be copied from a CCBS Request into calledParty.telno in the same form as stored in the message.		
<b>7.17.1.5 (1)</b>	Field	<b>TMServiceID_b</b>	Spec Ref	n/a
	Definition	See 7.1.1.9 (2).		
	Details	Implementation Info: This should be set to K_GG59_CCBSSERVNUM		
<b>(2)</b>	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	Table 3-1/Q.733.3
	Definition	See 7.1.1.9 (1).		
	Details	Implementation Info: If the operation CCBSRequest contains an ErrorCode, then it should be set to K_GG59_BASECCBS_ERRORCODE + tcapErrorCode_b, where tcapErrorCode_b takes the values of ShortTermDenial and LongTermDenial.		
<b>7.17.1.6</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10.		
	Details	Implementation Info: This should be set to K_GG59_USTCAP_INFO		

## 7.17.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.17.2.1</b>	Begin Packages	callingParty.telno calledParty.telno	See section 7.1.2.1
<b>7.17.2.2</b>	Continue Packages	n/a	See section 7.1.2.2
<b>7.17.2.3</b>	End Packages	n/a	See section 7.1.2.3

### 7.17.3 Call Trace Assistance

Call Trace Assistance																
7.17.3.1	Begin Packages (CCBS Request)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
			CALLED	X				X	X							
			CALLING	X				X	X							
			PCOTIDSSN	X												
			MATCHRULE	AND												
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
				n/a	11		n/a	n/a								
			Cross Triggers	Local			Global									
				X												
			State of Call	CTState			CTEnhState									
7.17.3.2	Continue Packages (CCBS Request RR.)	CTFlags Critter														
			PCOTIDSSN	X	X											
			DPCRTIDSSN		X											
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u								
				n/a	2760		n/a	n/a								
			Cross Triggers	Local			Global									
				X												
			State of Call	CTState			CTEnhState									
				n/a			'Continue - CCBS Request Return Result.'									

Call Trace Assistance														
7.17.3.3	Continue Packages (CCBS Remote User Free)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		PCOTIDSSN	X	X										
		DPCRTIDSSN		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		30		n/a		n/a					
		Cross Triggers	Local				Global							
			X											
		State of Call	CTState				CTEnhState							
			n/a				'Continue - Remote User Free'							
7.17.3.4	Continue Packages (CCBS Suspend, CCBS Resume)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		PCOTIDSSN	X	X										
		DPCRTIDSSN		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		0		n/a		n/a					
		Cross Triggers	Local				Global							
			X											
		State of Call	CTState				CTEnhState							
			n/a				'Continue - CCBS Suspend' 'Continue - CCBS Resume'							
7.17.3.5	End Packages (CCBS Cancel, Return Error)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCRTIDSSN		X		X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[DPCRTIDSSN]		0		n/a		n/a					
		Cross Triggers	Local				Global							
			X											
		State of Call	CTState				CTEnhState							
			n/a				'End - CCBS Cancel' 'End - CCBS Request Error'							

## 7.18 Lucent Proprietary AUTOPLEX

### 7.18.1 Fields

This defines the requirements in full for Lucent Proprietary - please do not implement 7.1 Generic TCAP. All references are to AUTOPLEX Cellular Telecommunications Systems, System 1000 Co-operative Innovations Proprietary Messages Interface Specification, Issue 2, December 1998.

MSU Breakout Fields				
	Field	Spec Ref		
<b>7.18.1.1 (1)</b>	Field	<b>packageType_b</b>	Spec Ref	Figure 2-1
	Definition	The package Type identifier. This will always be zero for Lucent proprietary messages.		
	Details	Implementation Info: Due to limitations of T25 CT Task this must be set to a normal TCAP package type. For each message set this to K_GG59_UNIDIRECTIONAL		
<b>7.18.1.2 (1)</b>  (2)	Field	<b>opCode_ba</b>	Spec Ref	Table 2-1, 2-2, 2-3, 2-4
	Definition	The message type and message class.		
	Details	Implementation Info: The message Type and message class should be extracted.		
	Field	<b>numOpcodes_b</b>	Spec Ref	n/a
	Definition	This will be 1 as there is only one value in the opCode array.		
<b>7.18.1.3 (1)</b>	Details	Implementation Info: Set to one as there will only ever be one Message Type/Class.		
	Field	<b>TMServiceID_b</b>	Spec Ref	n/a
	Definition	See 7.1.1.9 (2).		
	Details	Implementation Info: This should be set to K_GG59_LUCENTSERVNUM		

<b>7.18.1.4</b>	<b>Field</b>	<b>MIN.telno</b>	Spec Ref	Section 2
	<b>Definition</b>	The Mobile Identification Number		
	<b>Details</b>	<p>Implementation Info:  Extract from the following messages,  - convert any digits with value 'a' to value '0' (See Table 2-5):  - nibble swap the digits i.e. the octets 0x12,0x34,0xa6,0x78 would be extracted as 21436087  - If the message contains a number which has every octet coded 0x00 do not break the number out. No CT Flags should be set for such a number. As the zero digit is coded 0xa then all 0x0 in the message means number not populated.</p> <ul style="list-style-type: none"> <li>- IM Page Request</li> <li>- IM Page Response</li> <li>- IM Roamer Busy</li> <li>- IM Setup</li> <li>- IM Mobile Unit Release</li> <li>- IM Soft Handoff</li> <li>- IM Answer</li> <li>- IM Answer Failure</li> <li>- IM Force Release</li> <li>- IM Lost Call</li> <li>- IM Flash</li> <li>- IM Custom Service Request</li> <li>- IM Custom Service Response</li> <li>- IM Abort Handoff</li> <li>- IM Handoff Deny</li> <li>- IM Voice Channel Confirmation</li> <li>- IM Maintain Call</li> <li>- IM VMAN Request</li> <li>- IM IVHDIND</li> <li>- IM Handoff Completed</li> <li>- IM New Cell Site Handoff Order</li> <li>- IM Transmitter Activation Confirmation</li> </ul>		
<b>7.18.1.5</b>	<b>Field</b>	<b>MSN.telno</b>	Spec Ref	Section 2
	<b>Definition</b>	The Electronic Serial Number.		
	<b>Details</b>	<p>Implementation Info:  Extract from the following messages,  - nibble swap the digits i.e. the octets 0x12,0x34,0xa6,0x78 would be extracted as 21436a87  - If the message contains a number which has every octet coded 0x00 do not break the number out. No CT Flags should be set for such a number.</p> <ul style="list-style-type: none"> <li>- IM Page Request</li> <li>- IM Page Response</li> <li>- IM Roamer Busy</li> </ul>		

7.18.1.6	Field	calledParty.telno	Spec Ref	Section 2	
	Definition	The Mobile Directory Number.			
	Details	<p>Implementation Info:  Extract from the following messages,  - convert any digits with value 'a' to value '0' (See Table 2-5):  - nibble swap the digits i.e. the octets 0x12,0x34,0xa6,0x78 would be extracted as 21436087  - If the message contains a number which has every octet coded 0x00 do not break the number out. No CT Flags should be set for such a number. As the zero digit is coded 0xa then all 0x0 in the message means number not populated.</p> <ul style="list-style-type: none"> <li>- IM Page Request</li> <li>- IM Page Response</li> <li>- IM Roamer Busy</li> <li>- IM Setup</li> <li>- IM Mobile Unit Release</li> <li>- IM Soft Handoff</li> <li>- IM Answer</li> <li>- IM Answer Failure</li> <li>- IM Force Release</li> <li>- IM Lost Call</li> <li>- IM Flash</li> <li>- IM Custom Service Request</li> <li>- IM Custom Service Response</li> <li>- IM Abort Handoff</li> <li>- IM Handoff Deny</li> <li>- IM Voice Channel Confirmation</li> <li>- IM Maintain Call</li> <li>- IM VMAN Request</li> <li>- IM IVHDIND</li> <li>- IM Handoff Completed</li> </ul>			

<b>7.18.1.7</b>	<b>Field</b>	<b>callingParty.telno</b>	<b>Spec Ref</b>	Section 2
	<b>Definition</b>	The Mobile Directory Number		
	<b>Details</b>	<p>Implementation Info:  Extract from the following messages,  - convert any digits with value 'a' to value '0' (See Table 2-5):  - nibble swap the digits i.e. the octets 0x12,0x34,0xa6,0x78 would be extracted as 21436087  - If the message contains a number which has every octet coded 0x00 do not break the number out. No CT Flags should be set for such a number. As the zero digit is coded 0xa then all 0x0 in the message means number not populated.</p> <ul style="list-style-type: none"> <li>- IM Page Request</li> <li>- IM Page Response</li> <li>- IM Roamer Busy</li> <li>- IM Setup</li> <li>- IM Mobile Unit Release</li> <li>- IM Soft Handoff</li> <li>- IM Answer</li> <li>- IM Answer Failure</li> <li>- IM Force Release</li> <li>- IM Lost Call</li> <li>- IM Flash</li> <li>- IM Custom Service Request</li> <li>- IM Custom Service Response</li> <li>- IM Abort Handoff</li> <li>- IM Handoff Deny</li> <li>- IM Voice Channel Confirmation</li> <li>- IM Maintain Call</li> <li>- IM VMAN Request</li> <li>- IM IVHDIND</li> <li>- IM Handoff Completed</li> </ul>		
<b>7.18.1.8</b>	<b>Field</b>	<b>callingName_ba</b>	<b>Spec Ref</b>	Section 2 Figure 2-5 Section 2 Figure 2-2
	<b>Definition</b>	The Calling Name Display		
	<b>Details</b>	<p>Implementation Info:  Extract from the Calling Name Display in the same format as it exists in the message:</p> <ul style="list-style-type: none"> <li>- IM Setup</li> <li>- IM Page Request</li> </ul>		
<b>7.18.1.9</b>	<b>Field</b>	<b>appLevel_b</b>	<b>Spec Ref</b>	n/a
	<b>Definition</b>	Application level for the gg59 union area		
	<b>Details</b>	<p>Implementation Info:  When the callingName_ba field is populated appLevel_b must be set to K_GG59_USTCAP_INFO</p>		

## 7.18.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>7.18.2.1</b>	All messages	n/a	n/a

### 7.18.3 Call Trace Assistance

Call Trace Assistance																
7.18.3.1	IM Page Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLED [if present]	X				X		X							
		CALLING [if present]	X				X		X							
		MSN [if present]	X				X		X							
		MIN [if present]	X				X		X							
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		8		n/a		n/a							
		Cross Triggers	Local				Global									
			X													
7.18.3.2	IM Page Response	State of Call	CTState				CTEnhState									
			n/a				'IM Page Request'									
		CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLED [if present]					X		X							
		CALLING [if present]					X		X							
		MSN [if present]					X		X							
		MIN [if present]	X				X		X							
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
			X													
		State of Call	CTState				CTEnhState									
			n/a				'IM Page Response'									

Call Trace Assistance															
7.18.3.3	IM Setup	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED [if present]					X		X						
		CALLING [if present]					X		X						
		MIN [if present]	X				X		X						
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		0		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			n/a				'IM Setup'								
7.18.3.4	IM Mobile Unit Release	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED [if present]					X		X						
		CALLING [if present]					X		X						
		MIN [if present]	X				X		X						
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		2		n/a		n/a						
		Cross Triggers	Local				Global								
			X												
		State of Call	CTState				CTEnhState								
			n/a				'IM Mobile Unit Release'								

Call Trace Assistance																
<b>7.18.3.5</b>	IM Roamer Busy	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLED [if present]					X		X							
		CALLING [if present]					X		X							
		MSN [if present]					X		X							
		MIN [if present]	X				X		X							
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
					0		n/a		n/a							
		Cross Triggers	Local				Global									
			X													
	State of Call	CTState				CTEnhState										
		n/a				'IM Roamer Busy'										
<b>7.18.3.6</b>	IM Soft Handoff Information	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		CALLED [if present]	X				X		X							
		CALLING [if present]	X				X		X							
		MIN [if present]	X				X		X							
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		2		n/a		n/a							
		Cross Triggers	Local				Global									
			X													
		State of Call	CTState				CTEnhState									
			n/a				'IM Soft Handoff Information'									

Call Trace Assistance																
<b>7.18.3.7</b>	IM Answer	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
	IM Answer Failure	CALLED [if present]					X		X							
	IM Force Release	CALLING [if present]					X		X							
	IM Lost Call	MIN [if present]	X				X		X							
	IM Flash	MATCHRULE	AND													
	IM Custom Service Request	Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u									
	IM Abort Handoff		n/a	5		n/a	n/a									
	IM Handoff Deny	Cross Triggers	Local			Global										
	IM Voice Channel Confirmation	State of Call	CTState			CTEnhState										
	IM Maintain Call		n/a			'IM Answer' 'IM Answer Failure' 'IM Force Release' 'IM Lost Call' 'IM Flash' 'IM Custom Service Request' 'IM Custom Service Response' 'IM Abort Handoff' 'IM Handoff Deny' 'IM Voice Channel Confirmation' 'IM Maintain Call' 'IM VMAN Request' 'IM IVHDIND' 'IM Handoff Completed'										
	IM VMAN Request															
	IM IVHDIND															
	IM Handoff Completed															
<b>7.18.3.8</b>	IM Transmitter Activation Confirmation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		MIN	X				X		X							
	MATCHRULE	AND														
	Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u										
		n/a	8		n/a	n/a										
	Cross Triggers	Local			Global											
		X														
	State of Call	CTState			CTEnhState											
		n/a			'IM TransmitterActivation Confirmation'											

Call Trace Assistance													
<b>7.18.3.9</b>	IM New Cell Site Handoff Order	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			MIN	X			X		X				
		MATCHRULE	AND										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			n/a		11		n/a	n/a					
		Cross Triggers	Local			Global							
			X										
		State of Call	CTState			CTEnhState							
			n/a			'IM New Cell Site Handoff Order'							

## 7.19 Lucent Proprietary IS41

### 7.19.1 Fields

This defines the requirements Lucent Proprietary IS41. This protocols is to be treated as an extension to the IS41 SuperSet Protocol. All IS41SuperSet requirements are to be implemented. No breakouts are to be done for the private parameters as they do not contain any data we wish to breakout.

All references are to AUTOPLEX Cellular Telecommunications Systems, System 1000 Co-operative Innovations Proprietary Messages Interface Specification. Issue 2, December 1998 Section 3.

### 7.19.2 Capture Buffer Indices

All IS41 SuperSet Capture Buffer Indices requirements shall apply to this protocol.

### 7.19.3 Call Trace Assistance

Call Trace Assistance				
		State of Call	CTState	CTEnhState
<b>7.19.3.1</b>	Call Screen Request operation		n/a	“Call Screen Request”
<b>7.19.3.2</b>	Mobile Call Register operation		n/a	“Mobile Call Register”
<b>7.19.3.3</b>	Registration Notification		n/a	“Registration Notification”
<b>7.19.3.4</b>	Profile Request operation		n/a	“Profile Request”
<b>7.19.3.5</b>	Qualification Request operation		n/a	“Qualification Request”
<b>7.19.3.6</b>	Auto Roamer Greeting IM notification operation		n/a	“Auto Roamer Greeting”
<b>7.19.3.7</b>	Inter-MSC DCA request operation		n/a	“IM DCA request”
<b>7.19.3.8</b>	Inter-MSC DCA unblock request operation		n/a	“IM DCA unblock request”
<b>7.19.3.9</b>	Inter-MSC DCA audit request operation		n/a	“IM DCA audit request”
<b>7.19.3.10</b>	Inter-MSC Invalid PIN Notification operation		n/a	“IM Invalid PIN”
<b>7.19.3.11</b>	Authentication Request (Call Time) operation		n/a	“Auth Request - Call Time”

## 7.20 BSSAP+

### 7.20.1 Fields

The following fields should be extracted from all messages which contain them. All references are to ETSI TS 101 346 (GSM 09.18 version 7.3.0 Release 1998), V7.3.0 (2000-06) (see 2.3.80) or 3GPP TS 29.018 (see 2.3.126) unless otherwise stated.

MSU Breakout Fields				
7.20.1.1	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	This indicates application user level is available.		
	Details	Implementation info: K_GG59_BSSAP_PLUS_INFO		
7.20.1.2	Field	<b>bssapPlusMessageType_u</b>	Spec Ref	Section 18.2
	Definition	This is the unique Message Type identifier of the BSSAP+ message.		
	Details	Implementation info: The Message Type is extracted from every signalling message.		
7.20.1.3	Field	<b>bssapPlusErrorMessageType_u</b>	Spec Ref	Section 17.1.12/18.4.4
	Definition	This Error Message Type is the type of message contained in the BSSAP+-Mobile-Status message.		
	Details	Implementation info: This is the message type set in the Erroneous Message IE of the BSSAP+-Mobile-Status failure report message.		

<b>7.20.1.4</b>	<b>Field</b>	<b>procedureClassId_u</b>	<b>Spec Ref</b>	No reference, meta data applied by TSD
	<b>Definition</b>	An identifier which tags each SU as belonging to a particular procedure.		
	<b>Details</b>	<p>Implementation Info:            BSSAP+ doesn't use TCAP, it runs directly on top of SCCP, therefore there is no Transaction Identifier in the messages. To compensate for this, each message will be assigned a procedure class identifier (procedureClassId_u) indicating that the message is used within a particular procedure. The IMSI and procedure class identifier can then be used together to link the different MSUs involved in the procedure as a call in Call Trace.</p> <p>The Procedure Class ID for BSSAP is derived from the message type of the SU except for the BSSAP+-MOBILE-STATUS message for which the Procedure Class Id is determined from the Erroneous Message IE message type contained in the BSSAP+-MOBILE-STATUS message.</p> <p>It comprises 2 bytes:</p> <p>Top 8 bits: Protocol Identifier = K_GG59_PROTOCOL_BSSAP_PLUS &lt;&lt; 8            Bottom 8 bits: Procedure Identifier (one of):</p> <p><b>K_GG59_PROC_BSSAP_PLUS_PAGING:</b>            BSSAP+-PAGING-REQUEST            BSSAP+-PAGING-REJECT BSSAP+-MS-UNREACHABLE</p> <p><b>K_GG59_PROC_BSSAP_PLUS_LOC_UPDATE:</b>            BSSAP+-LOCATION-UPDATE-REQUEST            BSSAP+-LOCATION-UPDATE-ACCEPT            BSSAP+-LOCATION-UPDATE-REJECT            BSSAP+-TMSI-REALLOCATION-COMPLETE</p> <p><b>K_GG59_PROC_BSSAP_PLUS_ALERT:</b>            BSSAP+-ALERT-REQUEST            BSSAP+-ALERT-ACK BSSAP+-ALERT-REJECT</p> <p><b>K_GG59_PROC_BSSAP_PLUS_MS_ACTIVITY:</b>            BSSAP+-MS-ACTIVITY-INDICATION</p> <p><b>K_GG59_PROC_BSSAP_PLUS_GPRS_DETACH:</b>            BSSAP+-GPRS-DETACH-INDICATION            BSSAP+-GPRS-DETACH-ACK</p> <p><b>K_GG59_PROC_BSSAP_PLUS_IMSI_DETACH:</b>            BSSAP+-IMSI-DETACH-INDICATION            BSSAP+-IMSI-DETACH-ACK</p> <p><b>K_GG59_PROC_BSSAP_PLUS_RESET:</b>            BSSAP+-RESET-INDICATION            BSSAP+-RESET-ACK</p> <p><b>K_GG59_PROC_BSSAP_PLUS_MS_INFO:</b>            BSSAP+-MS-INFORMATION-REQUEST            BSSAP+-MS-INFORMATION-RESPONSE</p> <p><b>K_GG59_PROC_BSSAP_PLUS_MM_INFO:</b>            BSSAP+-MM-INFORMATION-REQUEST</p> <p><b>K_GG59_PROC_BSSAP_PLUS_DL_TUNNEL_REQ:</b>            BSSAP+-DL-TUNNEL-REQUEST</p> <p><b>K_GG59_PROC_BSSAP_PLUS_UL_TUNNEL_REQ:</b>            BSSAP+-UL-TUNNEL-REQUEST</p> <p>Note: For the BSSAP+-MOBILE-STATUS message the procedureClassId_u is set according to the message type contained in the Erroneous Message IE.</p>		

<b>7.20.1.5</b>	Field	<b>IMSI.telno</b>	Spec Ref	Section 18.3/18.4.9
	Definition	This is the unique IMSI for the MS.		
	Details	Implementation Info: The IMSI is extracted from any message that contains it.		
<b>7.20.1.6</b>	Field	<b>TMSI.telno</b>	Spec Ref	Section 18.3/18.4.22
	Definition	This is the currently assigned TMSI for the MS.		
	Details	Implementation Info: The TMSI is extracted from any message that contains it.		
<b>7.20.1.7</b>	Field	<b>IMEI.telno</b>	Spec Ref	Section 18.3/18.4.7
	Definition	This is the unique IMEI for the MS.		
	Details	Implementation Info: The IMEI is extracted from any message that contains it.		
<b>7.20.1.8</b>	Field	<b>bssapPlusCauseValue_b</b>	Spec Ref	Section 18.3/18.4.6
	Definition	This is the Gs Cause Information Element.		
	Details	Implementation Info: The Cause Value is extracted from any message that contains it.		
<b>7.20.1.9</b>	Field	<b>removed</b>	Spec Ref	
	Definition			
	Details			
<b>7.20.1.10</b>	Field	<b>bssapPlusRejectCauseValue_b</b>	Spec Ref	Section 17.1.9/18.3/18.4.20
	Definition	This is Reject Cause IE from theBSSAP+-LOCATION-UPDATE-REJECT message.		
	Details	Implementation Info: This is coded as per the Reject Cause IE of GSM 04.08, not including the GSM 04.08 IEI.		
<b>7.20.1.11</b>	Field	<b>bssapPlusLocationAreaId_ba</b>	Spec Ref	Section 18.3/18.4.13
	Definition	This is extracted from any message that contains it.		
	Details	Implementation Info: This is coded as per the Location Area Identifier IE of GSM 08.18, not including the GSM 08.18 IEI.		
<b>7.20.1.12</b>	Field	<b>bssapPlusNonGprsDetachType_b</b>	Spec Ref	Section 18.4.11
	Definition	IMSI detach from non-GPRS service type.		
	Details	Implementation Info: This field should be extracted from any message that contains it. One of K_GG59_BSSAP_PLUS_NON_GPRS_MS_DETACH K_GG59_BSSAP_PLUS_NON_GPRS_COMBINED_DETACH K_GG59_BSSAP_PLUS_NON_GPRS_SGSN_DETACH		

<b>7.20.1.13</b>	Field	<b>bssapPlusGprsDetachType_b</b>	Spec Ref	Section 18.4.10
	Definition	IMSI detach from GPRS service type.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.            One of            K_GG59_BSSAP_PLUS_GPRS_NETWORK_DETACH            K_GG59_BSSAP_PLUS_GPRS_MS_DETACH            K_GG59_BSSAP_PLUS_GPRS_SERVICES_NOT_ALLOWED</p>		
<b>7.20.1.14</b>	Field	<b>bssapPlusLocationInfoAge_u</b>	Spec Ref	Section 18.4.14
	Definition	Location Information Age		
	Details	<p>Implementation Info:  <b>bssapPlusLocationInfoAge_u</b> should be extracted from any message that contains it.</p>		
<b>7.20.1.15</b>	Field	<b>cellId_ba</b> (Synonym: bssapPlusCellGlobalId_ba)	Spec Ref	Section 18.4.1
	Definition	Cell Global Identity or New Cell Global Identity		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it. If            (bssapPlusMessageType_u ==            K_GG59_BSSAP_PLUS_LOCATION_UPDATE_REQUEST), the field should be New Cell            Global Identity.            For other Message Types, the field should be Cell Global Identity.</p>		
<b>7.20.1.16</b>	Field	<b>SGSNNo</b> (Synonym: bssapPlusSGSNNo)	Spec Ref	Section 18.4.21
	Definition	SGSN Number		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		
<b>7.20.1.17</b>	Field	<b>VLRNo</b> (Synonym: bssapPlusVLRNo)	Spec Ref	Section 18.4.24
	Definition	VLR Number		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.</p>		

## 7.20.2 Capture Buffer Indices

Capture Buffer Indices						
		I7526_hashAddCpctTelno			I7524_hashAdd3Val	
<b>7.20.2.1</b>	BSSAP+ Messages Containing an IMSI	IMSI.telno			n/a	
<b>7.20.2.2</b>	All Messages				procedureClassId_u, M_GG59_TELNO_LOWER_32(IMSI.telno), M_GG59_TELNO_UPPER_32(IMSI.telno)	

## 7.20.3 Call Trace Assistance

Call Trace Assistance														
<b>7.20.3.1</b>	BSSAP+-PAGING-REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI	X				X		X					
		PROCCLAS-SIMSI	X											
		MATCHRULE	AND											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		5		n/a		n/a					
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
			n/a				“Paging Request”							

Call Trace Assistance															
<b>7.20.3.2</b>	BSSAP+-PAGING-REJECT BSSAP+-MS-UNREACHABLE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X								
		PROCCLAS-SIMSI		X		X									
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			2		5		n/a	n/a							
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				“Paging Reject” “MS Unreachable”								
<b>7.20.3.3</b>	BSSAP+-LOCATION-UPDATE-REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X	X						
		PROCCLAS-SIMSI	X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
			n/a		5		n/a	n/a							
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				“Location Update Request”								

Call Trace Assistance														
7.20.3.4	BSSAP+-LOCATION-UPDATE-ACCEPT	CTFlags Critter  IMSI  PROCCLAS-SIMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
				X										
			MATCHRULE AND											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		5		n/a		n/a					
		Cross Triggers	Local				Global							
		State of Call	CTState				CTEnhState							
			n/a				“Location Update Accept“							
7.20.3.5	BSSAP+-LOCATION-UPDATE-REJECT  BSSAP+-TMSI-REALLOCATION-COMPLETE	CTFlags Critter  IMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
				X		X								
			MATCHRULE AND											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2		5		n/a		n/a					
		Cross Triggers	Local				Global							
		State of Call	CTState				CTEnhState							
			n/a				“Location Update Reject“ “TMSI Reallocation Complete“							

Call Trace Assistance											
<b>7.20.3.6</b>	BSSAP+-GPRS-DETACH-INDICATION	CTFlags Critter  IMSI  PROCCLAS-SIMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
	BSSAP+-IMSI-DETACH-INDICATION						X		X		
			X	X							
	MATCHRULE	AND									
	Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u				
			n/a		5		n/a		n/a		
	Cross Triggers	Local				Global					
						X					
	State of Call	CTState				CTEnhState					
		n/a				“GPRS Detach Indication”; “IMSI Detach Indication”					
<b>7.20.3.7</b>	BSSAP+-GPRS-DETACH-ACK	CTFlags Critter  IMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
	BSSAP+-IMSI-DETACH-ACK		X				X				
				X		X					
	MATCHRULE	AND									
	Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u				
			2		5		n/a		n/a		
	Cross Triggers	Local				Global					
						X					
	State of Call	CTState				CTEnhState					
		n/a				“GPRS Detach Acknowledge”; “IMSI Detach Acknowledge”					

Call Trace Assistance												
7.20.3.8	BSSAP+-ALERT-REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		IMSI	X				X					
		PROCCLAS- SIMSI	X									
		MATCHRULE	AND									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			n/a		5		n/a			n/a		
		Cross Triggers	Local				Global					
							X					
		State of Call	CTState				CTEnhState					
			n/a				“Alert Request”					
7.20.3.9	BSSAP+-ALERT-ACK BSSAP+-ALERT-REJECT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		IMSI	X				X					
		PROCCLAS- SIMSI		X		X						
		MATCHRULE	AND									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			2		5		n/a			n/a		
		Cross Triggers	Local				Global					
							X					
		State of Call	CTState				CTEnhState					
			n/a				“Alert Acknowledge” “Alert Reject”					

Call Trace Assistance																
<b>7.20.3.10</b>	BSSAP+-MS-INFORMATION-REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI					X	X	X							
		PROCCLAS-SIMSI	X													
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“MS Information Request”									
<b>7.20.3.11</b>	BSSAP+-MS-INFORMATION-RESPONSE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X									
		PROCCLAS-SIMSI		X		X										
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			2		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“MS Information Response”									

Call Trace Assistance																
<b>7.20.3.12</b>	BSSAP+-MOBILE-STATUS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X									
		PROCLAS-SIMSI		X		X										
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			2		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“Mobile Status Error“									
<b>7.20.3.13</b>	BSSAP+-MS-ACTIVITY-INDICATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X									
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“MS Activity Indication“									

Call Trace Assistance																
<b>7.20.3.14</b>	BSSAP+-MM- INFORMATION- REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X	X								
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“MM Information Request“									
<b>7.20.3.15</b>	BSSAP+-DOWN- LINK-TUNNEL- REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		IMSI	X				X									
		PROCLAS- SIMSI	X													
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“Downlink Tunnel Request“									

Call Trace Assistance													
<b>7.20.3.16</b>	BSSAP+-UPLINK-TUNNEL-REQUEST	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
			X				X						
		PROCLAS-SIMSI	X										
			MATCHRULE	AND									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			n/a		5		n/a	n/a					
		Cross Triggers	Local				Global						
							X						
		State of Call	CTState				CTEnhState						
			n/a				“Uplink Tunnel Request “						

## 7.21 PP ISDN

### 7.21.1 Fields

The PP ISDN protocol is encapsulated in the User Service Information (USI) parameter of TI.CS.INAP (see 7.7). This section defines the PP ISDN requirements additional to the basic TI.CS.INAP requirements.

<b>7.21.1.1 (1)</b>	<b>Field</b>	<b>txNum[].telno</b>	<b>Spec Ref</b>	SASSN IP-1010/1 Rev.0.0.3 SASSN IP-1030/1 Rev.0.0.3
	Definition	Extracted from the Selection digits of a message of type “selection digits” or from the digits parameter of an S&F message.		
	Details	<p>Implementation info: These digits are being extracted to txNum rather than calledParty so that both numbers (Service AccessCode may be in calledParty from IDP ) are available in CT call record for subsequent display.</p> <p>The Selection Digits message carries the digits that the subscriber actually dialled while the S&amp;F message carries the digits that the subscriber dialled for message forwarding.</p> <p>The Service Access Code is carried as the Called Party Number in the IDP message, it will be handled by the existing INAP breakout structure.</p>		
<b>(2)</b>	<b>Field</b>	<b>txNum[].telnoType_b</b>	<b>Spec Ref</b>	SASSN IP-1010/1 Rev.0.0.3 SASSN IP-1030/1 Rev.0.0.3
	Definition	The Telno Type subfield of the selection digits parameter. It indicates the raw field name information.		
	Details	<p>Implementation Info: See 7.21.1.1(1)</p> <p>The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_SELECTDIGITS (for Selection Digits)</p>		
<b>7.21.1.2</b>	<b>Field</b>	<b>currentCredit_m</b>	<b>Spec Ref</b>	<b>SASSN IP-1010/1 Rev.0.0.3 24 July 1998</b>
	Definition	The Credit Available parameter.		
	Details	<p>Implementation Info: This should be extracted from all messages that contain it in the same form as stored in the message.</p>		
<b>7.21.1.3</b>	<b>Field</b>	<b>minCreditVerifyRes_m</b>	<b>Spec Ref</b>	<b>SASSN IP-1010/1 Rev.0.0.3 24 July 1998</b>
	Definition	The Minimum Credit Verification Results parameter.		
	Details	<p>Implementation Info: This should be extracted from all messages that contain it in the same form as stored in the message.</p>		

<b>7.21.1.4</b>	Field	<b>usiServiceInd_m</b>		<b>SASSN IP-1010/1 Rev.0.03 24 July 1998</b>
	Definition	The Service Indicator parameter in USI information.		
	Details	Implementation Info: This should be extracted from all messages that contain it in the same form as stored in the message.		
<b>7.21.1.5</b>	Field	<b>usiTTPType_m</b>		<b>SASSN IP-1010/1 Rev.0.03 24 July 1998</b>
	Definition	The TTP Type parameter in USI information.		
	Details	Implementation Info: This should be extracted from all messages that contain it in the same form as stored in the message.		
<b>7.21.1.6</b>	Field	<b>usiTTPIdCode_ba</b>		<b>SASSN IP-1010/1 Rev.0.03 24 July 1998</b>
	Definition	The TTP Id Code parameter in USI information.		
	Details	Implementation Info: It's dynamic varaiable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The array length will be 10 in TI PP ISDN.		

## 7.21.2 Capture Buffer Indices

For generic TCAP see section 7.1.2

For basic TI.CS.INAP see section 7.7.2

## 7.21.3 Call Trace Assistance

Call Trace Assistance										
<b>7.21.3.1</b>	Any INAP message containing USI information with the PPISDN messages Selection Digits or S&F Data. <sup>a</sup>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK <sup>a</sup>	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
	TX	X					X			
	DPCRTIDSSN				X					
	MATCHRULE AND									
	Time Outs		CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		0		n/a		5	
	Cross Triggers	Local				Global				
						X				
	State of Call	CTState				CTEnhState				
		n/a				'PPISDN Selection Digits' 'PPISDN Store and Forward Data'				
<b>7.21.3.2</b>	Anti tapping response	State of Call	CTState				CTEnhState			
							'PPISDN Anti-tapping response'			
<b>7.21.3.3</b>	TTP hang-up	State of Call	CTState				CTEnhState			
							'PPISDN TTP hang-up'			
<b>7.21.3.4</b>	Message answer	State of Call	CTState				CTEnhState			
							'PPISDN Message answer'			
<b>7.21.3.5</b>	Release downstream	State of Call	CTState				CTEnhState			
							'PPISDN Release downstream'			
<b>7.21.3.6</b>	Called Party Reply	State of Call	CTState				CTEnhState			
							'PPISDN Called Party Reply'			
<b>7.21.3.7</b>	Validation request	State of Call	CTState				CTEnhState			
							'PPISDN Validation request'			
<b>7.21.3.8</b>	Validation Result where the value of the result is zero, one or ten.	State of Call	CTState				CTEnhState			
							'PPISDN Validation Success'			
<b>7.21.3.9</b>	Validation Result where the value of the result is two or greater, excluding the value ten.	State of Call	CTState				CTEnhState			
							'PPISDN Validation Failure'			

Call Trace Assistance				
<b>7.21.3.10</b>	Traffic Report	State of Call	CTState	CTEnhState
				'PPISDN Traffic Report'

a. As appropriate for TCAP message component type.

## 7.22 QSIG over TCAP

This defines the requirements in addition to the basic TCAP requirements (see 7.1) References are to Q.765.1 (see 2.3.102).

### 7.22.1 Fields

MSU Breakout Fields				
<b>7.22.1.1 (1)</b>	Field	<b>calledParty.telno</b>	Spec Ref	p.50/51
	Definition	This is the Address Signal subfield of the Called Party Number		
	Details	Implementation Info: Should be extracted from the setup operation. N.B. This is NOT part of the VPNTTransport parameter		
<b>(2)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	p.50/51
	Definition	This is the nature of address subfield of the Called Party Number		
	Details	Implementation Info: See (1) above		
<b>(3)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	p.50/51
	Definition	This is the numbering plan subfield of the Called Party Number		
	Details	Implementation Info: See (1) above		

### 7.22.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.22.2.1</b>	Begin Packages	n/a	See section 7.1.2.1 (Generic TCAP)
<b>7.22.2.2</b>	Continue Package	n/a	See section 7.1.2.1 (Generic TCAP)
<b>7.22.2.3</b>	End Package	n/a	See section 7.1.2.1 (Generic TCAP)
<b>7.22.2.4</b>	Abort Package	n/a	See section 7.1.2.1 (Generic TCAP)

### 7.22.3 Call Trace Assistance

Call Trace Assistance											
7.22.3.1	setUp operation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		CALLED					X				
		Cross Triggers	Local			Global					
						X					
		State of Call	CTState			CTEnhState					
						“SetUp”					
7.22.3.2	setUp operation return result	State of Call	CTState			CTEnhState					
						‘SetUp Result’					
7.22.3.3	connect operation	State of Call	CTState			CTEnhState					
						‘Connect’					
7.22.3.4	release operation	State of Call	CTState			CTEnhState					
						‘Release’					
7.22.3.5	vpnFacility operation	State of Call	CTState			CTEnhState					
						‘VPN Facility’					
7.22.3.6	activityTest operation	State of Call	CTState			CTEnhState					
						‘Activity Test’					

## 7.22.4 Generic TCAP Package Flags

Call Trace Assistance												
7.22.4.1	Begin Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN	X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
					0							
		Cross Triggers	Local				Global					
							X					
		State of Call	CTState				CTEnhState					
7.22.4.2	Continue Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN		X								
		PCOTIDSSN	X	X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
					0							
		Cross Triggers	Local				Global					
							X					
		State of Call	CTState				CTEnhState					

Call Trace Assistance												
<b>7.22.4.3</b>	End Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
			DPCRTIDSSN	X		X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
			2									
		Cross Triggers	Local				Global					
		State of Call	CTState				CTEnhState					
<b>7.22.4.4</b>	Abort Packages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN		X		X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u				
			2									
		Cross Triggers	Local				Global					
		State of Call	CTState				CTEnhState					

## 7.23 3GPP MAP

This section describes the breakout requirements for the 3GPP MAP (3GPP TS 29.002). The section is based on the existing GSM MAP requirements [7.14] and therefore only details breakout requirements for new operations and those operations where the requirements differ from the GSM MAP protocol.

### 7.23.1 Fields

#### MSU Breakout Fields

<b>7.23.1.1 (1)</b>	<b>Field</b>	<b>calledParty.natOfAddr_b</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.24]</b>					
	<b>Definition</b>	The nature of address subfield of the MSISDN.							
	<b>Details</b>	<p>Implementation Info: See 7.14.1.1 (3).</p> <p>Also, these values should be mapped to the ISUP equivalents.</p> <ul style="list-style-type: none"> <li>- International (1) -&gt; K_GG59_INTLNATOFADDR (4)</li> <li>- National (2) -&gt; K_GG59_NSIGNATOFADDR (3)</li> <li>- Network Specific (3) -&gt; K_GG59_NTWKSPECNUM (14)</li> <li>- Subscriber Number (4) -&gt; K_GG59_SUBSCRIBENUM (1)</li> </ul> <p>All other values shall retain their original values.</p>							
<b>(2)</b>	<b>Field</b>	<b>calledParty.numberingPlan_b</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.24]</b>					
	<b>Definition</b>	The numbering plan subfield of the MSISDN.							
	<b>Details</b>	<p>Implementation Info: See 7.14.1.1 (3).</p>							
<b>(3)</b>	<b>Field</b>	<b>calledParty.telno</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.24]</b> <b>ETSI TS 123 093 v3.2.0 [5.6.4.1]</b>					
	<b>Definition</b>	The MSISDN IE or B-Subscriber-Address IE or TranslatedB-Number is extracted into this field. These IEs refer to the ISDN number of a mobile subscriber.							
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>- The B-Subscriber-Address will be extracted from any message that contains it.</li> <li>- The translatedB-Number will be extracted from any message that contains it.</li> <li>- For MAP-MO-FORWARD-SHORT-MESSAGE and MAP-MT-FORWARD-SHORT-MESSAGE the msisdn will be extracted from the digits of the SMS TP-Destination Address (DA). The TP-DA is held inside the RP-User Data area when the TP-MTI is SMS-SUBMIT.</li> </ul> <p>Otherwise the MSISDN is extracted from any message that contains an msisdn parameter with the following exceptions:</p> <ul style="list-style-type: none"> <li>- The MSISDN will not be extracted from the SM-RP-OA field of the MAP-MO-FORWARD-SHORT-MESSAGE indication as this is the calling MSISDN number. Also the MSISDN shall not be extracted from the SM-RP-OA parameter in a MAP-MT-FORWARD-SHORT-MESSAGE indication as this refers to the sending Service Centre which is not call specific.</li> </ul> <p>The MSISDN is extracted from destination reference in MAP-OpenInfo of the following messages:</p> <p>MAP-PROCESS-UNSTRUCTURED-SS-REQUEST MAP-UNSTRUCTURED-SS-REQUEST MAP-UNSTRUCTURED-SS-NOTIFY</p>							
<b>(4)</b>	<b>Field</b>	<b>calledParty.telnoType_b</b>		See 7.23.1.1(3).					
	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.							
	<b>Details</b>	<p>Implementation Info: See 7.23.1.1(3).</p> <p>The telnoType_b subfield should be set as the following:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">K_GG59_TELNOTYPE_MSISDN</td> <td style="width: 60%;">(for MSISDN)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_BSUBADDR</td> <td>(for B Subscriber Address)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_TRANSLATEDBNUM</td> <td>(for Translated B Number)</td> </tr> </table>			K_GG59_TELNOTYPE_MSISDN	(for MSISDN)	K_GG59_TELNOTYPE_BSUBADDR	(for B Subscriber Address)	K_GG59_TELNOTYPE_TRANSLATEDBNUM
K_GG59_TELNOTYPE_MSISDN	(for MSISDN)								
K_GG59_TELNOTYPE_BSUBADDR	(for B Subscriber Address)								
K_GG59_TELNOTYPE_TRANSLATEDBNUM	(for Translated B Number)								

<b>7.23.1.2 (1)</b>	<b>Field</b>	<b>callingParty.natOfAddr_b</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.25]</b>			
	<b>Definition</b>	The nature of address subfield of Calling Party Number.					
	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (3).</p> <p>Also, these values should be mapped to the ISUP equivalents.</p> <ul style="list-style-type: none"> <li>- International (1) -&gt; K_GG59_INTLNATOFADDR (4)</li> <li>- National (2) -&gt; K_GG59_NSIGNATOFADDR (3)</li> <li>- Network Specific (3) -&gt; K_GG59_NTWKSPECNUM (14)</li> <li>- Subscriber Number (4) -&gt; K_GG59_SUBSCRIBENUM (1)</li> </ul> <p>All other values shall retain their original values.</p>					
	<b>(2)</b>	<b>Field</b>	<b>callingParty.numberingPlan_b</b>				
<b>(2)</b>	<b>Definition</b>	The numbering plan subfield of Calling Party Number.					
	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (3).</p>					
	<b>(3)</b>	<b>Field</b>	<b>callingParty.telno</b>				
	<b>Definition</b>	The address subfield of the TP-OA, MSISDN from RP-OA, or Calling Party Number.					
<b>(3)</b>	<b>Details</b>	<p>Implementation Info: For MAP-MO-FORWARD-SHORT-MESSAGE request the MSISDN of the calling party will be extracted from the SM-RP-OA field. This is the MS ISDN number of the sending mobile.</p> <p>For MAP-MT-FORWARD-SHORT-MESSAGE request the MSISDN of the calling party will be extracted from the digits of the SMS TP-Originating Address (OA). The TP-OA is held inside the RP-User Data area when the TP-MTI is SMS-DELIVER.</p> <p>For MAP-PROCESS-UNSTRUCTURED-SS Request, if the MSISDN field is present, it should be extracted into callingParty; If not, MAP-OpenInfo -&gt; MSISDN should be extracted into callingParty.</p> <p>For any MAP operations, if the Calling Party Number field is present, it should be extracted into callingParty.</p> <p><b>Note:</b> The MSISDN shall not be extracted from the SM-RP-OA parameter in a MAP-MT-FORWARD-SHORT-MESSAGE (mobile terminated) indication as this refers to the sending Service Centre which is not call specific.</p> <p><b>Note:</b> If Type-of-number of TP-OA is alphanumeric and all the Address-Value characters of TP-OA are TBCD characters (0-9, a-f, A-F), then the 7-bit packed characters should be converted into TBCD digits and extracted to callingParty.telno. Otherwise, if Address-Value of TP-OA contains any non-TBCD characters (for example g-z, G-Z), the characters should NOT be extracted to callingParty.telno. See also 7.23.1.35. The MSISDN is extracted from Originating-reference in MAP-OpenInfo into callingParty.</p>					
	<b>(4)</b>	<b>Field</b>	<b>callingParty.telnoType_b</b>	See 7.23.1.2(3)			
	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.					
	<b>Details</b>	<p>Implementation Info: See 7.23.1.2(3).</p> <p>The telnoType_b subfield should be set as the following:</p> <table style="margin-left: 20px;"> <tr> <td>K_GG59_TELNOTYPE_MSISDN</td> <td>(for MSISDN)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_CALLINGPARTYNUM</td> <td>(for callingPartyNumber)</td> </tr> </table>			K_GG59_TELNOTYPE_MSISDN	(for MSISDN)	K_GG59_TELNOTYPE_CALLINGPARTYNUM
K_GG59_TELNOTYPE_MSISDN	(for MSISDN)						
K_GG59_TELNOTYPE_CALLINGPARTYNUM	(for callingPartyNumber)						

<b>7.23.1.3 (1)</b>	<b>Field</b>	<b>fwdNumOrMSRN_b</b>		<b>n/a</b>					
	<b>Definition</b>	This is a flag to distinguish whether the forwardedToNumber or the MSRN is broken into txNum.							
	<b>Details</b>	<p>Implementation Info: The flag fwdNumOrMSRN_b is set to K_GG59_MAPFWDTONUM (1) if it is forward-edtoNumber or K_GG59_MAPMSRN (2) if it is an MSRN.</p>							
	<b>(2)</b>	<b>Field</b>	<b>txNum[].natOfAddr_b</b>	<b>ETSI TS 129 002 v3.7.1 [7.6.2.22] ETSI TS 129 002 v3.7.1 [7.6.2.19]</b>					
		<b>Definition</b>	The nature of address subfield of the Forwarded to Number or MSRN.						
<b>(3)</b>	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (4) Also, these values should be mapped to the ISUP equivalents.            - International (1) -&gt; K_GG59_INTLNATOFADDR (4)            - National (2) -&gt; K_GG59_NSIGNATOFADDR (3)            - Network Specific (3) -&gt; K_GG59_NTWSPECNUM (14)            - Subscriber Number (4) -&gt; K_GG59_SUBSCRIBENUM (1)            All other values shall retain their original values.</p>							
	<b>(4)</b>	<b>Field</b>	<b>txNum[].numberingPlan_b</b>	<b>ETSI TS 129 002 v3.7.1 [7.6.2.22] ETSI TS 129 002 v3.7.1 [7.6.2.19]</b>					
		<b>Definition</b>	The numbering plan subfield of the Forwarded to Number or MSRN.						
	<b>(5)</b>	<b>Details</b>	<p>Implementation Info: See 7.14.1.2 (4)</p>						
		<b>Field</b>	<b>txNum[].telno</b>	<b>ETSI TS 129 002 v3.7.1 [7.6.2.22] ETSI TS 129 002 v3.7.1 [7.6.2.19]</b>					
		<b>Definition</b>	The MSRN or forwardedToNumber or equivalent is extracted into this field. MSRN refers to the Mobile Subscribers Roaming Number; forwardedToNumber refers to an address where the call is forwarded to. These numbers will be mutually exclusive i.e. if one is present then the other will not be present. If additional forwarding numbers are available, e.g. Camel-RoutingInfo in ExtendedRoutingInfo in MAP-SEND-ROUTING-INFORMATION response, this information is also broken out.						
<b>(6)</b>	<b>Details</b>	<p>Implementation Info: The MSRN or the forwardedtoNumber is extracted from a message in the same form as it exists in the message. The flag fwdNumOrMSRN_b is set to 1 if it is forwardedtoNumber or 2 if it is an MSRN. The equivalent of an MSRN for calls requiring provision of IWU resources is the SIWFS Number. The SIWFS will be extracted from the MAP-PROVIDE-SIWFS-NUMBER response.</p>							
	<b>(7)</b>	<b>Field</b>	<b>txNum[].telnoType_b</b>	See 7.23.1.3(4)					
		<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.						
		<b>Details</b>	<p>Implementation Info: See 7.23.1.3(4). The telnoType_b subfield should be set as the following:</p> <table style="margin-left: 20px;"> <tr> <td>K_GG59_TELNOTYPE_FORWTONUM</td> <td>(for Forwarded To Number)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_ROAMINGNUM</td> <td>(for Roaming Number)</td> </tr> <tr> <td>K_GG59_TELNOTYPE_SIWFSENUM</td> <td>(for SIWFS Number)</td> </tr> </table>			K_GG59_TELNOTYPE_FORWTONUM	(for Forwarded To Number)	K_GG59_TELNOTYPE_ROAMINGNUM	(for Roaming Number)
K_GG59_TELNOTYPE_FORWTONUM	(for Forwarded To Number)								
K_GG59_TELNOTYPE_ROAMINGNUM	(for Roaming Number)								
K_GG59_TELNOTYPE_SIWFSENUM	(for SIWFS Number)								

<b>7.23.1.4</b>	<b>Field</b>	<b>IMSI.telno</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.1]</b>
	<b>Definition</b>	The IMSI refers to the International Mobile Subscriber Identity.		
	<b>Details</b>	<p>Extracted from all messages that contain an imsi IE, including IMSI field in MAP-OpenInfo.</p> <p>Also extracted from the Destination Reference of the MAP-OPEN service for:</p> <ul style="list-style-type: none"> <li>MAP-REGISTER-SS</li> <li>MAP-ERASE-SS</li> <li>MAP-ACTIVATE-SS</li> <li>MAP-DEACTIVATE-SS</li> <li>MAP-INTERROGATE-SS</li> <li>MAP-REGISTER-PASSWORD</li> <li>MAP-PROCESS-UNSTRUCTURED-SS-REQUEST</li> <li>MAP-UNSTRUCTURED-SS-REQUEST</li> <li>MAP-UNSTRUCTURED-SS-NOTIFY</li> <li>MAP-FORWARD-SHORT-MESSAGE</li> <li>MAP-REGISTER-CC-ENTRY</li> <li>MAP-ERASE-CC-ENTRY</li> <li>MAP-CHECK-IMEI</li> </ul>		
<b>7.23.1.5</b>	<b>Field</b>	<b>IMEI.telno</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.3]</b>
	<b>Definition</b>	The IMEI refers to the International Mobile Equipment Identity.		
	<b>Details</b>	Extracted from all messages that contain an imei IE.		
<b>7.23.1.6</b>	<b>Field</b>	<b>LMSI.telno</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.16]</b>
	<b>Definition</b>	The LMSI refers to the Local Mobile Subscriber Identity.		
	<b>Details</b>	Extracted from all messages that contain a lmsi IE.		
<b>7.23.1.7</b>	<b>Field</b>	<b>TMSI.telno</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.2]</b>
	<b>Definition</b>	The TMSI refers to the Temporary Mobile Subscriber Identity.		
	<b>Details</b>	Extracted from all messages that contain a tmsi IE.		
<b>7.23.1.8</b>	<b>Field</b>	<b>MSCNo (Synonym: mapMSCNo)</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.11]</b>
	<b>Definition</b>	This is extracted from the msc-Number IE, targetMSC-Number IE, and networkNode-Number IE. This field refers to the ISDN number of the Mobile Services Switching Centre (MSC) to which a call is about to be handed over.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>		

<b>7.23.1.9</b>	Field	<b>mapHLRNo</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.13]</b>	
	Definition	The TP Originating Address IE or the hlr-Number IE. This identifier refers to an application level identification of a system component, which is currently it's associated ISDN number, ie. the HLR ISDN number.			
	Details	<p>This should be extracted from either the hlr-Number IE, if present, or from the MAP-OPEN Destination address IE of the following messages:</p> <ul style="list-style-type: none"> <li>- MAP-UPDATE-LOCATION response</li> <li>- MAP-UPDATE-GPRS-LOCATION response</li> <li>- MAP-RESET indication</li> <li>- MAP-RESTORE-DATA response</li> </ul>			
<b>7.23.1.10</b>	Field	<b>VLRNo</b> (Synonym: mapVLRNo)		<b>ETSI TS 129 002 v3.7.1 [7.6.2.14]</b>	
	Definition	The VLR number refers to the ISDN number of the Visitor's Location register.			
	Details	<p>Implementation Info: This field should be extracted from any message that contains it.</p>			
<b>7.23.1.11</b>	Field	<b>mapTargetCellId_ba</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.2.8]</b>	
	Definition	The Target Cell ID refers to the identity of a cell on which a call is to be handed over.			
	Details	<p>This should be extracted from the targetCellId IE of the following messages:</p> <ul style="list-style-type: none"> <li>- MAP-PREPARE-HANDOVER indication</li> <li>- MAP-PREPARE-SUBSEQUENT-HANDOVER indication</li> </ul>			
<b>7.23.1.12</b>	Field	<b>serviceCentreAddress</b> (Synonym: mapServiceCentreAddress)		<b>ETSI TS 129 002 v3.7.1 [7.6.2.27]</b>	
	Definition	The Service Centre Address refers to the network address of a short message service centre.			
	Details	<p>This should be extracted from the serviceCentreAddress IE of the following messages:</p> <ul style="list-style-type: none"> <li>- MAP-SEND-ROUTING-INFO-FOR-SM indication</li> <li>- MAP-REPORT-SM-DELIVERY-STATUS indication</li> </ul> <p>and from the serviceCentreAddressDA IE of the SM-RP-DA in the following message:</p> <ul style="list-style-type: none"> <li>- MAP-MO-FORWARD-SHORT-MESSAGE indication</li> </ul> <p>and from the serviceCentreAddressOA IE of the SM-RP-OA in the following message:</p> <ul style="list-style-type: none"> <li>- MAP-MT-FORWARD-SHORT-MESSAGE indication</li> </ul>			
<b>7.23.1.13</b>	Field	<b>mapSScode_b</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.4.1]</b>	
	Definition	<p>Implementation Info: This is a list of SS-Code fields. This parameter may refer to one supplementary service, a set of supplementary services, or all supplementary services.</p>			
	Details	<p>This field was changed from single-value to multi-value field. It should be extracted from any message that contains SS-Code field. See 7.23.4 for Context Assistance requirement for this field.</p>			

<b>7.23.1.14</b>	<b>Field</b>	<b>mapSMDeliveryOutcome_b</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.8.6]</b>
	<b>Definition</b>	This parameter indicates the cause for setting the message waiting data.		
	<b>Details</b>	This should be extracted from the sm-DeliveryOutcome Field of the following message: - MAP-REPORT-SM-DELIVERY-OUTCOME indication		
<b>7.23.1.15</b>	<b>Field</b>	<b>authSetListInfo_pb</b>	<b>Spec Ref</b>	<b>ETSI TS 129 002 v3.7.1 [7.6.7.1]</b>
	<b>Definition</b>	The AuthenticationSetList is a sequence of size 3 or 5 of AuthenticationSet which contains the {RAND, SRES, Kc} or {RAND, XRES, CK, IK, AUTN}.		
	<b>Details</b>	Implementation Info: This is a pointer to the length field of the AuthenticationSetList of the MAP-SEND-AUTHENTICATION-INFO response.		
<b>7.23.1.16</b>	<b>Field</b>	<b>numOfForward_b</b>	<b>Spec Ref</b>	<b>ETSI TS 123 018 v3.6.0 [8.2.1]</b>
	<b>Definition</b>	The numOfForward parameter contains the number of times a call has been forwarded and is received from ISUP and transparently passed to the HLR.		
	<b>Details</b>	Implementation Info: This value should be extracted from the MAP-SEND-ROUTING-INFORMATION invocation.		
<b>7.23.1.17</b>	<b>Field</b>	<b>basicService_b, bearerOrTele_b</b>	<b>Spec Ref</b>	<b>ETSI TS 129 002 v3.7.1 [7.6.4.40]</b>
	<b>Definition</b>	The basicservice parameter type refers to a basic service (tele or bearer service) involved in a call or supplementary service handling. basicService is made up of a choice of bearerService(1 octet) or teleservice(1 octet).		
	<b>Details</b>	Implementation Info: This value must be extracted from the following operations in the same form as it exists in the message: - RegisterSS Invoke bearerOrTele_b is set to 1 if it is bearerService or 2 if it is TeleService. This must be implemented for GSM Phase I and II.		
<b>7.23.1.18</b>	<b>Field</b>	<b>equipStatus_b</b>	<b>Spec Ref</b>	<b>ETSI TS 129 002 v3.7.1 [7.6.3.2]</b>
	<b>Definition</b>	The equipmentStatus parameter refers to the status of the mobile equipment. It is an ENUMERATED type of blackListed, whiteListed, greyListed		
	<b>Details</b>	Implementation Info: This value should be extracted from the MAP-CHECK-IMEI response in the same form as it exists in the message.		
<b>7.23.1.19</b>	<b>Field</b>	<b>appLevel_b</b>		n/a
	<b>Definition</b>	See 7.2.1.10		
	<b>Details</b>	This should be set to K_GG59_GSMMAP_INFO.		

<b>7.23.1.20 (1)</b>	<b>Field</b>	<b>TMServiceId_b</b>		n/a
	<b>Definition</b>	See 7.1.1.9 (2)		
	<b>Details</b>	<p>This is set depending on the combination of SSN, and message direction.</p> <p>Except for messages carried in UDT/XUDTS SCCP message types, called SSN ( sccp-Called.SSN_b ) is used for messages carried in TCAP Begin packages, calling SSN is used for messages carried in other TCAP package types.</p> <p>For messages carried in UDT/XUDTS SCCP message types (messageType_b = K_GG59_SCCP_UDTS, or K_GG59_SCCP_XUDTS), calling SSN is used.</p> <p>Having selected the appropriate SSN to use, SSNs are mapped to TMServiceId_b as follows:</p> <ul style="list-style-type: none"> <li>-SSN = 5 then set TMServiceId_b = K_GG59_MAPSERVNUM</li> <li>-SSN = 6 then set TMServiceId_b = K_GG59_HLRSERVNUM</li> <li>-SSN = 7 then set TMServiceId_b = K_GG59_VLRSERVNUM</li> <li>-SSN = 8 then set TMServiceId_b = K_GG59_MSCSERVNUM</li> <li>-SSN = 9 then set TMServiceId_b = K_GG59_EIRSERVNUM</li> <li>-SSN = 10 then set TMServiceId_b = K_GG59_ACSERVNUM</li> <li>-SSN = any other value, then set TMServiceId_b = K_GG59_MAPSERVNUM</li> </ul>		
<b>(2)</b>	<b>Field</b>	<b>TMServiceAssFailCode_u</b>		n/a
	<b>Definition</b>	See 7.1.1.9 (1)		
	<b>Details</b>	The base for Private/Local error codes is K_GG59_BASEGSMMAP_ERRORCODE.		
<b>7.23.1.21 (1)</b>	<b>Field</b>	<b>smsTimestamp</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.8.4]</b>
	<b>Definition</b>	<p>TP Service Centre Timestamp represents the local time and timezone. This field deals with the timestamp portion.</p> <p>The TP-SC time stamp (TP-SCTS) is a subparameter of SM-RP-UI.</p> <p>See also RES Section 8.26.1.11.</p>		
	<b>Details</b>	<p>The timestamp appears in the parameter in BCD format. The smsTimestamp structure is defined as unix 'timespec', therefore the breakout function must manipulate the BCD format into a format which conforms to the 'timespec' format.</p> <p>Only the timestamp portion of TP-SCTS must be populated into this field. This field should be extracted from the following operations:</p> <ul style="list-style-type: none"> <li>- MAP-MO-FORWARD-SHORT-MESSAGE indication and response</li> <li>- MAP-MT-FORWARD-SHORT-MESSAGE indication and response</li> </ul>		
<b>(2)</b>	<b>Field</b>	<b>smsTimezone_i</b>		<b>ETSI TS 129 002 v3.7.1 [7.6.8.4]</b>
	<b>Definition</b>	<p>TP Service Centre Timestamp represents the local time and timezone. This field deals with the timezone portion.</p> <p>The TP-SC time stamp (TP-SCTS) is a subparameter of SM-RP-UI.</p> <p>See also RES Section 8.26.1.11.</p>		
	<b>Details</b>	<p>Only the timezone portion of TP-SCTS must be populated into this field. This field is defined in the specification as a signed BCD number and specifies the timezone in increments of 15 minutes. This should be extracted into smsTimezone_i as a signed integer depicting the timezone in increments of 1 minute only. For example, the timezone in the message may depict it as +2, but the information populated in smsTimezone_i should depict +30. The signed portion should reflect which side of GMT the timestamp comes from.</p> <p>This should be extracted from the following messages:</p> <ul style="list-style-type: none"> <li>- MAP-MO-FORWARD-SHORT-MESSAGE indication and response</li> <li>- MAP-MT-FORWARD-SHORT-MESSAGE indication and response</li> </ul>		

<b>7.23.1.22</b>	<b>Field</b>	<b>USSDCodingScheme_m</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.4.36																					
	<b>Definition</b>	The USSD Data Coding Scheme field.																							
	<b>Details</b>	n/a																							
<b>7.23.1.23</b>	<b>Field</b>	<b>USSDString.string_pb</b> <b>USSDString.length_u</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.4.37																					
	<b>Definition</b>	The USSD String field.																							
	<b>Details</b>	<p>Implementation Info: This field should be extracted from any message containing the USSD String field. The pointer is set to first octet after the length octet. The length is the size of USSD String field in octet. The maximum length of the field could be 160 octets.</p>																							
<b>7.23.1.24</b>	<b>Field</b>	<b>authQuintuplets</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.7.1																					
	<b>Definition</b>	This is the Authentication Quintuplet List field. The UMTS quintuplet includes RAND (random number), XRES (response to an UMTS authentication request), CK (key for UMTS ciphering), IK (integrity key), and AUTN (authentication token).																							
	<b>Details</b>	<p>Implementation Info:  <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 7.23.1.25 for the new field.</b>  This field is implemented as multi-value structure field. All the instance of Quintuplet should be extracted. The gg59 API getMValCount(tag) could be used to get the number of actual extracted instances.</p>																							
<b>7.23.1.25</b>	<b>Field</b>	<b>authVectorSet</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.7.1																					
	<b>Definition</b>	This is the set of Authentication Vectors.																							
	<b>Details</b>	<p>Implementation Info: This field should be extracted from any message that contains it. It is implemented as a multi-value structure field, each value being a single authentication vector. All the instances of authentication vectors should be extracted. The gg59 API getMValCount(tag) can be used to discover the actual number of authentication vectors extracted.</p>																							
<b>7.23.1.26</b>	<b>Field</b>	<b>accessType_m</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.7.11																					
	<b>Definition</b>	The Access Type field indicates the procedure type which initiates the authentication procedure.																							
	<b>Details</b>	<p>Implementation Info: This field should be extracted from any message that contains it. One of:</p> <table style="margin-left: 20px;"> <tr><td>K_GG59_ACCTYPE_CALL</td><td>(0)</td></tr> <tr><td>K_GG59_ACCTYPE_EMERGENCYCALL</td><td>(1)</td></tr> <tr><td>K_GG59_ACCTYPE_LOCATIONUPDATING</td><td>(2)</td></tr> <tr><td>K_GG59_ACCTYPE_SUPPLEMENTARYSERVICE</td><td>(3)</td></tr> <tr><td>K_GG59_ACCTYPE_SHORTMESSAGE</td><td>(4)</td></tr> <tr><td>K_GG59_ACCTYPE_GPRSATTACH</td><td>(5)</td></tr> <tr><td>K_GG59_ACCTYPE_ROUTINGAREAUPDATING</td><td>(6)</td></tr> <tr><td>K_GG59_ACCTYPE_SERVICEREQUEST</td><td>(7)</td></tr> <tr><td>K_GG59_ACCTYPE_PDPCONTEXTACTIVATION</td><td>(8)</td></tr> <tr><td>K_GG59_ACCTYPE_PDPCONTEXTDEACTIVATION</td><td>(9)</td></tr> <tr><td>K_GG59_ACCTYPE_GPRSDETACH</td><td>(10)</td></tr> </table> <p>Note: The value zero is a valid value.</p>			K_GG59_ACCTYPE_CALL	(0)	K_GG59_ACCTYPE_EMERGENCYCALL	(1)	K_GG59_ACCTYPE_LOCATIONUPDATING	(2)	K_GG59_ACCTYPE_SUPPLEMENTARYSERVICE	(3)	K_GG59_ACCTYPE_SHORTMESSAGE	(4)	K_GG59_ACCTYPE_GPRSATTACH	(5)	K_GG59_ACCTYPE_ROUTINGAREAUPDATING	(6)	K_GG59_ACCTYPE_SERVICEREQUEST	(7)	K_GG59_ACCTYPE_PDPCONTEXTACTIVATION	(8)	K_GG59_ACCTYPE_PDPCONTEXTDEACTIVATION	(9)	K_GG59_ACCTYPE_GPRSDETACH
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K_GG59_ACCTYPE_GPRSDETACH	(10)																								

<b>7.23.1.27</b>	<b>Field</b>	<b>mmCode_m</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 17.7.1
	<b>Definition</b>	The MM Code field indicates a Mobility Management event.		
	<b>Details</b>	<p>Implementation Info:            This field is implemented as a multi-value field. It should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_MMPCODE_LOCATIONUPDATEINSAMEVLR (0x00)</li> <li>K_GG59_MMPCODE_LOCATIONUPDATETOOTHERVLR (0x01)</li> <li>K_GG59_MMPCODE_IMSIATTACH (0x02)</li> <li>K_GG59_MMPCODE_MSINITIMSIDETACH (0x03)</li> <li>K_GG59_MMPCODE_NETWORKINITIMSIDETACH (0x04)</li> <li>K_GG59_MMPCODE_RAUPDATEINSAMESGSN (0x80)</li> <li>K_GG59_MMPCODE_RAUPDATETOOTHERSGSN_UFNS (0x81)</li> <li>K_GG59_MMPCODE_RAUPDATETOOTHERSGSN_DBT (0x82)</li> <li>K_GG59_MMPCODE_GPRSATTACH (0x83)</li> <li>K_GG59_MMPCODE_MSINITGPRSDETACH (0x84)</li> <li>K_GG59_MMPCODE_NETWORKINITGPRSDETACH (0x85)</li> <li>K_GG59_MMPCODE_NETWORKINITTRANSF_TMNRF (0x86)</li> </ul> <p>Note1: The value zero is a valid value.            Note2: The MM Code field can be present in MAP eventMet Parameter. It can also be present up to maxNumOfMobilityTriggers (10) times in MAP mobilityTriggers Parameter.</p>		
<b>7.23.1.28</b>	<b>Field</b>	<b>targetRNCId_ba</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.2.8A
	<b>Definition</b>	The Target RNC Id field indicates the RNC to which a call has to be relocated.		
	<b>Details</b>	<p>Implementation Info:            This field should be extracted from any message that contains it.            This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The array length will be K_GG59_MAP_TARGETRNCID_SIZE in MAP protocols.</p>		
<b>7.23.1.29</b>	<b>Field</b>	<b>failureCause_m</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.5.1.16
	<b>Definition</b>	The Failure Cause field indicates to an authentication failure cause which has occurred.		
	<b>Details</b>	<p>Implementation Info:            This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_FAILCAUSE_WRONGUSERRESPONSE (0)</li> <li>K_GG59_FAILCAUSE_WRONGNETWORKSIGNATURE (1)</li> </ul> <p>Note: The value zero is a valid value.</p>		

<b>7.23.1.30</b>	<b>Field</b>	<b>GGSNAddress</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.2.40
	<b>Definition</b>	The GGSN Address field indicates the IP address of a GGSN.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) This field should be extracted from any message that contains it.</li> <li>(2) The subfield organisation_b should be one of:           <ul style="list-style-type: none"> <li>K_GG61_ETS1_PDPORG (0x0)</li> <li>K_GG61_IETF_PDPORG (0x1)</li> <li>K_GG61_EMPTY_PDPORG (0xf)</li> </ul> </li> <li>(3) The subfield type_b should be one of:           <ul style="list-style-type: none"> <li>K_GG61_ETS1_X121_PDPADDR (0x00)</li> <li>K_GG61_ETS1 PPP_PDPADDR (0x01)</li> <li>K_GG61_ETS1_OSPHOSS_PDPADDR (0x02)</li> <li>K_GG61_IETF_IPv4_PDPADDR (0x21)</li> <li>K_GG61_IETF_IPv6_PDPADDR (0x57)</li> </ul> </li> <li>(4) The subfield numOctets_b should be the number of octets. And the subfield addrOctets_ba should be address octets.</li> <li>(5) The macro M_GG61_getIPv4_PDPADDR(pPDPAddr) is provided to extract an IPv4 address from the Address. The macro M_GG61_isIPv4_PDPADDR(pPDPAddr) can be used to first check that the address does contain a IPv4 address.</li> </ul>		
<b>7.23.1.31</b>	<b>Field</b>	<b>GGSNNo</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.2.41
	<b>Definition</b>	The GGSN Number field indicates the ISDN number of a GGSN or the ISDN number of the protocol-converter if a protocol-converting GSN is used between the GGSN and the HLR.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>		
<b>7.23.1.32</b>	<b>Field</b>	<b>QoSSubscribed</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.3.47, 74, and 75A
	<b>Definition</b>	The QoS Subscribed field list, including QoS-Subscribed, Ext-QoS-Subscribed, and Ext2-QoS-Subscribed.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) This field is implemented as a multi-value field. It should be extracted from MAP PDP-Context and PDP-ContextInfo parameters.</li> <li>(2) The subfield a7PresentInd_b should be set to K_GG59_QOS_MAPQOS.</li> <li>(3) The subfield params.mapQoS.basicQoS should be extracted from QoS-Subscribed field to indicate the quality of service subscribed for a certain service (3GPP TS 29.002, Section 7.6.3.47).</li> <li>(4) The subfield params.mapQoS.extQoS should be extracted from Extension QoS-Subscribed field to indicate the enhanced QoS subscribed for a certain service (3GPP TS 29.002, Section 7.6.3.74).</li> <li><b>Note:</b> The "qos-Subscribed [11] Ext-QoS-Subscribed" in PDP-ContextInfo should be extracted to extQoS (not basicQoS).</li> <li>(5) The subfield params.mapQoS.ext2QoS should be extracted from Extension-2 QoS-Subscribed field to indicate the additional QoS information to the Extension QoS-subscribed parameter (3GPP TS 29.002, Section 7.6.3.75A).</li> </ul>		

<b>7.23.1.33</b>	<b>Field</b>	<b>PDPContext</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 17.7.1
	<b>Definition</b>	The PDP Context field.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) This field is implemented as a multi-value field. It should be extracted from any message that contains it.</li> <li>(2) The subfield PDPCtxId_b should be extracted from PDP Context Identifier field to indicate a PDP context for the subscriber (3GPP TS 29.002, Section 7.6.3.55).</li> <li>(3) The subfield PDPAddress should be extracted from: <ul style="list-style-type: none"> <li>- PDP Type field to indicate which type of protocol is used by the MS (3GPP TS 29.002, Section 7.6.2.44); and</li> <li>- PDP Address field to indicate the address of the data protocol (3GPP TS 29.002, Section 7.6.2.40).</li> </ul> </li> <li>(4) The subfield QoSSubscribed should be extracted. It should also be extracted to field QoS-Subscribed (see also 7.23.1.32).</li> <li>(5) The subfield APN should be extracted from APN field to indicate the DNS name of a GGSN (3GPP TS 29.002, Section 7.6.2.42).</li> <li>(6) The subfield vplmnAddressAllowed_b should be extracted from VPLMN Address Allowed field to indicate whether the MS is allowed to use a dynamic address allocated in the VPLMN (3GPP TS 29.002, Section 7.6.3.48). One of: <ul style="list-style-type: none"> <li>K_GG59_VPLMNADD_NOTALLOWED (0) (not present)</li> <li>K_GG59_VPLMNADD_ALLOWED (1) (present)</li> </ul> </li> <li>(7) The subfield PDPChargingCharacteristics_ba should be extracted from PDP-Charging Characteristics field to indicate the charging characteristics associated with a specific PDP context (3GPP TS 29.002, Section 7.6.2.55).</li> </ul>		
<b>7.23.1.34</b> (1)	<b>Field</b>	<b>MSISDN.telno</b>		3GPP TS 29.002, Section 7.6.2.24 ETSI TS 123 093 v3.2.0 [5.6.4.1]
	<b>Definition</b>	The Address Signal subfield of the MSISDN or StoredMSISDN field.		
	<b>Details</b>	<p>Implementation Info:</p> <p>The Digits should be copied in the same form as stored in the message for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) MSISDN in any operation;</li> <li>(2) StoredMSISDN in any operation.</li> </ul>		
 (2)	<b>Field</b>	<b>MSISDN.natOfAddr_b</b>		3GPP TS 29.002, Section 7.6.2.24 ETSI TS 123 093 v3.2.0 [5.6.4.1]
	<b>Definition</b>	The nature of address subfield of the MSISDN or storedMSISDN.		
	<b>Details</b>	<p>Implementation Info:</p> <p>See 7.23.1.34 (1).</p>		
 (3)	<b>Field</b>	<b>MSISDN.numberingPlan_b</b>		3GPP TS 29.002, Section 7.6.2.24 ETSI TS 123 093 v3.2.0 [5.6.4.1]
	<b>Definition</b>	The numbering plan subfield of the MSISDN or storedMSISDN.		
	<b>Details</b>	<p>Implementation Info:</p> <p>See 7.23.1.34 (1).</p>		

<b>7.23.1.35</b>	Field	<b>callingName_ba</b>	Spec Ref	3GPP TS 29.002, Section 7.6.2.25 3GPP TS 23.040, Section 9.2.3.7
	Definition	The non-TBCD alphanumeric Address-Value string of the SMS TP Originator Address (TP-OA).		
	Details	<p>Implementation Info:</p> <p>If Type-of-number of TP-OA is alphanumeric and the Address-Value of TP-OA contains any non-TBCD characters (for example g-z, G-Z), then the 7-bit packed characters should be converted into ASCII characters and extracted to callingName_ba field as null-terminated string.</p> <p>If the number of characters is greater than (K_GG26_CALLINGNAME_LEN - 1) then the first (K_GG26_CALLINGNAME_LEN - 1) characters must be extracted and the string then null terminated.</p>		
<b>7.23.1.36</b>	Field	<b>SGSNNo</b> (Synonym: mapSGSNNo)	Spec Ref	3GPP TS 29.002
	Definition	The ISDN number of an SGSN		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>		
<b>7.23.1.37</b>	Field	<b>mapSGSNAddress</b>	Spec Ref	3GPP TS 29.002
	Definition	The IP-address of an SGSN		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>		
<b>7.23.1.38</b>	Field	<b>smDeliveryFailureCause_m</b>	Spec Ref	3GPP TS 29.002, Section 17.7.7
	Definition	The Enumerated value of SM-EnumeratedDeliveryFailureCause field.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_SMDFC_MEMORYCAPACITYEXCEEDED (0)</li> <li>K_GG59_SMDFC_EQUIPMENTPROTOCOLERROR (1)</li> <li>K_GG59_SMDFC_EQUIPMENTNOTSM_EQUIPPED (2)</li> <li>K_GG59_SMDFC_UNKNOWNSERVICECENTRE (3)</li> <li>K_GG59_SMDFC_SC_CONGESTION (4)</li> <li>K_GG59_SMDFC_INVALIDSME_ADDRESS (5)</li> <li>K_GG59_SMDFC_NOTSC_SUBSCRIBER (6)</li> </ul> <p>Note: The value zero is a valid value.</p>		

<b>7.23.1.39</b>	Field	<b>smsTPUserData.string_pb</b> <b>smsTPUserData.length_u</b>	Spec Ref	3GPP TS 29.002, Section 7.6.8.4 3GPP TS 23.040, Section 9.2.3.24
	Definition	This is the SMS TP User Data field (not including optional User Data Header Part).		
	Details	<p>This is extracted from any MAP and SMS message that contains the SMS TP User Data field (not including optional User Data Header Part).  If User Data Header Part is not present, the pointer should be set to the first octet after the length octet.  If TP User Data field contains a Header in addition to the short message content, the pointer should be set to the actual short message content start octet (after User Data Header Part).  The subfield length_u should be the length of SMS TP User Data field (not including optional User Data Header Part) in octets, which may be different with TP User Data Length field in 3GPP TS 23.040, Section 9.2.3.16.</p>		
<b>7.23.1.40</b>	Field	<b>extTeleService_b</b>	Spec Ref	3GPP TS 29.002, Section 7.6.3.4
	Definition	This is a list of Extensible Teleservice fields.		
	Details	<p>Implementation Info:  This field is implemented as multi-value field. It should be extracted from any message that contains it.   Every Extensible Teleservice field should be 1 to 5 octet(s) in length.  Only the first octet should be extracted. If the rest 4 octets (OCTETS 2-5: reserved for future use) are present, they will be discarded in Breakout.   See 7.23.4 for Context Assistance requirement for this field.</p>		
<b>7.23.1.41</b>	Field	<b>extBearerService_b</b>	Spec Ref	3GPP TS 29.002, Section 7.6.3.3
	Definition	This is a list of Extensible Bearer Service fields.		
	Details	<p>Implementation Info:  This field is implemented as multi-value field. It should be extracted from any message that contains it.   Every Extensible Bearer Service field should be 1 to 5 octet(s) in length.  Only the first octet should be extracted. If the rest 4 octets (OCTETS 2-5: reserved for future use) are present, they will be discarded in Breakout.   See 7.23.4 for Context Assistance requirement for this field.</p>		

<b>7.23.1.42</b>	<b>Field</b>	<b>ssStatus_b</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.4.2 and 7.6.3.17
	<b>Definition</b>	This is a list of SS-Status or Ext-SS-Status fields. This parameter refers to the state information of individual supplementary services		
	<b>Details</b>	<p>Implementation Info:            This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>This field is implemented as multi-value field. It should be extracted from any message that contains SS-Status or Ext-SS-Status fields.</p> <p>Every Ext-SS-Status field should be 1 to 5 octet(s) in length.            Only the first octet should be extracted. If the rest 4 octets (OCTETS 2-5: reserved for future use) are present, they will be discarded in Breakout.</p> <p>See 7.23.4 for Context Assistance requirement for this field.</p> <p>The following bit masks can be used to get the individual SS Status:            K_GG59_MAP_SSSTATUS_ACTIVATION (0x01)            K_GG59_MAP_SSSTATUS_REGISTRATION (0x02)            K_GG59_MAP_SSSTATUS_PROVISION (0x04)            K_GG59_MAP_SSSTATUS QUIESCENT (0x08)</p>		
<b>7.23.1.43</b>	<b>Field</b>	<b>gsmSCFAddr</b>	<b>Spec Ref</b>	3GPP TS 29.002, Section 7.6.2.58
	<b>Definition</b>	The parameter refers to the ISDN number assigned to the gsmSCF address. In an IP Multimedia Core Network, the gsmSCF-address shall contain the IM-SF address when the IM-SF takes the role of the gsmSCF.		
	<b>Details</b>	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.23.1.44</b>	<b>Field</b>	<b>reasonForAbsence</b>	<b>Spec Ref</b>	3GPP TS 29.002 Section 17.6.6, 17.7.7 3GPP TS 23.040 Section 3.3.2
	<b>Definition</b>	This parameter refers to parameter of absentSubscriberDiagnosticSM for non-GPRS or parameter of additionalAbsentSubscriberDiagnosticSM for GPRS in parameter of AbsentSubscriberSM-Param.		
	<b>Details</b>	Implementation Info: In MAP ReturnError message, when Error Code is "Absent Subscriber SM", extracted the "Reason for Absence" field from parameter of absentSubscriberDiagnosticSM(for non-GPRS) or additionalAbsentSubscriberDiagnosticSM(for GPRS)		
<b>7.23.1.45</b>	<b>Field</b>	<b>aggregateCellId</b>	<b>Spec Ref</b>	3GPP TS 29.002 Section 17.7.8 3GPP TS 23.003
	<b>Definition</b>	This is a list of aggregate and unified Cell Identifier fields, including Cell Identifier, Cell Identifier (Serving), Cell Identifier (Target), and every instance of Cell Identifier List.		
	<b>Details</b>	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This field is implemented as multi-value field. It should be extracted from any message that contains it.</li> <li>(2) The subfield a7CellIdType_b indicates the type of Cell Identifier. One of:            K_GG59_A7_CITYTYPE_NOTYPE (default)            K_GG59_A7_CITYTYPE_SERVING (for Cell Identifier (Serving))            K_GG59_A7_CITYTYPE_TARGET (for Cell Identifier (Target))            K_GG59_A7_CITYTYPE_CGI_SAI_LAI (for CellGlobalIdorServiceAreaIdorLAI)</li> <li>(3) The subfields value.string_ba[] and value.length_m indicate the Cell identification value.</li> </ol>		

## 7.23.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno	I7524_hashAdd3Val (phase 1) hashAddSCCPAddr (phase 2 and phase 2+)	
<b>7.23.2.1</b>	Query packages (with & without permission)	n/a	Refer to generic TCAP, 7.1.2.1 (phase 1) 7.1.3.1 (phase 2 and phase 2+)
<b>7.23.2.2</b>	Conversation Packages	n/a	Refer to generic TCAP, 7.1.2.2 (phase 1) 7.1.3.2 (phase 2 and phase 2+)
<b>7.23.2.3</b>	Response and Abort Packages	n/a	Refer to generic TCAP, 7.1.2.3 (phase 1) 7.1.3.3/7.1.3.4 (phase 2 and phase 2+)
<b>7.23.2.4</b>	Messages which contain an IMSI	IMSI.telno	n/a
<b>7.23.2.5</b>	Messages which contain a Called Party number	calledParty.telno	n/a

## 7.23.3 Call Trace Assistance

This defines requirements additional to or different to the GSM MAP requirements[7.14].

### 7.23.3.1 Operation Requests

Note that all operations use generic GSM MAP Package Flags (see 7.14.3.3).

Call Trace Assistance															
7.23.3.1.1	Request for: MAP-PROVIDE-SUB- SCRIBER-LOCATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X		X						
		LMSI					X								
		IMEI					X								
		CALLED	X				X		X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
					30										
		State of Call	CTState				CTEnhState								
							'Provide Subscriber Location'								
7.23.3.1.2	Request for: MAP-SUBSCRIBER- LOCATION-REPORT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED	X				X		X						
		IMSI	X				X		X						
		IMEI					X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
					30										
		State of Call	CTState				CTEnhState								
							'Subscriber Location Report'								

Call Trace Assistance															
7.23.3.1.3	Request for: MAP-RESTORE-DATA	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X		X						
		LMSI					X								
		State of Call	CTState				CTEnhState								
							'Restore Data'								
7.23.3.1.4	Request for: MAP-IST-ALERT, MAP-IST-COMMAND	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X	X						
		State of Call	CTState				CTEnhState								
							'IST Alert', 'IST Command' as appropriate								
7.23.3.1.5	Request for: MAP-READY-FOR-SM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X								
		State of Call	CTState				CTEnhState								
							'Ready For SMS'								
7.23.3.1.6	Request for: MAP-MT-FORWARD- SHORT-MESSAGE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X	X						
		LMSI					X			X					
		CALLED	X				X	X							
		CALLING					X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
					30										
		State of Call	CTState				CTEnhState								
							'MT Forward SM'								

Call Trace Assistance														
7.23.3.1.7	Request for: MAP-MO-FORWARD-SHORT-MESSAGE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X	X	X					
		CALLED	X				X	X	X					
							X							
		PCOTIDSSN <sup>a</sup>	X	X	X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					30									
		State of Call	CTState				CTEnhState							
							'MO Forward SM'							
7.23.3.1.8	Requests for: MAP-INFORM-SERVICE-CENTRE	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CALLED					X		X					
			X			X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2 [K_GG59_PCOTIDSSN]		0									
		State of Call	CTState				CTEnhState							
							'Inform Service Centre'							
7.23.3.1.9	Requests for: MAP-REPORT-SM-DELIVERY-STATUS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CALLED					X	X	X					
		State of Call	CTState				CTEnhState							
							'Report SMS Delivery Status'							
7.23.3.1.10	Request for: MAP-SEND-ROUTING- INFORMATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CALLED	X				X							
		State of Call	CTState				CTEnhState							
							'Send Routing Information'							

Call Trace Assistance														
7.23.3.1.11	Request for: MAP-SEND-ROUTING-INFO-FOR-LCS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X		X					
		CALLED	X				X	X	X					
		State of Call	CTState				CTEnhState							
							'Send Routing Info for LCS'							
7.23.3.1.12	Request for: MAP-PROVIDE-SUB-SCRIBER- INFORMATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE RELATED	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X	X						
		LMSI			X		X							
		State of Call	CTState				CTEnhState							
							'Provide Subscriber Information'							
7.23.3.1.13	Request for: MAP-AUTHENTICATION-FAILURE-REPORT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
							X		X					
		State of Call	CTState				CTEnhState							
							'Authentication Failure Report.'							
7.23.3.1.14	Request for: MAP_SEND_AUTHENTICATION-INFO	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X	X	X					
		State of Call	CTState				CTEnhState							
							'Send Authentication Info.'							
7.23.3.1.15	Request for: MAP-ANY-TIME-INTERROGATION, MAP-ANY-TIME-MODIFICATION, MAP-ANY-TIME-SUBSCRIPTION-INTERROGATION, MAP-NOTE-SUBSCRIBER-DATA-MODIFIED	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X	X	X					
		CALLED					X	X						
			Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u				
						30								
		State of Call	CTState				CTEnhState							
							'Any Time Interrogation', 'Any Time Modification', 'Any Time Subscription Interrogation' 'Note Subscriber Data Modified'							

Call Trace Assistance														
7.23.3.1.16	Request for: MAP-NOTE-MM-EVENT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI					X		X					
		CALLED					X		X					
		Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					30									
		State of Call	CTState				CTEnhState							
							'Note MM Event'							
7.23.3.1.17	Request for: MAP-PROVIDE-SIWFS- NUMBER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		CALLED	X				X	X						
		State of Call	CTState				CTEnhState							
							'Provide SIWFS Number'							
7.23.3.1.18	Request for: MAP-SIWFS-SIGNAL- LING-MODIFY	State of Call	CTState				CTEnhState							
							'SIWFS Signalling Modify'							
7.23.3.1.19	Request for: MAP-PREPARE-HANDO- VER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI (If present)	X				X	X						
		State of Call	CTState				CTEnhState							
							'Prepare Handover'							
7.23.3.1.20	Request for: MAP-PREPARE-SUBSE- QUENT-HANDOVER	State of Call	CTState				CTEnhState							
							'Prepare Subsequent Handover'							
7.23.3.1.21	Request for: MAP-PROCESS-ACCESS- SIGNALLING	State of Call	CTState				CTEnhState							
							'Process Access Signalling'							
7.23.3.1.22	Request for: MAP-FORWARD- ACCESS-SIGNALLING	State of Call	CTState				CTEnhState							
							'Forward Access Signalling'							
7.23.3.1.23	Request for: MAP-FORWARD-CHECK- SS-INDICATION	State of Call	CTState				CTEnhState							
							'Forward Check SS Indication'							
7.23.3.1.24	Request for: MAP-SEND-END-SIGNAL	State of Call	CTState				CTEnhState							
							'Send End Signal'							
7.23.3.1.25	Request for: MAP-PREPARE-GROUP- CALL	State of Call	CTState				CTEnhState							
							'Prepare Group Call'							

Call Trace Assistance															
<b>7.23.3.1.26</b>	Request for: MAP-SEND-GROUP- CALL-END-SIGNAL	State of Call	CTState				CTEnhState								
							'Send Group Call End Signal'								
<b>7.23.3.1.27</b>	Request for: MAP-PROCESS-GROUP- CALL-SIGNALLING	State of Call	CTState				CTEnhState								
							'Process Group Call Signalling'								
<b>7.23.3.1.28</b>	Request for: MAP-FORWARD-GROUP- CALL-SIGNALLING	State of Call	CTState				CTEnhState								
							'Forward Group Call Signalling'								
<b>7.23.3.1.29</b>	Request for: MAP-ERASE-CC-ENTRY	State of Call	CTState				CTEnhState								
							'Erase CC_Entry'								
<b>7.23.3.1.30</b>	Request for: MAP-RESET	State of Call	CTState				CTEnhState								
							'HLR Reset'								
<b>7.23.3.1.31</b>	Request for: MAP-NOTE-MM-EVENT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X		X						
		CALLED					X		X						
		Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							
					30										
		State of Call	CTState				CTEnhState								
							'Note MM Event'								
<b>7.23.3.1.32</b>	Request for: MAP-PROCESS- UNSTRUCTUREDSS- REQUEST MAP-UNSTRUC- TUREDSS-REQUEST MAP-UNSTRUCTURED- SS-NOTIFY	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLED	X				X	X							
		State of Call	CTState				CTEnhState								
							'Process Unstructured SS Request " "Unstructured SS Request " "Unstructured SS Notify "								
<b>7.23.3.1.33</b>	Request for: Resume CallHandling	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X		X						
<b>7.23.3.1.34</b>	Request for: MAP-CHECK-IMEI	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X							
		IMEI	X				X	X							
		CALLING	X				X	X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u							

				30		
		State of Call	CTState		CTEnhState	
			'checkIMEI'			

a. This is a special case and CT has been explicitly changed to check for FIRSTUSEBACK on PCOTIDSSN. The FIRSTUSEBACK is required only if MAP MO Forward Short Message is over TCAP Continue.

#### 7.23.3.2 Operation Responses

## 7.23.4 Context Assistance

If the fields are subfields of Ext-CallBarInfo (including mapSScode\_b, ssStatus\_b, extTeleService\_b, and extBearerService\_b), the context value should be set as the following.

Otherwise, no context value should be set.

Context Assistance		
<b>7.23.4.1</b>	mapSScode_b ssStatus_b extTeleService_b extBearerService_b	(1) If the fields are subfields of Ext-CallBarInfo, the context mask K_GG59_CTXTMASK_MAP_PARAMS (0x00ff0000) bits should be to: K_GG59_MAP_EXTCALLBARINFO (0x00010000)
<b>7.23.4.2</b>	mapSScode_b ssStatus_b extTeleService_b extBearerService_b	(1) If the fields are subfields of Ext-CallBarInfo, the context mask K_GG59_CTXTMASK_MAP_ECBI_NUM (0x0000ff00) bits should be used to indicate the sequence number of Ext-CallBarInfo. (2) It should start from 1 and increase by 1 for next parameter Ext-CallBarInfo. (3) Its valid range is 1..30. 0 means "not set".
<b>7.23.4.3</b>	ssStatus_b extTeleService_b extBearerService_b	(1) If the fields are subfields of Ext-CallBarInfo ->Ext-CallBarringFeature, the context mask K_GG59_CTXTMASK_MAP_ECBF_NUM (0x000000ff) bits should be used to indicate the sequence number of Ext-CallBarringFeature under same Ext-CallBarInfo. (2) It should start from 1 for new parameter Ext-CallBarInfo and increase by 1 for next parameter Ext-CallBarringFeature. (3) Its valid range is 1..32. 0 means "not set".

## 7.24 E911

This section describes the breakout requirements for E911 (Automatic Location Identification Protocol based on Enhanced Wireless 9-1-1). The section is based upon the existing IS41 SS requirements [7.10] and therefore only details breakout requirements which are new or changed in relation to the existing IS41 SS requirements.

### 7.24.1 Fields

MSU Breakout Fields				
<b>7.24.1.1</b>	Field	<b>removed</b>		
<b>7.24.1.2</b>	Field	<b>TMSI.telno</b>		<b>TIA/EIA/IS-735 6.5.2.bl</b>
Definition	The TMSI Code defines a 32-bit MS temporary identification in one TMSI Zone.			
	Implementation Info: Extracted from the TMSI Code of the Network TMSI parameter of any operation carrying it.			

### 7.24.2 Capture Buffer Indices

These settings are in addition to those defined for IS41 SS

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.24.2.1</b>	Messages which contain a MDN	ocn.telno	
<b>7.24.2.2</b>	Messages which contain an TMSI	TMSI.telno	

### 7.24.3 Call Trace Assistance

Call Trace Assistance										
7.24.3.1	ORREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		CALLING	X				X		X	
		MSN	X				X		X	
		MIN	X				X		X	
		IMSI	X				X		X	
		TMSI	X				X		X	
		PCOTIDSSN	X							
		State of Call	CTState				CTEnhState			
							"OriginationRequest"			
7.24.3.2	FLASHREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		MSN	X				X			
		MIN	X				X			
		IMSI	X				X			
		PCOTIDSSN	X							
		State of Call	CTState				CTEnhState			
							"FlashRequest"			

Call Trace Assistance										
7.24.3.3	ISPOSREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		CALLING	X				X	X	X	
		CALLED	X				X	X	X	
		MSN	X				X	X	X	
		IMSI	X				X	X	X	
		MIN	X				X	X	X	
		TMSI	X				X	X		
		PCOTIDSSN	X							
		State of Call	CTState				CTEnhState			
7.24.3.4	ISPOSREQFWD (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		MSN	X				X	X	X	
		IMSI	X				X	X	X	
		MIN	X				X	X	X	
		PCOTIDSSN	X							
		State of Call	CTState				CTEnhState			
							"InterSystemPositionRequestForward"			

Call Trace Assistance										
7.24.3.5	CTRPT (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			MSN	X			X	X	X	
		IMSI	X				X	X	X	
			MIN	X			X	X	X	
		TMSI	X				X	X	X	
			PCOTIDSSN	X						
		State of Call		CTState			CTEnhState			
							"Call Termination Report"			
7.24.3.6	GPOSREQ(in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			MSN	X			X	X	X	
		MIN	X				X	X	X	
			IMSI	X			X	X	X	
		TMSI	X				X	X	X	
			PCOTIDSSN	X						
		State of Call		CTState			CTEnhState			
							"GeoPositionRequest"			
7.24.3.7	GPOSDIR (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			MSN	X			X	X	X	
		IMSI	X				X	X	X	
			MIN	X			X	X	X	
		TMSI	X				X	X	X	
			PCOTIDSSN	X						
		State of Call		CTState			CTEnhState			
							"GeoPositionDirective"			

Call Trace Assistance											
7.24.3.8	SMDPP (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			MSN	X				X	X	X	
			MIN	X				X	X	X	
			IMSI	X				X	X	X	
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
7.24.3.9	SMDFWD (in addition to those requirements of an IS41 Query)	CTFlags Critter	n/a					"SMSDeliveryPointToPoint"			
			MSN	X				X	X		
			MIN	X				X	X		
			IMSI	X				X	X		
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
				n/a					"SMSDeliveryForward"		
7.24.3.10	SMDBACK (in addition to those requirements of an IS41 Query)	CTFlags Critter	n/a					"SMSDeliveryBackward"			
			MSN	X				X	X	X	
			MIN	X				X	X	X	
			IMSI	X				X	X	X	
			PCOTIDSSN	X							
		State of Call		CTState				CTEnhState			
				n/a					"SMSDeliveryBackward"		

Call Trace Assistance												
<b>7.24.3.11</b>	orreq falshreq isposreq isposreqfwd ctrpt gposreq gposdir smdpp smdfwd smdback lpreq pen	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		DPCRTIDSSN	(as per the IS41 Response package)									
		State of Call	CTState				CTEnhState					
<b>7.24.3.12</b>	LPREQ (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CALLING	X				X	X	X			
		State of Call	CTState				CTEnhState					
									"LCS Parameter Request "			
<b>7.24.3.13</b>	PEN (in addition to those requirements of an IS41 Query)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		IMSI	X				X	X	X			
		MIN	X				X	X	X			
		State of Call	CTState				CTEnhState					
									"Position Event Notification "			

## 7.25 GAIT (Obsolete)

GAIT protocol was discontinued in 2008 and superseded by standard protocols 3GPP.MAP and TIA-EIA.V1.IS41. GAIT specific Breakout requirements were merge back to standard protocols.

See also 7.23 3GPP MAP and 7.10 IS41 SS.

The requirement for GAIT was obsolete and removed in version 05.30.  
The latest version requirement for GAIT can be viewed in version 5.21.

IS41 operations supported by GAIT:

BulkDeregistration

.....

UnreliableRoamerDataDirective

GSM operations supported by GAIT:

UpdateLocation

.....

ReadyforShortMessage

## 7.26 Ericsson MAP

This section describes the breakout requirements for Ericsson MAP. The section is based upon the existing GSM MAP requirements [7.14] and therefore only details breakout requirements which are new or changed in relation to the existing GSM MAP requirements.

### 7.26.1 Fields

ISUP MSU Breakout Fields					
7.26.1.1 (1)	Field	callingParty.natOfAddr_b	Spec Ref		
(2)	Definition	The Nature of Address Indicator subfield of the Calling Party Number parameter field.			
	Details	n/a			
(2)	Field	callingParty.numberingPlan_b	Spec Ref		
(3)	Definition	The Numbering Plan Indicator subfield from the Calling Party Number parameter.			
	Details	n/a			
(3)	Field	callingParty.telno	Spec Ref		
	Definition	The Address Signal subfield of the Calling Party Number parameter.			
	Details	<p>Implementation Info:</p> <p>Extract calling party number for extension parameter in Ericsson MAP Send Routing Information.</p>			

### 7.26.2 Capture Buffer Indices

No new Capture Buffer Indices are required.

### **7.26.3 Call Trace Assistance**

This defines requirements additional to or different from the GSM MAP requirement [7.14].

### 7.26.3.1 Operation Request

Call Trace Assistance												
7.26.3.1.1	Request for: provideSubscriberLocation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUS E	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATC H	
		IMSI	X					X				
		State of Call	CTState				CTEnhState					
							'Provide Subscriber Location'					
7.26.3.1.2	Request for: performLocation	State of Call	CTState				CTEnhState					
							'Perform Location'					
7.26.3.1.3	Request for: RoutingInformationRequest	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUS E	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATC H	
		IMSI	X				X	X		X		
		TMSI					X					
		CALLED	X					X	X	X		
		State of Call	CTState				CTEnhState					
							'Routing Information Request'					
7.26.3.1.4	Request for: sendRoutingInformation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUS E	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATC H	
		CALLING						X	X			
		State of Call	CTState				CTEnhState					
							n/a					

### 7.26.3.2 Operation Responses

Call Trace Assistance														
7.26.3.2.1	Response for: RoutingInformationRequest	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUS E	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
		IMSI	X					X		X				
		TX	X					X						
		DPCRTIDSS N		X	X	X								
		Timeouts	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
					5				5000msec					
		Cross Trig- gers	Local			Global								
						X								
		State of Call	CTState			CTEnhState			'Routing Information Request'					

### 7.26.3.3 Generic Ericsson MAP Package Flags

No new generic package handling is required.

**Table 4: Ericsson MAP User or Provider Errors**

Local Value	Message	Local Value	Message
251	Positioning Not Allowed	253	Position Failure

## 7.27 Ericsson INAP

This defines the requirements additional to the basic TCAP requirements(see 7.1). The following fields should be extracted from all messages which contain them, unless stated otherwise. References are to [2.3.106]and [2.3.107].

### 7.27.1 Fields

MSU Breakout Fields				
7.27.1.1 (1)	Field	<b>calledParty.telno</b>		2.3.106 Section 4.2.9, p37
	Definition	The Address Signal field of the Called Party Number field		
	Details	Implementation Info: The Digits of the Called Party Number parameter should be copied into calledParty.telno in the same form as stored in the messages for the following message types: [A] Event [B] Handover [C] Provide Instructions		
(2)	Field	<b>calledParty.natOfAddr_b</b>		2.3.106 Section 4.2.9, p37
	Definition	The nature of address field of the Called Party Number field.		
	Details	Implementation Info: The Nature of address value of the Called Party Number parameter should be copied into calledParty.natOfAddr_b in the same form as stored in the messages for all messages specified in (1).		
(3)	Field	<b>calledParty.numberingPlan_b</b>		2.3.106 Section 4.2.9, p37
	Definition	The numbering plan field of the Called Party Number field.		
	Details	Implementation Info: The numbering plan value of the Called Party Number parameter should be copied into calledParty.numberingPlan_b in the same form as stored in the messages for all messages specified in (1).		

<b>7.27.1.2 (1)</b>	Field	<b>callingParty.telno</b>		2.3.106 Section 4.2.12, p39
	Definition	The Address Signal field of the Calling Party Number field		
	Details	<p>Implementation Info: The Digits of the Calling Party Number parameter should be copied into callingParty.telno in the same form as stored in the messages for the following message types:</p> <ul style="list-style-type: none"> <li>[A] Create</li> <li>[B] Handover</li> <li>[C] Provide Instructions</li> <li>[D] Retrieve(from parameter NumberType1)</li> </ul>		
<b>(2)</b>	Field	<b>callingParty.natOfAddr_b</b>		2.3.106 Section 4.2.12, p39
	Definition	The nature of address field of the Calling Party Number field.		
	Details	<p>Implementation Info: The Nature of address value of the Calling Party Number parameter should be copied into callingParty.natOfAddr_b in the same form as stored in the messages for all messages specified in (1).</p>		
<b>(3)</b>	Field	<b>callingParty.numberingPlan_b</b>		2.3.106 Section 4.2.12, p39
	Definition	The numbering plan field of the Calling Party Number field.		
	Details	<p>Implementation Info: The numbering plan value of the Calling Party Number parameter should be copied into CallingParty.numberingPlan_b in the same form as stored in the messages for all messages specified in (1).</p>		
<b>7.27.1.3 (1)</b>	Field	<b>ocn.telno</b>		2.3.106 Section 4.2.72, p82
	Definition	The Address Signal field of the Original Called Number. This is the DN of the first redirecting party.		
	Details	<p>Implementation Info: The Digits of the Original Called Number parameter should be copied into ocn.telno in the same form as stored in the messages for the following message types:</p> <ul style="list-style-type: none"> <li>[A] Create</li> <li>[B] Handover</li> <li>[C] Provide Instructions</li> </ul>		
<b>(2)</b>	Field	<b>ocn.natOfAddr_b</b>		See 7.27.1.3(1).
	Definition	The nature of address subfield of the Original Called Number.		
	Details	<p>Implementation Info: See 7.27.1.3(1).</p>		
<b>(3)</b>	Field	<b>ocn.numberingPlan_b</b>		See 7.27.1.3(1).
	Definition	The numbering plan subfield of the Original Called Number.		
	Details	<p>Implementation Info: See 7.27.1.3(1).</p>		

<b>7.27.1.4 (1)</b>	Field	<b>redirectingNum.telno</b>		2.3.106 Section 4.2.76, p84	
	Definition	The Address Signal field of the Redirecting Number.			
	Details	<p>Implementation Info:</p> <p>The Digits of the Redirecting Number parameter should be copied into redirectingNum.telno in the same form as stored in the messages for the following message types:</p> <ul style="list-style-type: none"> <li>[A] Create</li> <li>[B] Handover</li> <li>[C] Provide Instructions</li> </ul>			
<b>(2)</b>	Field	<b>redirectingNum.natOfAddr_b</b>		See 7.27.1.4(1).	
	Definition	The nature of address subfield of the Redirecting Number.			
	Details	<p>Implementation Info:</p> <p>See 7.27.1.4(1).</p>			
<b>(3)</b>	Field	<b>redirectingNum.numberingPlan_b</b>		See 7.27.1.4(1).	
	Definition	The numbering plan subfield of the Redirecting Number.			
	Details	<p>Implementation Info:</p> <p>See 7.27.1.4(1).</p>			
<b>7.27.1.5 (1)</b>	Field	<b>chargeNum.telno</b>		2.3.106 Section 4.2.17, p44	
	Definition	The Digits of the Charge Number 1 parameter			
	Details	<p>Implementation Info:</p> <p>The Digits of the Charge Number 1 parameter should be copied into chargeNum.telno in the same form as stored in the message for the 'Charging Information' message.</p>			
<b>(2)</b>	Field	<b>chargeNum.natOfAddr_b</b>		2.3.106 Section 4.2.17, p44	
	Definition	The nature of address field of the Charge Number 1 parameter.			
	Details	<p>Implementation Info:</p> <p>The Nature of address value of the Charge Number 1 parameter should be copied into chargeNum.natOfAddr_b in the same form as stored in the messages for the 'Charging Information' message.</p>			
<b>(3)</b>	Field	<b>chargeNum.numberingPlan_b</b>		2.3.106 Section 4.2.17, p44	
	Definition	The numbering plan of the Charge Number 1 field.			
	Details	<p>Implementation Info:</p> <p>The numbering plan value of the Charge Number 1 parameter should be copied into chargeNum.numberingPlan_b in the same form as stored in the message for the 'Charging Information' message.</p>			
<b>7.27.1.6</b>	Field	<b>serviceKey_digits</b>		2.3.106	
	Definition	Information for selection of service logic within the network.			
	Details	<p>Implementation Info:</p> <p>Digits extracted from the Address Signal subfield of the serviceKey parameter of Handover</p>			

<b>7.27.1.7 (1)</b>	Field	<b>TMServiceID_b</b>		n/a
	Definition	See 7.1.1.9 (2).		
	Details	Implementation Info: This should be set to K_GG59_INAPSERVNUM		
	(2)	Field	<b>TMServiceAssFailCode_u</b>	2.3.106
		Definition	See 7.1.1.9 (1).	
		Details	Implementation Info: If the message contains a local error code, this should be set to K_GG59_BASETIINAP_ERRORCODE + tcapErrorCode_b (see 7.1.1.9 (1)).	
<b>7.27.1.8</b>	Field	<b>appLevel_b</b>		n/a
	Definition	See 7.2.1.10.		
	Details	Implementation Info: This should be set to K_GG59_USTCAP_INFO		
<b>7.27.1.9 (1)</b>	Field	<b>locationNumAddress.telno</b>	Spec Ref	2.3.106 Section 4.2.61, p75
	Definition	The Address Signal subfield of the Location Number parameter.		
	Details	n/a		
	(2)	Field	<b>locationNumAddress.natOfAddr_b</b>	Spec Ref
		Definition	The nature of address subfield of the Location Number parameter.	
		Details	n/a	
	(3)	Field	<b>locationNumAddress.numberingPlan_b</b>	Spec Ref
		Definition	The numbering plan subfield of the Location Number parameter.	
		Details	n/a	

<b>7.27.1.10</b>	(1)	Field	<b>addCallingPartyAddress.telno</b>	Spec Ref	2.3.106 Section 4.2.47, p64				
	(2)	Definition	The Address Signal subfield of the Additional Calling Party parameter.						
		Details	Implementation Info: This field should be extracted from Generic Numbers when the "Number Qualifier Indicator" is "Additional calling party number (6)"						
		Field	<b>addCallingPartyAddress.natOfAddr_b</b>	Spec Ref	2.3.106 Section 4.2.47, p64				
	(3)	Definition	The nature of address subfield of the Additional Calling Party parameter.						
		Details	Implementation Info: See 7.27.1.10 (1)						
		Field	<b>addCallingPartyAddress.numberingPlan_b</b>	Spec Ref	2.3.106 Section 4.2.47, p64				
		Definition	The numbering plan subfield of the Additional Calling Party parameter.						
		Details	Implementation Info: See 7.27.1.10 (1)						
<b>7.27.1.11</b>	(1)	Field	<b>txNum[0].telno</b>	Spec Ref	2.3.106 Section 4.2.34, p53				
	(2)	Definition	The Address Signals subfield from the Destination Number parameter.						
		Details	Implementation Info: This field should be extracted from any message that contains Destination Number.						
		Field	<b>txNum[0].natOfAddr_b</b>	Spec Ref	2.3.106 Section 4.2.34, p53				
	(3)	Definition	The nature of address subfield of the Destination Number parameter.						
		Details	Implementation Info: See 7.27.1.11 (1)						
		Field	<b>txNum[0].numberingPlan_b</b>	Spec Ref	2.3.106 Section 4.2.34, p53				
		Definition	The numbering plan subfield of the Destination Number parameter.						
		Details	Implementation Info: See 7.27.1.11 (1)						
<b>7.27.1.12</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	2.3.106 Section 4.2.11, P38					
	Definition	The Calling Party Category parameter.							
	Details	n/a							
<b>7.27.1.13</b>	Field	<b>redirectInfo_ba</b>	Spec Ref	2.3.106 Section 4.2.78, p84					
	Definition	The Redirection Information parameter. This parameter contains the Original reason and Reason							
	Details	Implementation Info: Redirection Information is a 1-octet parameter in Ericsson INAP. This should be extracted into the first octet of the 2-octet array in the same format as which it is stored in the message							

<b>7.27.1.14</b>	Field	<b>fwdCallInds_ba</b>	Spec Ref	2.3.106 Section 4.2.42, p59
	Definition	The Forward Call Indicators Parameter. See also section 6.4.1.6.		
	Details	n/a		
<b>7.27.1.15</b>	Field	<b>bckwdCallIndctr_ba</b>	Spec Ref	2.3.106 Section 4.2.5, p34
	Definition	The Backward Call Indicators Parameter. See also section 6.4.1.7.		
	Details	n/a		
<b>7.27.1.16</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	2.3.106 Section 4.2.15, p42
	Definition	The value of the first two octets of the Cause Indicators Parameter. See also section 6.4.1.20		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.27.1.17</b>	(1)	Field	<b>genericChargingDigits.telno</b>	Spec Ref
		Definition	The Address Signal subfield of the Generic Charging Digits (genericChargingDigits -> Gener- icDigitsSet -> GenericDigits).	
		Details	Implementation Info: The Digits should be extracted from Furnish Charging Information message. The field is implemented as multiple-value s_gg61_addr address. All the instances of the field should be extracted.	
	(2)	Field	<b>genericChargingDi gits. natOfAddr_b</b>	Spec Ref
		Definition	The type of digits subfield of the Generic Charging Digits.	
		Details	Implementation Info: See <a href="#">7.27.1.17 (1)</a>	
	(3)	Field	<b>genericChargingDi gits. encodingSchema_b</b>	Spec Ref
		Definition	The encoding scheme subfield of the Generic Charging Digits.	
		Details	Implementation Info: See <a href="#">7.27.1.17 (1)</a>	

<b>7.27.1.18</b>	<b>(1)</b>	Field	<b>genericAddress.telno</b>	Spec Ref	2.3.106 Section 4.2.45, p61	
		Definition	The Address Signal subfield of the Generic Charging Numbers.			
		Details	<p>Implementation Info:            This Digits should be extracted from Furnish Charging Information message.            The field was originally defined as static s_gg61_addr address. It is changed from static to multiple-value (dynamic) field according to CDR requests. All the instances of the field should be extracted.</p>			
<b>(2)</b>	Field	<b>genericTypeOfAddress_b</b>	Spec Ref	2.3.106 Section 4.2.45, p61		
	Definition	The Type of Address subfield of the Generic Address parameter. For Ericsson INAP, the parameter is The Number Qualifier Indicator subfield of the Generic Charging Numbers.				
	Details	<p>Implementation Info:            (1) This field should be extracted from Furnish Charging Information message.            (2) The field was originally defined as single-value int32. It is changed from to multiple-value int32 field according to DR requests. All the instances of the field should be extracted.            (3) The 2 fields genericAddress and genericTypeOfAddress_b are always present at the same time. <u>Protocol Breakouts should ensure the 2 multi-value fields to be extracted at the same time</u>.</p>				
<b>(3)</b>	Field	<b>genericAddress.natOfAddr_h</b>	Spec Ref	2.3.106 Section 4.2.45, p61		
	Definition	The nature of address subfield of the the Generic Charging Numbers.				
	Details	<p>Implementation Info: See  <u>7.27.1.18 (1)</u></p>				
<b>(4)</b>	Field	<b>genericAddress.numberingPl</b>	Spec Ref	2.3.106 Section 4.2.45, p61		
	Definition	The numbering plan subfield of the Generic Charging Numbers.				
	Details	<p>Implementation Info: See  <u>7.27.1.18 (1)</u></p>				

## 7.27.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7535_hashAddSCCPAddr
<b>7.27.2.1</b>	Query packages (with & without permission)	n/a	See Section 7.1.2.1 (Generic TCAP)
<b>7.27.2.2</b>	Conversation Packages	n/a	See Section 7.1.2.2 (Generic TCAP)
<b>7.27.2.3</b>	Response and Abort Packages	n/a	See Section 7.1.2.3 (Generic TCAP)

### 7.27.3 Call Trace assistance

Call Trace Assistance																	
7.27.3.1	Open Special Function	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		PCOTIDSSN	X														
		State of Call	CTState				CTEnhState										
			n/a				"Open Special Function"										
7.27.3.2	Provide Instruction	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		CALLING	X				X	X									
		CALLED	X				X	X									
		OCN	X				X	X									
		RN	X				X	X									
		PCOTIDSSN	As per generic requirements for the package type + FIRSTUSEBACK														
		DPCRTIDSSN	As per generic requirements for the package type														
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u									
			n/a		0		n/a	5000(msec)									
		State of Call	CTState				CTEnhState										
							"Provide Instruction"										
7.27.3.3	Call Control Monitor Activate Resource Split Join	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		DPCRTIDSSN	As per generic requirements for the package type														
		State of Call	CTState				CTEnhState										
							'Call Control' 'Monitor' 'Activate Resource' 'Split' 'Join'										

Call Trace Assistance												
<b>7.27.3.4</b>	Create	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
			X				X	X				
			OCN	X			X	X				
			RN	X			X	X				
			PCOTIDSSN	As per generic requirements for the package type								
			DPCRTIDSSN	As per generic requirements for the package type								
			State of Call	CTState				CTEnhState				
				n/a				"Create"				
			7.27.3.5									
			Charging Information	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
<b>7.27.3.5</b>	Charging Information	CTFlags Critter	CHARGING	X				X				
			PCOTIDSSN	As per generic requirements for the package type								
			DPCRTIDSSN	As per generic requirements for the package type								
			State of Call	CTState				CTEnhState				
								"Charging Information"				
			7.27.3.6									
			Event	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			CALLED	X				X	X			
			PCOTIDSSN	As per generic requirements for the package type								
			DPCRTIDSSN	As per generic requirements for the package type								
<b>7.27.3.7</b>	Retrieve	CTFlags Critter	State of Call	CTState				CTEnhState				
								"Event"				
			CALLING	X				X	X			
			PCOTIDSSN	As per generic requirements for the package type								
			DPCRTIDSSN	As per generic requirements for the package type								
			State of Call	CTState				CTEnhState				
								"Retrieve"				

Call Trace Assistance																		
<b>7.27.3.8</b>	Transfer Control Congestion Control Handover SCF Reset Indication SSF Reset Indication	CTFlags Critter PCOTIDSSN DPCRTIDSSN Time Outs	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH								
			As per generic requirements for the package type															
			As per generic requirements for the package type															
			CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u									
			n/a		4000(msec)		n/a		n/a									
			State of Call	CTState			CTEnhState											
							'Transfer Control' 'Congestion Control' 'Handover' SCF Reset Indication' SSF Reset Indication'											
			Activity Test	State of Call	CTState			CTEnhState										
								'Activity Test'										
			Backward Information	State of Call	CTState			CTEnhState										
								'Backward Information'										
<b>7.27.3.11</b>	Free		State of Call	CTState			CTEnhState											
							'Free'											
<b>7.27.3.12</b>	Generate		State of Call	CTState			CTEnhState											
							'Generate'											
<b>7.27.3.13</b>	Release Resource		State of Call	CTState			CTEnhState											
							'Release Resource'											
<b>7.27.3.14</b>	Reset Timer		State of Call	CTState			CTEnhState											
							'Reset Timer'											
<b>7.27.3.15</b>	Update		State of Call	CTState			CTEnhState											
							'Update'											

## 7.27.4 Generic INAP Package Flags

Same as section 7.7.4

## 7.28 WIN

This defines the requirements additional to those defined for IS41 SS (see 7.10).

### 7.28.1 Fields

No new breakout fields are required.

### 7.28.2 Capture Buffer Indices

As for IS41 SS (see 7.10.2).

### 7.28.3 Call Trace Assistance

Call Trace Assistance				
7.28.3.1	AnalyzedInformation operation	State of Call	CTState	CTEnhState
				`Analyzed Information'
7.28.3.2	BulkDisconnection operation	State of Call	CTState	CTEnhState
				`Bulk Disconnection'
7.28.3.3	CallControlDirective operation	State of Call	CTState	CTEnhState
				`Call Control Directive'
7.28.3.4	CallRecoveryReport operation	State of Call	CTState	CTEnhState
				`Call Recovery Report'
7.28.3.5	ConnectionFailureReport operation	State of Call	CTState	CTEnhState
				`Connection Failure Report'
7.28.3.6	ConnectResource operation	State of Call	CTState	CTEnhState
				`Connect Resource'
7.28.3.7	DisconnectResource operation	State of Call	CTState	CTEnhState
				`Disconnect Resource'
7.28.3.8	FacilitySelectedAndAvailable operation	State of Call	CTState	CTEnhState
				`Facility Selected and Available'
7.28.3.9	InstructionRequest operation	State of Call	CTState	CTEnhState
				`Instruction Request'
7.28.3.10	Modify operation	State of Call	CTState	CTEnhState
				`Modify'

Call Trace Assistance				
<b>7.28.3.11</b>	OAnswer operation	State of Call	CTState	CTEnhState
				`O Answer'
<b>7.28.3.12</b>	ODisconnect opera-tion	State of Call	CTState	CTEnhState
				`O Disconnect'
<b>7.28.3.13</b>	ResetTimer opera-tion	State of Call	CTState	CTEnhState
				`Reset Timer'
<b>7.28.3.14</b>	Search operation	State of Call	CTState	CTEnhState
				`Search'
<b>7.28.3.15</b>	SeizeResource opera-tion	State of Call	CTState	CTEnhState
				`Seize Resource'
<b>7.28.3.16</b>	SRFDirective opera-tion	State of Call	CTState	CTEnhState
				`SRF Directive'
<b>7.28.3.17</b>	TAnswer operation	State of Call	CTState	CTEnhState
				`T Answer'
<b>7.28.3.18</b>	TBusy operation	State of Call	CTState	CTEnhState
				`T Busy'
<b>7.28.3.19</b>	TDisconnect opera-tion	State of Call	CTState	CTEnhState
				`T Disconnect'
<b>7.28.3.20</b>	TNoAnswer opera-tion	State of Call	CTState	CTEnhState
				`T No Answer'
<b>7.28.3.21</b>	UnreliableCallData opera-tion	State of Call	CTState	CTEnhState
				`Unreliable Call Data'

## 7.29 Vodafone VAP

This defines the requirements additional to the basic TCAP requirements (see 7.1). The following fields should be extracted from all messages which contain them, unless stated otherwise. References are to [2.3.111].

### 7.29.1 Fields

MSU Breakout Fields				
<b>7.29.1.1 (1)</b>	Field	<b>calledParty.telno</b>		[2.3.111] Section 5.4.2, p37 & p39
	Definition	The Digits of "mobile" and "Phonenumber" parameters		
	Details	<p>Implementation Info:            The Digits of the "mobile" parameter should be copied into calledParty.telno from any messages that contains it.            The IA5 characters of the "Phonenumber" parameter should be converted BCD digits and copied into calledParty.telno when the "Phonenumber" parameter is the first level parameter of any operations (not the sub-parameter of Pers_Spare or AssociatedNumbers).</p> <p>NOTE:            The IA5 characters should be converted to standard compact telno format e.g. "1", "2", "3", "4", "5" =&gt;0x21, 0x43, 0x05. Additionally, the characters [aAbBcCdDeE] shall be mapped to their hexadecimal equivalent, e.g., "1", "a", "2" =&gt; 0xa1, 0x02. Any values outwith this range should be mapped to 0x0f e.g. "1", "G", "2" =&gt; 0xf1, 0x02.</p>		
<b>(2)</b>	Field	<b>calledParty.natOfAddr_b</b>		[2.3.111] Section 5.4.2, p39
	Definition	The Nature of Address Indicator.		
	Details	<p>Implementation Info:            The Type of Number value of the parameters for all messages specified in (1).</p>		
<b>(3)</b>	Field	<b>calledParty.numberingPlan_b</b>		[2.3.111] Section 5.4.2, p39
	Definition	The Numbering Plan Indicator.		
	Details	<p>Implementation Info:            The Numbering Plan Indicator of the parameters for all messages specified in (1).</p>		

### 7.29.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.29.2.1</b>	TC-INVOKE Packages	n/a	See Section 7.1.2.1 (Generic TCAP)

Capture Buffer Indices			
<b>7.29.2.2</b>	TC-RESULT, TC-REJECT, TC-CANCEL, TC-ERROR Packages	n/a	See Section 7.1.2.2 (Generic TCAP)
<b>7.29.2.3</b>	VAP Message containing mobile or Phonenumber	calledParty.telno	n/a

## 7.29.3 Call Trace assistance

Call Trace Assistance														
<b>7.29.3.1</b>	All packages	Cross Triggers	Local				Global							
							X							
<b>7.29.3.2</b>	All TC-INVOKE packages apart from those carrying "EnquireOnMailbox"	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
		PCOTIDSSN	X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		30		n/a		n/a					
<b>7.29.3.3</b>	All TC-RESULT, TC-REJECT, TC-CANCEL, TC-ERROR Packages apart from those carrying "EnquireOnMailbox-Ack"	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCRTIDSSN		X		X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			2[K_GG59_DPCRTIDS SN]		5		n/a		n/a					
<b>7.29.3.4</b>	ChangeRTNR	State of Call	CTState				CTEnhState							
							'ChangeRTNR'							
<b>7.29.3.5</b>	ChangeRTNRAck	State of Call	CTState				CTEnhState							
							'ChangeRTNRAck'							
<b>7.29.3.6</b>	DePersonaliseMailbox	State of Call	CTState				CTEnhState							
							'DePersonaliseMailbox'							
<b>7.29.3.7</b>	DePersonaliseMailboxAck	State of Call	CTState				CTEnhState							
							'DePersonaliseMailboxAck'							

Call Trace Assistance											
<b>7.29.3.8</b>	EnquireOnMailbox	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCRTIDSSN	X								
		State of Call	CTState				CTEnhStat				
							'EnquireOnMailbox'				
<b>7.29.3.9</b>	EnquireOnMailbox- Ack	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCRTIDSSN	X								
		State of Call	CTState				CTEnhStat				
							'EnquireOnMailboxAck'				
<b>7.29.3.10</b>	InformAlertResult	State of Call	CTState				CTEnhState				
							'InformAlertResult'				
<b>7.29.3.11</b>	InformAlertResult- tAck	State of Call	CTState				CTEnhState				
							'InformAlertResultAck'				
<b>7.29.3.12</b>	InformMessage Re- trieved	State of Call	CTState				CTEnhState				
							'InformMessageRetrieved'				
<b>7.29.3.13</b>	InformMessage Re- trievedAck	State of Call	CTState				CTEnhState				
							'InformMessageRetrievedAck'				
<b>7.29.3.14</b>	InformMessageW ait- ing	State of Call	CTState				CTEnhState				
							'InformMessageWaiting'				
<b>7.29.3.15</b>	InformMessageW ait- ingAck	State of Call	CTState				CTEnhState				
							'InformMessageWaitingAck'				
<b>7.29.3.16</b>	InitiateAlert	State of Call	CTState				CTEnhState				
							'InitiateAlert'				
<b>7.29.3.17</b>	InitiateAlertAck	State of Call	CTState				CTEnhState				
							'InitiateAlertAck'				
<b>7.29.3.18</b>	PersonaliseMailbo x	State of Call	CTState				CTEnhState				
							'PersonaliseMailbox'				
<b>7.29.3.19</b>	PersonaliseMailbox- Ack	State of Call	CTState				CTEnhState				
							'PersonaliseMailboxAck'				
<b>7.29.3.20</b>	RemoveStutterDi al- Tone	State of Call	CTState				CTEnhState				
							'RemoveStutterDialTone'				

<b>Call Trace Assistance</b>				
<b>7.29.3.21</b>	RemoveStutterDial-ToneAck	State of Call	CTState	CTEnhState
				`RemoveStutterDialToneAck'
<b>7.29.3.22</b>	SetStutterDialTone	State of Call	CTState	CTEnhState
				`SetStutterDialTone'
<b>7.29.3.23</b>	SetStutterDialTon-eAck	State of Call	CTState	CTEnhState
				`SetStutterDialToneAck'

## 7.30 Ericsson PrePaidSystem

This section describes the breakout requirements for Ericsson PrePaid System (see 2.3.112).

Ericsson PrePaid System could be seen as an appendix to the Ericsson CS-1+ INAP. The section is based upon the existing Ericsson CS-1+ INAP requirements [7.7] and therefore only details breakout requirements which are new or changed in relation to the existing Ericsson CS-1+ INAP requirements.

### 7.30.1 Fields

MSU Breakout Fields				
7.30.1.1 (1)	Field	<b>calledParty.telno</b>		[2.3.112] Section 4.1, p15 & p31 [2.3.103] Section 2.2, p34
	Definition	The Address Signal field of the Called Party Number field		
	Details	Implementation Info: The Digits of the calledPartyNumber parameter should be copied into calledParty.telno in the same form as stored in the messages from any messages that contains it.		
(2)	Field	<b>calledParty.natOfAddr_b</b>		[2.3.112] Section 4.1, p15 & p31 [2.3.103] Section 2.2, p34
	Definition	The Nature of Address Indicator.		
(3)	Details	Implementation Info: The Type of Number value of the calledPartyNumber parameter should be copied into calledParty.natOfAddr_b in the same form as stored in the messages when the field is present for the messages specified in (1).		
	Field	<b>calledParty.numberingPlan_b</b>		[2.3.112] Section 4.1, p15 & p31 [2.3.103] Section 2.2, p34
	Definition	The Numbering Plan Indicator.		
	Details	Implementation Info: The Numbering Plan Indicator value of the calledPartyNumber parameter should be copied into calledParty.numberingPlan_b in the same form as stored in the messages when the field is present for the messages specified in (1)		

<b>7.30.1.2 (1)</b>	Field	<b>callingParty.telno</b>		[2.3.112] Section 4.1, p15 & p31 [2.3.103] Section 2.2, p34
	Definition	The Address Signal field of the CallingParty Number field		
	Details	Implementation Info: The Digits of the callingPartyNumber parameter should be copied into callingParty.telno in the same form as stored in the messages from any messages that contains it.		
<b>(2)</b>	Field	<b>callingParty.natOfAddr_b</b>		[2.3.112] Section 4.1, p15 & p31 [2.3.103] Section 2.2, p34
	Definition	The Nature of Address Indicator.		
<b>(3)</b>	Details	Implementation Info: The Type of Number value of the callingPartyNumber parameter should be copied into callingParty.natOfAddr_b in the same form as stored in the messages when the field is present for the messages specified in (1).		
	Field	<b>callingParty.numberingPlan_b</b>		[2.3.112] Section 4.1, p15 & p31 [2.3.103] Section 2.2, p34
	Definition	The Numbering Plan Indicator.		
	Details	Implementation Info: The Numbering Plan Indicator value of the callingPartyNumber parameter should be copied into callingParty.numberingPlan_b in the same form as stored in the messages when the field is present for the messages specified in (1)		

## 7.30.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>7.30.2.1</b>	Query Packages	n/a	See Section 7.1.2.1 (Generic TCAP)
<b>7.30.2.2</b>	Conversation packages	n/a	See Section 7.1.2.2 (Generic TCAP)
<b>7.30.2.3</b>	Response and Abort packages	n/a	See Section 7.1.2.3 (Generic TCAP)
<b>7.30.2.4</b>	operations containing CdPN	calledParty.telno	n/a
<b>7.30.2.5</b>	operations containing CgPN	callingParty.telno	n/a

### 7.30.3 Call Trace assistance

Call Trace Assistance													
7.30.3.1	All packages	Cross Triggers	Local				Global				X		
7.30.3.2	FIRST INTERROGATION, INTERMEDIATE INTERROGATION, FINAL REPORT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
		CALLED	X				X	X	X				
		CALLING	X				X	X	X				
		PCOTIDSSN	as per Generic Requirements for the package type										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u						
			n/a	n/a		n/a	n/a						
		Time Outs	CTState				CTEnhState						
			n/a				'First Interrogation' 'Intermediate Interrogation' 'Final Report'						
7.30.3.3	FIRST INTERROGATION RESULT, INTERMEDIATE INTERROGATION RESULT, FINAL REPORT RESULT, SETUP USSD CB RESULT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
		DPCRTIDSSN	as per Generic Requirements for the package type										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u						
			2[K_GG59_DPCRTIDS SN]	n/a		n/a	n/a						
		State of Call	CTState				CTEnhState						
			n/a				'Retrieve Result'						
7.30.3.4	SETUP USSD CB	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH			
		CALLING	X				X	X					
		CALLED	X				X	X					
		PCOTIDSSN	as per Generic Requirements for the package type										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u						
			n/a	n/a		n/a	n/a						
		Time Outs	CTState				CTEnhState						
			n/a				'Setup USSD CB'						

## 7.31 China INAP

This section describes the breakout requirements for China INAP. The section is based upon the existing INAP requirements (see 7.7) and therefore only details breakout requirements which are new in relation to the existing INAP. References are to [2.3.56], [2.3.113] and [2.3.114].

### 7.31.1 Fields

MSU Breakout Fields							
7.31.1.1	Field	Spec Ref	China INAP Appendix I				
	Definition	This is the Charged Party Identity Indicator from the aChBillingChargingCharacteristics parameter					
	Details	<p>Implementation Info: POPULATE FOR CHINA INAP ONLY            This is always initially set to 2 in all messages containing the aCHBillingChargingCharacteristics parameter even if the Charged Party Identity Indicator is not transmitted in the message.            This allows the DEFAULT value of 2 to be broken out when the field is not transmitted in the message.</p> <p>The following mappings will determine the fields value:</p> <ul style="list-style-type: none"> <li>01 Calling Party -&gt; K_GG59_INAPCHARGE PARTY IS CALLING</li> <li>02 dialed Number -&gt; K_GG59_INAPCHARGE PARTY IS CALLED</li> <li>03 Translated Party -&gt; K_GG59_INAPCHARGE PARTY IS TRANSLATED</li> <li>127 Specific Charged Party Number -&gt; K_GG59_INAPCHARGE PARTY IS CHARGENUM</li> <li>All other values -&gt; K_GG59_INAPCHARGE PARTY IS UNDEFINED</li> </ul> <p>K_GG59_INAPCHARGE PARTY IS TRANSLATED is not defined in gg59 and will need to be locally defined in the breakout with a value of 0x03</p>					
7.31.1.2	Field	Spec Ref	China INAP Appendix II				
	Definition	Nature of Address of Billed Number field contained within Specific Charge Party Numer					
	Details	<p>Implementation Info: POPULATE FOR CHINA INAP ONLY            Extract the 7 bit Nature of Address of Billed Number field. The gg59 value will be the value in the message + 1. This ensures that subscriber number, national and international map to the ANSI values. A value of zero implies the field is not present.</p> <p>e.g. Value 3 International Number in the message will be mapped to 4 in the breakout structure</p>					

<b>7.31.1.3</b>	Field	<b>chargeNum.telno</b>	Spec Ref	China INAP Appendix II ITU Q.1228, p.30 and Section 17.38 CAMEL 29.078, 11.14
	Definition	Billed Number field contained within Specific Charge Party Number [China] Charge Number field contained within Connect [ITU and CAMEL]		
	Details	Implementation Info: CHINA INAP: Digits extracted from the billed number subfield. All filler digits must be removed. ITU Q.1228 and CAMEL: The Digits of the ChargeNumber parameter should be copied into chargeNum.telno in the same form as stored in the message except ChargeNumber in Establish Temporary Connection [CAMEL] which should <b>not</b> be broken out.		
<b>7.31.1.4</b>	Field	<b>currentCredit_m</b>	Spec Ref	China INAP Appendix I
	Definition	costGranted field from aChBillingChargingCharacteristics.callSupervision.supervisionMethod		
	Details	Implementation Info: POPULATE FOR CHINA INAP ONLY This field shall be extracted into gg59 as a binary number in the range (0 to $2^{32}-1$ ). The specification defines this as a 4 octet ASN.1 Integer but as this is ASN.1, in practice the size can vary up to 4 octets. The breakout must check the size of the field before extracting the value.		
<b>7.31.1.5</b>	Field	<b>callCost_m</b>	Spec Ref	Call Result : China INAP Appendix I
	Definition	CallCost from the ApplyChargingReport		
	Details	Implementation Info: POPULATE FOR CHINA INAP ONLY This field shall be extracted into gg59 as a binary number in the range (0 to $2^{31}-1$ ). The specification defines this as a 4 octet ASN.1 Integer but as this is ASN.1, in practice the size can vary up to 4 octets. The breakout must check the size of the field before extracting the value.		
<b>7.31.1.6</b>	Field	<b>achChargingBilling_pb</b>	Spec Ref	China INAP Appendix I
	Definition	achChargingBilling pointer		
	Details	Implementation Info: Pointer to the start of the information contained within achBillingChargingCharacteristics. Points to the octet immediately after the Length		
<b>7.31.1.7</b>	Field	<b>invokeID_ba</b>	Spec Ref	China INAP Appendix I
	Definition	This is a list of TCAP component invoke ID in the package.		
	Details	Implementation Info:  This field is implemented as an array. This value should be extracted for the China INAP messages. The actual number of the array equals to the lesser of numComponents_b and K_GG59_MAXCOMPONENTS.		

<b>7.31.1.8</b>	Field	<b>calledParty.telno</b>	Spec Ref	2.3.56 Appendix III 2.3.114 Section 2.4.1-(14)	
	Definition	The Address Signal field of the Called Party Number field			
	Details	<p>Implementation Info:</p> <p>The Digits of the Digits Response parameter from the Response of Prompt and Collect User Info should be copied into calledParty.telno if the digits do not contain a '*' (0x0B) character and if the following characteristics apply:</p> <ol style="list-style-type: none"> <li>1. starts with 0</li> <li>2. <math>\geq 10</math> digits</li> </ol> <p>Note: If the last digit is 0x0C ('#'), it should be removed, and it should not be counted in the number of digits.</p>			
<b>7.31.1.9</b>	Field	<b>chargeNum.telno</b>	Spec Ref	2.3.56 Appendix III 2.3.113 Section 3.2	
	Definition	The Address Signal field of the Charge Number field.			
	Details	<p>Implementation Info:</p> <p>The Digits of the Digits Response parameter from the Response of Prompt and Collect User Info should be copied into chargeNum.telno if the digits do not contain a '*' (0x0B) character and if the following characteristics apply:</p> <ol style="list-style-type: none"> <li>1. starts with a non-zero digit, ie. 1-9</li> <li>2. <math>\geq 12</math> digits</li> </ol> <p>Note: if the last digit is 0x0C ('#'), it should be removed, and it should not be counted in the number of digits.</p>			

## 7.31.2 Capture Buffer Indices

The Capture Buffer Indices are the same as for Generic INAP. See section 7.7.2.

### 7.31.3 Call Trace assistance

<b>7.31.3.1</b>	Apply Charging with SpecificChargedPartyNumber Nature of Address= Account Card A/B/C/D. (CHINA INAP only)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CHARGING	X				X					
		PCOTIDSSN	Generic requirements for the package type+FIRSTUSEBACK									
		DPCRTIDSSN	Generic requirements for the package type+FIRSTUSEBACK									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
				0			5000					
		Cross Triggers	Local				Global					
							X					
		State of Call	CTState				CTEnhState					
							'Apply Charing'					
<b>7.31.3.2</b>	Response for Prompt and Collect User Info	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		CHARGING					X					
		CALLED	X				X					
		PCOTIDSSN	as per Generic Requirements for the package type + FIRSTUSEBACK									
		DPCRTIDSSN	as per generic requirements for the package type + FIRSTUSEBACK									
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u					
			n/a	0		n/a	5000(msec)					
		Cross Triggers	Local				Global					
		State of Call	CTState				CTEnhState					
							'Prompt and Collect User Information'					

## 7.32 Message Waiting Indication (MWI)

### 7.32.1 Fields

MSU Breakout Fields				
7.32.1.1	Field	calledParty.telno	Spec Ref	[2.3.117]
	Definition	The Address Signal field of the Called Party Number field		
	Details	Implementation Info: The Digits of the Called Party Number parameter should be copied into calledParty.telno in the same form as stored in the messages for the following message types: [1] MWI set [2] MWI reset		
7.32.1.2	Field	callingParty.telno	Spec Ref	[2.3.117]
	Definition	The Address Signal field of the Calling Party Number field		
	Details	Implementation Info: The Digits of the Calling Party Number parameter should be copied into callingParty.telno in the same form as stored in the messages for the following message types: [1] MWI set [2] MWI reset		

### 7.32.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
7.32.2.1	operations containing CdPN	calledParty.telno	n/a
7.32.2.2	operations containing CgPN	callingParty.telno	n/a

### 7.32.3 Call Trace assistance

7.32.3.1	MWI set MWI reset	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		CALLED	X				X	X		
		CALLING	X				X	X		
		PCOTIDSSN	X							
		MATCHRULE	OR							
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u			
				0						
		Cross Triggers	Local			Global				
			X							
		State of Call	CTState			CTEnhState				

### 7.33 Virtual Private Network (VPN)

#### 7.33.1 Fields

MSU Breakout Fields				
7.33.1.1	Field	calledParty.telno	Spec Ref	[2.3.118]
	Definition	The Address Signal field of the Called Party Number field		
	Details	Implementation Info: The Digits of the Called Party Number parameter should be extarcted from any message that contains it.		
7.33.1.2	Field	callingParty.telno	Spec Ref	[2.3.118]
	Definition	The Address Signal field of the Calling Party Number field		
	Details	Implementation Info: The Digits of the Calling Party Number parameter should be extarcted from any message that contains it.		

#### 7.33.2 Capture Buffer Indices

N/A

#### 7.33.3 Call Trace Assistance

N/A

## 7.34 CAMEL Application Part (CAP)

### 7.34.1 Fields

This section describes the breakout requirements for CAMEL Application Part (CAP). The Reference for CAP Protocol is: 3GPP TS 29.078. This defines the requirements additional to the basic TCAP requirements (see 7.1).

MSU Breakout Fields					
7.34.1.1 (1)	Field	callingParty.telno	Spec Ref	3GPP TS 29.078	
	Definition	The Address Signal subfield of the Calling Party Number Field.			
	Details	Implementation Info: The Digits should be copied into callingParty.telno in the same form as stored in the message for the following parameters: (1) callingPartyNumber in any operation; (2) MSISDN in any operation.			
(2)	Field	callingParty.natOfAddr_b	Spec Ref	3GPP TS 29.078	
	Definition	The nature of address subfield of the Calling Party Number Field.			
	Details	Implementation Info: See 7.34.1.1(1)			
(3)	Field	callingParty.numberingPlan_b	Spec Ref	3GPP TS 29.078	
	Definition	The numbering subfield of the Calling Party Number Field.			
	Details	Implementation Info: See 7.34.1.1(1)			
(4)	Field	callingParty.telnoType_b	Spec Ref	3GPP TS 29.078	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	Implementation Info: See 7.34.1.1(1) The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_MSISDN (for MSISDN) K_GG59_TELNOTYPE_CALLINGPARTYNUM (for callingPartyNumber)			

<b>7.34.1.2 (1)</b>	<b>Field</b>	<b>calledParty.telno</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The Address Signal subfield of the Called Party Number Field.		
	<b>Details</b>	<p>Implementation Info: The Digits should be copied into calledParty.telno in the same form as stored in the message for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) calledPartyNumber in any operation;</li> <li>(2) calledPartyBCDNumber in any operation;</li> <li>(3) destinationSubscriberNumber in InitialDPSMS (Note: All destinationSubscriberNumber will be extracted to txNum[]. See also 7.34.1.5.)</li> </ul> <p><b>Notes:</b> If there are more than 1 instances of above parameters in same message, only the first one should be extracted.</p>		
<b>(2)</b>	<b>Field</b>	<b>calledParty.natOfAddr_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The nature of address subfield of the Called Party Number Field.		
	<b>Details</b>	<p>Implementation Info: See 7.34.1.2(1).</p>		
<b>(3)</b>	<b>Field</b>	<b>calledParty.numberingPlan_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The numbering plan subfield of the Called Party Number Field.		
	<b>Details</b>	<p>Implementation Info: See 7.34.1.2(1).</p>		
<b>(4)</b>	<b>Field</b>	<b>calledParty.telnoType_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	<b>Details</b>	<p>Implementation Info: See 7.34.1.2(1).</p> <p>The telnoType_b subfield should be set as the following:</p> <ul style="list-style-type: none"> <li>K_GG59_TELNOTYPE_CALLEDPARTYNUM (for calledPartyNumber)</li> <li>K_GG59_TELNOTYPE_CALLEDPARTYBCDNUM (for calledPartyBCDNumber)</li> <li>K_GG59_TELNOTYPE_DESTSUBNUM (for destinationSubscriberNumber)</li> </ul>		

<b>7.34.1.3 (1)</b>	Field	<b>ocn.telno</b>	Spec Ref	3GPP TS 29.078
	Definition	The Address Signal subfield of the Original Called Number. This is the DN of the first redirecting party.		
	Details	<p>Implementation Info: The Digits should be copied into ocn.telno in the same form as stored in the message for the following parameters:</p> <p>(1) originalCalledPartyID in any operation.</p>		
<b>(2)</b>	Field	<b>ocn.natOfAddr_b</b>	Spec Ref	3GPP TS 29.078
	Definition	The nature of address subfield of the Original Called Number.		
	Details	<p>Implementation Info: See 7.34.1.3(1).</p>		
<b>(3)</b>	Field	<b>ocn.numberingPlan_b</b>	Spec Ref	3GPP TS 29.078
	Definition	The numbering plan subfield of the Original Called Number.		
	Details	<p>Implementation Info: See 7.34.1.3(1).</p>		
<b>7.34.1.4 (1)</b>	Field	<b>redirectingNum.telno</b>	Spec Ref	3GPP TS 29.078
	Definition	The Address Signal subfield of the Redirecting Number.		
	Details	<p>Implementation Info: The Digits should be copied into redirectingNum.telno in the same form as stored in the message for the following parameters:</p> <p>(1) redirectingPartyID in any operation.</p>		
<b>(2)</b>	Field	<b>redirectingNum.natOfAddr_b</b>	Spec Ref	3GPP TS 29.078
	Definition	The nature of address subfield of the Redirecting Number.		
	Details	<p>Implementation Info: See 7.34.1.4(1).</p>		
<b>(3)</b>	Field	<b>redirectingNum.numberingPlan_b</b>	Spec Ref	3GPP TS 29.078
	Definition	The numbering plan subfield of the Redirecting Number.		
	Details	<p>Implementation Info: See 7.34.1.4(1).</p>		

<b>7.34.1.5 (1)</b>	<b>Field</b>	<b>txNum[n].telno</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The Address Signals subfield from the translation number.		
	<b>Details</b>	<p>Implementation Info:            The telno entries in txNum[] should be filled from the following parameters, if present. If more than one parameter is present, entries should be used in the order they are encountered in the message.</p> <ul style="list-style-type: none"> <li>(1) correlationID in any operation;</li> <li>(2) destinationRoutingAddress in any operation;</li> <li>(3) assistingSSPIPRoutingAddress in any operation;</li> <li>(4) ipRoutingAddress in any operation;</li> <li>(5) destinationSubscriberNumber in any operation. (Note: destinationSubscriberNumber in InitialDPSMS is also extracted to calledParty. See also 7.34.1.2.)</li> </ul>		
<b>(2)</b>	<b>Field</b>	<b>txNum[n].natOfAddr_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The nature of address subfield of the translation number.		
	<b>Details</b>	<p>Implementation Info:            See 7.34.1.5(1).</p>		
<b>(3)</b>	<b>Field</b>	<b>txNum[n].numberingPlan_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The "Numbering Plan", "Type of Digits", or "Type of Number" subfield of the translation number.		
	<b>Details</b>	<p>Implementation Info:            See 7.7.1.5(1).</p>		
<b>(4)</b>	<b>Field</b>	<b>txNum[n].encodingScheme_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	The Encoding Scheme subfield of the translation number.		
	<b>Details</b>	<p>Implementation Info:            See 7.7.1.5(1).</p>		
<b>(5)</b>	<b>Field</b>	<b>txNum[n].telnoType_b</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	This is an acceSS7 system specific subfield to indicate the parameter type and name of the translation number.		
	<b>Details</b>	<p>Implementation Info:            See 7.34.1.5 (1) for Implementation Details.            The telnoType_b subfield should be set as the following:            K_GG59_TELNOTYPE_CORRID (for correlationID)            K_GG59_TELNOTYPE_DESTROUTINGADDR (for destinationRoutingAddress)            K_GG59_TELNOTYPE_ASIROUTINGADDR (for assistingSSPIPRoutingAddress)            K_GG59_TELNOTYPE_IPROUTINGADDR (for ipRoutingAddress)            K_GG59_TELNOTYPE_DESTSUBNUM (for destinationSubscriberNumber)</p>		
<b>7.34.1.6</b>	<b>Field</b>	<b>serviceKey_m</b>	<b>Spec Ref</b>	3GPP TS 29.078
	<b>Definition</b>	This is the Service Key field.		
	<b>Details</b>	<p>Implementation Info:            This should be extracted from all messages that contain it in the same form as stored in the message.</p>		

<b>7.34.1.7</b>	(1)	Field	<b>TMServiceId_b</b>	Spec Ref	n/a		
	(2)	Definition	See 7.1.1.9 (2)				
		Details	Implementation Info: This should be set to K_GG59_INAPSERVNUM.				
	(2)	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	n/a		
		Definition	See 7.1.1.9 (1)				
		Details	Implementation Info: If the component is carrying an ErrorCause parameter set TMServiceAssFailCode_u to K_GG59_BASEINAP_ERRORCODE + tcapErrorCode_b (this assumes that the error is 1 octet long).				
<b>7.34.1.8</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a			
	Definition	See 7.2.1.10					
	Details	Implementation Info: This should be set to K_GG59_INAP_INFO <b>Note:</b> CTAppLevel_b will be set to K_GG59_CAP_EXPINFO to distinguish CAP from INAP (see 7.34.1.25).					
<b>7.34.1.9</b>	Field	<b>IMSI.telno</b>	Spec Ref	3GPP TS 29.078			
	Definition	This is the International Mobile Subscriber Identity field.					
	Details	Implementation Info: This field should be extracted from any CAP message that contains it. N.B. Encoding of IMSI (MCC+MNC+MSIN) is specifications state 2 or 3 digit MNC but acceSS7 uses the old 2 digit MNC (as per customer requirements).					
<b>7.34.1.10</b>	Field	<b>IMEI.telno</b>	Spec Ref	3GPP TS 29.078			
	Definition	The IMEI refers to the International Mobile Equipment Identity					
	Details	Implementation Info: This field should be extracted from any CAP message that contains it.					
<b>7.34.1.11</b>	Field	<b>callingPtyCt_b</b>	Spec Ref	3GPP TS 29.078			
	Definition	The Calling Party Category parameter. This contains information sent in the forward direction indicating the category of the calling party, e.g., ordinary subscriber, <del>payphone etc</del>					
	Details	Implementation Info: This field should be extracted from any message that contains it.					
<b>7.34.1.12</b>	Field	<b>redirectInfo_ba</b>	Spec Ref	3GPP TS 29.078			
	Definition	The Redirection Information parameter. This parameter contains the redirection indicator, original redirecting reason, redirection indicator and the current redirection reason. ETSI CAMEL 29.078					
	Details	Implementation Info: This field should be extracted from any message that contains it.					

<b>7.34.1.13</b>	Field	<b>carrierSelection_b</b>	Spec Ref	3GPP TS 29.078	
	Definition	The Carrier Selection parameter. This is information sent in the forward direction to indicate whether the calling user selected the transit network by presubscription or dialled input and if presubscribed whether or not the carrier identification code was also dialled.			
	Details	Implementation Info: This field should be extracted from any message that contains it.			
<b>7.34.1.14</b>	Field	<b>carrierId_ba</b>	Spec Ref	3GPP TS 29.078	
	Definition	The Carrier Identification parameter. This is information sent in the forward direction to the transit network indicating the transit network selected by the originating subscriber.			
	Details	Implementation Info: This field should be extracted from any message that contains it.			
<b>7.34.1.15</b>	(1)	Field	<b>locationNumAddress.telno</b>	Spec Ref	
	(1)	Definition	The Address Signal subfield of the Location Number parameter.		
	(1)	Details	Implementation Info: This Digits should be extracted from any message that contains the Location Number parameter.		
	(2)	Field	<b>locationNumAddress.natOfAddr_b</b>	Spec Ref	
	(2)	Definition	The nature of address subfield of the Location Number parameter.		
	(2)	Details	Implementation Info: See <a href="#">7.34.1.15 (1)</a>		
	(3)	Field	<b>locationNumAddress.numberingPlan_b</b>	Spec Ref	
	(3)	Definition	The numbering plan subfield of the Location Number parameter.		
	(3)	Details	Implementation Info: See <a href="#">7.34.1.15 (1)</a>		

<b>7.34.1.16</b>	Field	<b>addCallingPartyAddress.tel_no</b>	Spec Ref	3GPP TS 29.078		
	Definition	The Address Signal subfield of the Additional Calling Party parameter.				
	Details	Implementation Info: This Digits should be extracted from any message that contains the Additional Calling Party parameter.				
	(2)	Field	<b>addCallingPartyAddress.natOfAddr_b</b>	Spec Ref	3GPP TS 29.078	
		Definition	The nature of address subfield of the Additional Calling Party parameter.			
		Details	Implementation Info: See <a href="#">7.7.1.18(1)</a>			
	(3)	Field	<b>addCallingPartyAddress.numberingPlan_b</b>	Spec Ref	3GPP TS 29.078	
		Definition	The numbering plan subfield of the Additional Calling Party parameter.			
		Details	Implementation Info: See <a href="#">7.7.1.18(1)</a>			
<b>7.34.1.17</b>	Field	<b>PDPId_m</b>	Spec Ref	3GPP TS 29.078		
	Definition	The CAP PDP Identifier.				
	Details	Implementation Info: This field should be extracted from any message that contains it.				
<b>7.34.1.18</b>	Field	<b>APN_pb</b> <b>APNLength_u</b>	Spec Ref	3GPP TS 29.078		
	Definition	The CAP Access Point Name (APN) parameter.				
	Details	Implementation Info: The 2 fields should be extracted from any message that contains APN parameter. The field APN_pb should be set to point to the first octet of the APN after the length. The field <b>APNLength_u</b> should be the length of APN data in octets				
<b>7.34.1.19</b>	Field	<b>serviceCentreAddress</b>	Spec Ref	3GPP TS 29.078		
	Definition	The CAP Short Message Service Centre Address Parameter.				
	Details	Implementation Info: This field should be extracted from any message that contains it.				
<b>7.34.1.20</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	3GPP TS 29.078 & ITU-T Q.763		
	Definition	The value of the first two octets of the Cause Indicators Parameter. See also section <a href="#">6.4.1.20</a>				
	Details	Implementation Info: This field should be extracted from any message that contains it.				

<b>7.34.1.21</b>	Field	<b>maxTransVolume_m</b>	Spec Ref	3GPP TS 29.078, section 11.4
	Definition	The MaxTransferredVolume field to specify specifies the maximum volume to be transferred in number of bytes before an ApplyChargingReportGPRS shall be sent to the <code>aemSCE</code>		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.34.1.22</b>	Field	<b>destReference_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The destinationReference field in CAP-GPRS-ReferenceNumber to identify the relationship between SGSN and the SCP.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.34.1.23</b>	Field	<b>origReference_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The originationReference field in CAP-GPRS-ReferenceNumber to identify the relationship between SGSN and the SCP.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.34.1.24</b>	Field	<b>BCSMEventType_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The enumerated value of eventTypeBCSM field.		
	Details	Implementation Info: This field should be extracted from any message that contains it. <b>Notes:</b> The eventTypeBCSM parameter could be present in InitialDP, EventReportBCSM, RequestRe- portBCSMEvent, [ITU-ETSI CS-2] CallGap, or [Ericsson CS1+] HandOver. In RequestReport- BCSMEvent, bcsmEvents is SEQUENCE SIZE(1..20) OF BCSMEvent. As subparameter of BCSMEvent, the eventTypeBCSM parameter is also repeatable. CDR is the first application to request this field and CDR only has interests of eventTypeBCSM in EventReportBCSM. So we only define the field as single value, not multiple value. If there are more than one instances in single one message, the last instance will overwrite the previous instances. One TCAP message could contain more than one components. The current gg59 did not support this function well. It's a known issue of gg59 and acceSS7 system. This field could not support the function well either.		
<b>7.34.1.25</b>	Field	<b>CTAppLevel_b</b>	Spec Ref	n/a
	Definition	The field is set by the breakouts and indicates what type of information has been broken out		
	Details	Implementation Info: This field should be set to K_GG59_CAP_EXPINFO for all CAP messages.		
<b>7.34.1.26</b>	Field	<b>volumeIfNoTariffSwitch_m</b>	Spec Ref	3GPP TS 29.078, section 13.3
	Definition	The volumeIfNoTariffSwitch in number of bytes. It shall be present if no tariff switch has occurred for the PDP Context, otherwise it shall be absent. If present, then the volume transferred since the detection of the event that triggered volume count shall be reported		
	Details	Implementation Info: This field should be extracted from any message that contains it.		

<b>7.34.1.27</b>	Field	<b>MSCNo</b>	Spec Ref	3GPP TS 29.078
	Definition	The ISDN Address Digits of mscAddress field.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.34.1.28</b>	Field	<b>SGSNNNo</b>	Spec Ref	3GPP TS 29.078
	Definition	The ISDN Address Digits of sgsn-Number field.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.34.1.29</b>	Field	<b>capGPRSCause_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The cause value of gprsCause field. It indicates the cause for CAP interface related information. The GPRSCause mapping to/from GTP cause values specified in the 3GPP TS 29.060 and to/ from 3GPP TS 24.008 [9] GMM cause and SM cause values are outside scope of CAP		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>7.34.1.30</b>	Field	<b>PDPAddress</b>	Spec Ref	3GPP TS 29.078
	Definition	The endUserAddress field.		
	Details	<p>Implementation Info:</p> <p>(1) This field should be extracted from any message that contains it. (2) The subfield organisation_b should be one of:</p> <ul style="list-style-type: none"> <li>K_GG61_ETS1_PDPORG (0x0)</li> <li>K_GG61_IETF_PDPORG (0x1)</li> <li>K_GG61_EMPTY_PDPORG (0xf)</li> </ul> <p>(3) The subfield type_b should be one of:</p> <ul style="list-style-type: none"> <li>K_GG61_ETS1_X121_PDPADDR (0x00)</li> <li>K_GG61_ETS1 PPP_PDPADDR (0x01)</li> <li>K_GG61_ETS1_OSPHOSS_PDPADDR (0x02)</li> <li>K_GG61_IETF_IPv4_PDPADDR (0x21)</li> <li>K_GG61_IETF_IPv6_PDPADDR (0x57)</li> </ul> <p>(4) The subfield numOctets_b should be the number of octets. And the subfield addrOctets_ba should be address octets.</p> <p>(5) The macro M_GG61_getIPv4_PDPADDR(pPDPAddr) is provided to extract an IPv4 address from the Address. The macro M_GG61_isIPv4_PDPADDR(nPDPAddr) can be used</p>		

<b>7.34.1.31</b>	<b>Field</b>	<b>GGSNAddress</b>	Spec Ref	3GPP TS 29.078
	<b>Definition</b>	The GGSNAddress field.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) This field should be extracted from any message that contains it.</li> <li>(2) The subfield organisation_b should be one of:           <ul style="list-style-type: none"> <li>K_GG61_ETS1_PDPORG (0x0)</li> <li>K_GG61_IETF_PDPORG (0x1)</li> <li>K_GG61_EMPTY_PDPORG (0xf)</li> </ul> </li> <li>(3) The subfield type_b should be one of:           <ul style="list-style-type: none"> <li>K_GG61_ETS1_X121_PDPADDR (0x00)</li> <li>K_GG61_ETS1 PPP_PDPADDR (0x01)</li> <li>K_GG61_ETS1_OSPHOSS_PDPADDR (0x02)</li> <li>K_GG61_IETF_IPv4_PDPADDR (0x21)</li> <li>K_GG61_IETF_IPv6_PDPADDR (0x57)</li> </ul> </li> <li>(4) The subfield numOctets_b should be the number of octets. And the subfield addrOctets_ba should be address octets.</li> <li>(5) The macro M_GG61_getIPv4_PDPADDR(pPDPAddr) is provided to extract an IPv4 address from the Address. The macro M_GG61_isIPv4_PDPADDR(pPDPAddr) can be used to first check that the address does contain a IPv4 address.</li> </ul>		
<b>7.34.1.32</b>	<b>Field</b>	<b>secondaryPDPContextFlag_m</b>	Spec Ref	3GPP TS 29.078
	<b>Definition</b>	The present flag for secondaryPDP-context field. It indicates that the PDP Context is as a secondary PDP Context.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This flag field should be set to TRUE for any CAP message that contains secondaryPDP-context field.</p>		
<b>7.34.1.33</b>	<b>Field</b>	<b>eventTypeSMS_m</b>	Spec Ref	3GPP TS 29.078
	<b>Definition</b>	The enumerated value of eventTypeSMS field.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_SMS_SMS_COLLECTEDINFO (0x01)</li> <li>K_GG59_SMS_O_SMSFAILURE (0x02)</li> <li>K_GG59_SMS_O_SMSSUBMISSION (0x03)</li> <li>K_GG59_SMS_SMS_DELIVERYREQUESTED (0x0b)</li> <li>K_GG59_SMS_T_SMSFAILURE (0x0c)</li> <li>K_GG59_SMS_T_SMSDELIVERY (0x0d)</li> </ul>		
<b>7.34.1.34</b>	<b>Field</b>	<b>GPRSEventType_m</b>	Spec Ref	3GPP TS 29.078
	<b>Definition</b>	The enumerated value of gprsEventType field.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GPRS_EVENTTYPE_ATTACH (0x01)</li> <li>K_GG59_GPRS_ATTACHCHANGEOFPOSITION (0x02)</li> <li>K_GG59_GPRS_DETACHED (0x03)</li> <li>K_GG59_GPRS_PDP_CTXTESTABLISH (0x0b)</li> <li>K_GG59_GPRS_PDP_CTXTESTABLISHACK (0x0c)</li> <li>K_GG59_GPRS_DISCONNECT (0x0d)</li> <li>K_GG59_GPRS_PDP_CTXTCHANGEOFPOSIT (0x0e)</li> </ul>		
<b>7.34.1.35</b>	<b>Field</b>	<b>smsRPErrorCause_b</b>	Spec Ref	3GPP TS 24.011, Section 8.2.5.4
	<b>Definition</b>	The value of MO-SMScause or MT-SMScause.		

	Details	Implementation Info: This field should be extracted from any message that contains it. Although it is a single value field, we'll set the context to indicate whether it's a MO or MT SMScause. See 7.34.4 for Context Assistance requirement for this field.		
<b>s7.34.1.36</b>	Field	<b>callSegmentId_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The call segment parameter.		
	Details	Implementation Info: This field should be extracted from any message that contains it. It is an ASN.1 BER integer (1..bound.&numOfCSs). The gg59 API Get_int32(tag) can be used to get the integer value.		
<b>7.34.1.37</b>	Field	<b>initiatorOfServiceChange_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The initiator of service change.		
	Details	Implementation Info: This is a multi-value field and should be extracted from any message that contains it. See 7.34.4 for Context Assistance requirement for this field.		
<b>7.34.1.38</b>	Field	<b>natureOfServiceChange_m</b>	Spec Ref	3GPP TS 29.078
	Definition	The nature of service change.		
	Details	Implementation Info: This is a multi-value field and should be extracted from any message that contains it. See 7.34.4 for Context Assistance requirement for this field.		

## 7.34.2 Capture Buffer Indices

Same as section 7.7.2.

## 7.34.3 Call Trace Assistance

This defines requirements additional to or different from section 7.7.3 for Generic INAP and section 7.7.4 for Generic TCAP Package Flags.

Call Trace Assistance													
7.34.3.1	Initial Detection Point	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED			
	Initial Detection Point with eventType-BCSM set to origAttemptAuthorized	CALLED	X				X	X					
		CALLING	X				X	X					
		IMSI	X				X	X	X				
		TMSI (If IMSI is present)								X			
		OCN (if present)	X				X						
		RN (if present)					X						
		PCOTIDSSN	As per generic requirements for the package type										
		DPCRTIDSSN	As per generic requirements for the package type										
		Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u						
				0									
		Cross Triggers	Local				Global						
							X						
		State of Call	CTState				CTEnhState						
							'Initial Detection Point' 'Origination Attempt Authorized'						

## 7.34.4 Context Assistance

Context Assistant		
7.34.3.1	Fields	Context Assistance
7.34.4.1	initiatorOfServiceChange_m natureOfServiceChange_m	The context mask K_GG59_CTXTMASK_CAP_SERVICECHANGE (0x000000ff) bits will be used to indicate service change side. One of: K_GG59_CAP_SERVICECHANGE_ORIG (0x00000001) K_GG59_CAP_SERVICECHANGE_TERM (0x00000002)

<b>7.34.4.2</b>	<b>smsRPErrorCause_b</b>	The context mask K_GG59_CTXTMASK_CAP_SMSCAUSE (0x000000ff) bits will be used to indicate MO or MT. One of: K_GG59_CAP_SMSCAUSE_MO (0x00000001) K_GG59_CAP_SMSCAUSE_MT (0x00000002)
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## 7.35 US National TCAP

This section covers requirements for the "US.TCAP" protocol. This expands on the 7.1 "Generic TCAP". This protocol is used where the service is not covered by one of the existing US National TCAP based protocols e.g. AIN, 800, LIDB, CLASS.

### 7.35.1 Fields

This defines the requirements additional to the basic TCAP requirements (see 7.1). The following fields should

be extracted from all messages which contain them. All references are to Telecordia GR-246-CORE T1.114.5, Issue 7 December 2002 or ANSI T1.114, Jun 2000 (or later versions).

MSU Breakout Fields					
7.35.1.1 (1)	Field	callingParty.telno	Spec Ref	T1.114.5, Section 4.5	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Calling Party Number.			
	Details	<p>Implementation Info:            If a Digits parameter contains ANI (calling) digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>			
(2)	Field	callingParty.natOfAddr_b	Spec Ref	T1.114.5, Section 4.5.2	
	Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Calling Party Number.			
	Details	<p>Implementation Info:            See 7.35.1.1 (1)            If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.</p>			
7.35.1.2 (1)	Field	calledParty.telno	Spec Ref	T1.114.5, Section 4.5	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Called Party Number.			
	Details	<p>Implementation Info:            If a Digits parameter contains called digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>			

	(2)	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2		
		Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Called Party Number.				
		Details	<p>Implementation Info: See 7.35.1.2 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.</p>				
7.35.1.3 (1)		Field	<b>ocn.telno</b>	Spec Ref	T1.114.5, Section 4.5		
		Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Original Called Number.				
		Details	<p>Implementation Info: If a Digits parameter contains original called digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>				
(2)		Field	<b>ocn.natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2		
		Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Original Called Number.				
		Details	<p>Implementation Info: See 7.35.1.3 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.</p>				
7.35.1.4 (1)		Field	<b>redirectingNum.telno</b>	Spec Ref	T1.114.5, Section 4.5		
		Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Redirecting Number.				
		Details	<p>Implementation Info: If a Digits parameter contains redirecting digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>				
(2)		Field	<b>redirectingNum.natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2		
		Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Redirecting Number.				
		Details	<p>Implementation Info: See 7.35.1.4 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.</p>				
7.35.1.5 (1)		Field	<b>chargeNum.telno</b>	Spec Ref	T1.114.5, Section 4.5		
		Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Billing Number.				
		Details	<p>Implementation Info: If a Digits parameter contains billing digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>				

	(2)	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2		
		Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Billing Number.				
		Details	<p>Implementation Info: See 7.35.1.5 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.</p>				
7.35.1.6 (1)		Field	<b>txNum[].telno</b>	Spec Ref	T1.114.5, Section 4.5		
		Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Routing Number.				
		Details	<p>Implementation Info: If a Digits parameter contains routing digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>				
(2)		Field	<b>txNum[].natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2		
		Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Routing Number.				
		Details	<p>Implementation Info: See 7.35.1.6 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.</p>				
(3)		Field	<b>txNum[].telnoType_b</b>	Spec Ref	T1.114.5, Section 4.5.2		
		Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.				
		Details	<p>Implementation Info: See 7.35.1.6 (1) The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_ROUTINGNUM (for Routing Number)</p>				
7.35.1.7		Field	<b>callingName_ba</b>	Spec Ref	T1.114.5, Section 4.24		
		Definition	The character subfield of the generic name when carrying a Calling Name.				
		Details	<p>Implementation Info: The character subfield of the generic name parameter extracted whenever present in the message and when the Type Of name subfield equals Calling Name. The array must be null terminated. If the number of characters is greater than (K_GG26_CALLINGNAME_LEN - 1) then the first (K_GG26_CALLINGNAME_LEN - 1) characters must be extracted and the string then null terminated.</p>				
7.35.1.8		Field	<b>standardAnnouncement_m</b>	Spec Ref	T1.114.5, Section 4.3		
		Definition	The Standard Announcement octet				
		Details	<p>Implementation Info: This field shall be extracted whenever present in the same format as stored in the message.</p>				

<b>7.35.1.9</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10		
	Details	Implementation Info: This should be set to K_GG59_USTCAP_INFO.		

## 7.35.2 Capture Buffer Indices

See Generic TCAP section 7.1.3. No additional requirements so far.

## 7.35.3 Call Trace Assistance

This defines the requirements additional to the basic TCAP (see section 7.1.4). TBD.

# 7.36 AT&T TCAP

This section covers requirements for the AT&T TCAP protocol.

## 7.36.1 Fields

The section is based upon the existing Generic TCAP requirements (see 7.1.1) and US National TCAP (see 7.35.1). The referenced fields are listed, and the new/changed fields are as the following:

Unchanged fields:

- 7.1.1.1 origTransId\_m
  - 7.1.1.2 respTransId\_m
  - 7.1.1.3 packageType\_b
  - 7.1.1.4 (1) opCode\_ba
    - (2) numOpcodes\_b
    - (3) opcodeType\_ba
  - 7.1.1.5 (1) componentType\_ba
    - (2) numComponents\_b
  - 7.1.1.6 pabortCause\_b
  - 7.1.1.7 (1) probType\_b
    - (2) probSpec\_b
  - 7.1.1.8 (1) errorID\_b
    - (2) tcapErrorCode\_b
  - 7.1.1.10 (1) acgCause\_b
    - (2) acgDuration\_b
    - (3) acgGap\_b
  - 7.1.1.11 invokeID\_ba
- 
- 7.35.1.2 (1) calledParty.telno
    - (2) calledParty.natOfAddr\_b
  - 7.35.1.3 (1) ocn.telno
    - (2) ocn.natOfAddr\_b
  - 7.35.1.4 (1) redirectingNum.telno
    - (2) redirectingNum.natOfAddr\_b
  - 7.35.1.7 callingName\_ba
  - 7.35.1.8 standardAnnouncement\_m

Changed fields:

<b>MSU Breakout Fields</b>				
<b>7.36.1.1</b>	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	n/a

<b>(1)</b>	Definition	<p>This is an internal Traffic Monitor error code which is derived from whichever level error is found in an SCCP or TCAP MSU. The NLS strings associated with this field are stored in <code>a7TMSAfail.h</code>. New failure codes should be added to this file. When decoding a new TCAP based protocol, it may be necessary to add a new 'base' for 'Private TCAP' (US) or 'local Value' (ITU) error codes.</p>		
<b>(2)</b>	Details	<p>Implementation Info:  For TCAP, the mapping of fields to TMServiceAssFailCode_u is as below. If multiple errors are found in a single MSU, the first one encountered should be left set up in TMServiceAssFailCode_u.</p> <ul style="list-style-type: none"> <li>(i) if a RESPONSE package contains a REJECT component set either to <ul style="list-style-type: none"> <li>(1) <code>K_GG59_BASETCAP_PROBCODE + (probType_b &lt;&lt; 8) + probSpec_b</code> (for US)</li> <li>(2) <code>K_GG59_BASEEURO_PROBCODE + ((probType_b &amp; 0x0f) &lt;&lt; 8) + probSpec_b</code> (for ITU-T Q.773 (03/93) - SS7 - Transaction Capabilities Formats &amp; Encoding)</li> </ul> </li> <li>(ii) if a RESPONSE package contains a RETURN ERROR component <ul style="list-style-type: none"> <li>(1) With a US National TCAP error code, set to <code>K_GG59_BASETCAP_ERRORCODE + tcapErrorCode_b</code></li> <li>(2) With an ITU globalValue error code, set to <code>K_GG59_BASEEURO_ERRORCODE + tcapErrorCode_b</code></li> <li>(3) With a US Private TCAP error code, or ITU local Value error code, set to <code>K_GG59_BASEXXXX_ERRORCODE + tcapErrorCode_b</code>, where <code>K_GG59_BASEXXXX_ERRORCODE + tcapErrorCode_b</code> is the base for the protocol in question. The base for private error codes must be stated in the appropriate section for the protocol in question.</li> </ul> </li> <li>(iii) if this is an ABORT package set either to <ul style="list-style-type: none"> <li>(1) <code>K_GG59_BASE_PABORTCAUSE + pabortCause_b</code> (for US)</li> <li>(2) <code>K_GG59_BASEEURO_PABORTCAUSE + pabortCause_b</code> (for ITU-T Q.773 (03/93) - SS7 - Transaction Capabilities Formats &amp; Encoding)</li> </ul> </li> </ul>		
	Field	<b>TMServiceId_b</b>	Spec Ref	n/a
	Definition	<p>This field is used to identify the type of message, eg. by Traffic Monitor. The Traffic Monitor supports a set of Service Assurance measurements on different services. Userdata decodes set TMServiceId_b. The Traffic Monitor resource file maps 1 or more TMServiceId_b values onto each 'Traffic Monitor service'. Thus, if appropriate, multiple SSNs can be mapped to one service (or different messages with the same SSN can be mapped onto different 'Traffic Monitor services'). This mechanism also make Traffic Monitor independent of particular SSN Values.</p>		
	Details	<p>Implementation Info:  This field should be set to <code>K_GG59_OTHERSERV</code> for AT&amp;T TCAP protocol.  Note: TMServiceId should be "OTHER" in the initial phase. It will be reserved for future enhancement. This was agreed with TrafficMonitor and Product Marketing.</p>		
<b>7.36.1.2 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	T1.114.5, Section 4.5
	Definition	<p>The Address Signal subfield of the Digits parameter, when Type of Digits is ANI (Calling Party Number) or ANI LRN.</p>		
<b>(2)</b>	Details	<p>Implementation Info:  If a Digits parameter contains ANI (calling) digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.</p>		
	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2
	Definition	<p>The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Calling Party Number.</p>		

	Details	Implementation nfo: See 7.36.1.2 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.			
(3)	Field	<b>callingParty.telnoType_b</b>	Spec Ref	T1.114.5, Section 4.5.2	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	Implementation info: The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_ANI (for ANI (calling)) K_GG59_TELNOTYPE_ANILRN (for ANI LRN)			
7.36.1.3 (1)	Field	<b>chargeNum.telno</b>	Spec Ref	T1.114.5, Section 4.5	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Billing Number or Billing Number LRN.			
	Details	Implementation Info: If a Digits parameter contains billing digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.			
(2)	Field	<b>chargeNum.natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2	
	Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Billing Number.			
	Details	Implementation Info: See 7.36.1.3 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.			
(3)	Field	<b>chargeNum.telnoType_b</b>	Spec Ref	T1.114.5, Section 4.5.2	
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.			
	Details	Implementation info: The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_BILLNUM (for Billing Number) K_GG59_TELNOTYPE_BILLNUMLRN (for Billing Number LRN)			
7.36.1.4 (1)	Field	<b>txNum[].telno</b>	Field	<b>txNum[].telno</b>	
	Definition	The Address Signal subfield of the Digits parameter, when Type of Digits is Routing Number, Destination Number, or Destination Number LRN.			
(2)	Details	Implementation nfo: If a Digits parameter contains routing digits (use Type of Digits to determine) in BCD format (use Encoding to determine) then the digits should be copied in the same form as stored in the message.			
	Field	<b>txNum[].natOfAddr_b</b>	Spec Ref	T1.114.5, Section 4.5.2	
	Definition	The National/International indicator of the Nature of Number subfield of the Digits parameter, when Type of Digits is Routing Number.			

(3)	Details	Implementation nfo: See 7.36.1.4 (1) If the Nature of Number is International then this field is set to K_GG59_INTLNATOFADDR, otherwise it is set to K_GG59_NSIGNATOFADDR.		
	Field	<b>txNum[].telnoType_b</b>	Spec Ref	T1.114.5, Section 4.5.2
	Definition	This is an acceSS7 system specific subfield to indicate the raw parameter type.		
	Details	Implementation Info: See 7.35.1.6 (1) The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_DESTNUM (for Destination Number) K_GG59_TELNOTYPE_DESTNUMLRN (for Destination Number LRN)		
7.35.1.9	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10		
	Details	Implementation Info: This field should not be set at present. It will be reserved for future.		

## 7.36.2 Capture Buffer Indices

This defines additional requirements to section 7.1.3 for Generic TCAP.

Capture Buffer Indices			
	I7526_hashAddCpctTelno (numbers)	I7524_hashAdd3Val (datasets)	
7.36.2.1	Any message containing a callingParty	callingParty.telno	N/A
7.36.2.2	Any message containing a calledParty	calledParty.telno	N/A

## 7.36.3 Call Trace Assistance

This defines additional requirements to section 7.1.4 for Generic TCAP.

Call Trace Assistance						
7.36.3.1	All message types (unless otherwise stated)	Timeouts	CTFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u
			n/a	n/a	n/a	n/a
		MATCHRULE	AND			
		Cross Triggers	Local		Global	
					X	

7.36.3.2	Request for: Miscellaneous	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
	NODETLLI-VAL									
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
		n/a		n/a		n/a		n/a		
	Cross Triggers		Local			Global				
			n/a			n/a				
	State of Call	CTState				CTEnhState				
		N/A				“LNP Request “				
7.36.3.3	Any message containing a calledParty	CTFlags [CALLED]	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		IMSI	X				X	X	X	
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
		n/a		n/a		7		n/a		
	Cross Triggers	Local				Global				
		n/a				n/a				
	State of Call	CTState				CTEnhState				
		N/A				N/a				
7.36.3.4	Any message containing a callingParty	CTFlags [CALLING]	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		IMSI	X				X	X	X	
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
		n/a		n/a		7		n/a		
	Cross Triggers	Local				Global				
		n/a				n/a				
	State of Call	CTState				CTEnhState				
		N/A				N/a				
7.36.3.5	Any message containing a chargeNum	CTFlags [CHARGING]	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		IMSI	X				X			

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		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
	Cross Triggers		Local				Global							
			n/a				n/a							
7.36.3.6	Any message containing an ocn	CTFlags [OCN]	CTState				CTEnhState							
			N/A				N/a							
7.36.3.7	Any message containing a redirectingNum	CTFlags [RN]	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			N/A				N/a							
		CTFlags [RN]	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X							
7.36.3.8	Any message containing a txNum[]	CTFlags [TX]	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X	X			X		X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		7		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			N/A				N/a							

# 8 Non-SS7 Based Breakout Requirements

## 8.1 Ethernet

### 8.1.1 Fields

The following fields should be extracted from all messages which contain them.

MSU Breakout Fields					
8.1.1.1	Field	sourceEtherAddr_ba	Spec Ref	IEEE 802.3	
	Definition	The source Ethernet MAC address			
	Details	Implementation Info:			
8.1.1.2	Field	destEtherAddr_ba	Spec Ref	IEEE 802.3	
	Definition	The destination Ethernet MAC address			
	Details	Implementation Info:			
8.1.1.3	Field	VLAN ID	Spec Ref	IEEE Std 802.1ad Section 9 IEEE Std. 802.1Q-2005 Section 9	
TsdBreakout	vlanId		Format	e (value)	
Details	This field should be extracted from any message that contains it.				
DrData	DRDATA_VLAN_ID_TAG		Format	CB_UBIT64	
Details	This field should be extracted from any message that contains it. Refer to 3.13.4 for details.				

### 8.1.2 Capture Buffer Indices

N/A

### 8.1.3 Call Trace Assistance

N/A

## 8.2 Internet Protocol (IP)

### 8.2.1 Fields

The following fields should be extracted from all messages which contain them.

MSU Breakout Fields						
	Field	Spec Ref				
<b>8.2.1.1</b>	Field	<b>outerIPv4SrcAddress_m</b>	Spec Ref IETF RFC 791			
	Definition	The source IP address of the outermost IP layer in the message				
	Details	Implementation Info: As the extraction code is called once per layer, then care must be taken to only set this field on the first call.				
<b>8.2.1.2</b>	Field	<b>outerIPv4DestAddress_m</b>	Spec Ref IETF RFC 791			
	Definition	The destination IP address of the outermost IP layer in the message.				
	Details	Implementation Info: As the extraction code is called once per layer, then care must be taken to only set this field on the first call.				
<b>8.2.1.3</b>	Field	<b>innerIPv4SrcAddress_m</b>	Spec Ref IETF RFC 791			
	Definition	The source IPv4 address of the inner IP layer in the message, not including the IP payload of GTP G-PDU or SNDCP.				
	Details	Implementation Info: This field should be set even if only one IP layer is present in the message. As the extraction code is called once per layer, then this field needs to be set or overwritten by every layer, but not including the IP payload of GTP G-PDU or SNDCP. This field should not be populated from IP payload of GTP G-PDU or SNDCP. The real last or innermost IP source address should refer to 8.2.1.6.				
<b>8.2.1.4</b>	Field	<b>innerIPv4DestAddress_m</b>	Spec Ref IETF RFC 791			
	Definition	The destination IPv4 address of the inner IP layer in the message, not including the IP payload of GTP G-PDU or SNDCP.				
	Details	Implementation Info: This field should be set even if only one IP layer is present in the message. As the extraction code is called once per layer, then this field needs to be set or overwritten by every layer, but not including the IP payload of GTP G-PDU or SNDCP. This field should not be populated from IP payload of GTP G-PDU or SNDCP. The real last or innermost IP destination address should refer to 8.2.1.7.				
<b>8.2.1.5</b>	Field	<b>nxtIPprotocol_b</b>	Spec Ref IETF RFC 791 IETF RFC 790			
	Definition	The next protocol field from the IP header, or IPsec authentication header.				
	Details	Implementation Info: This field is implemented as multi-value field. Each next protocol in the message should be broken out to this field.				

<b>8.2.1.6</b>	<b>(1)</b>	Field	<b>IPSrcAddress.a7PresentInd_m</b>	Spec Ref	<b>n/a</b>	
	<b>(2)</b>	Definition	Address indicator of IP source address.			
		Details	<p>Implementation Info: IPSrcAddress is implemented as multi-value field. a7PresentInd_m should be set according to the address type, one of: K_GG59_IPADDRESS_IPV4 (0x01) K_GG59_IPADDRESS_IPV6 (0x02)</p>			
<b>8.2.1.7</b>	<b>(2)</b>	Field	<b>IPDestAddress.ipAddr.ipv4_m</b>	Spec Ref	<b>IETF RFC 791</b>	
	<b>(3)</b>	Definition	The Source IPv4 address in the message.			
		Details	<p>Implementation Info: Each source IPv4 address in the message should be broken out to this field.</p>			
<b>8.2.1.7</b>	<b>(3)</b>	Field	<b>IPDestAddress.ipAddr.ipv6_ma</b>	Spec Ref	<b>TBD</b>	
	<b>(2)</b>	Definition	The Source IPv6 address in the message.			
		Details	<p>Implementation Info: TBD.</p>			
<b>8.2.1.7</b>	<b>(1)</b>	Field	<b>IPDestAddress.a7PresentInd_m</b>	Spec Ref	<b>n/a</b>	
	<b>(2)</b>	Definition	Address indicator of IP destination address.			
		Details	<p>Implementation Info: IPSrcAddress is implemented as multi-value field. a7PresentInd_m should be set according to the address type, one of: K_GG59_IPADDRESS_IPV4 (0x01) K_GG59_IPADDRESS_IPV6 (0x02)</p>			
<b>8.2.1.7</b>	<b>(2)</b>	Field	<b>IPDestAddress.ipAddr.ipv4_m</b>	Spec Ref	<b>IETF RFC 791</b>	
	<b>(3)</b>	Definition	The Destination IPv4 address in the message.			
		Details	<p>Implementation Info: Each destination IPv4 address in the message should be broken out to this field.</p>			
<b>8.2.1.7</b>	<b>(3)</b>	Field	<b>IPDestAddress.ipAddr.ipv6_ma</b>	Spec Ref	<b>TBD</b>	
	<b>(2)</b>	Definition	The Destination IPv6 address in the message.			
		Details	<p>Implementation Info: TBD.</p>			

## 8.2.2 Capture Buffer Indices

N/A

## 8.2.3 Call Trace Assistance

N/A

## 8.3 Transmission Control Protocol (TCP)

### 8.3.1 Fields

The following fields should be extracted from all messages which contain them.

MSU Breakout Fields				
8.3.1.1	Field	srcPortNum_u	Spec Ref	IETF RFC 793
	Definition	The TCP Source Port number		
	Details	<p>Implementation Info: This field is implemented as multi-value field. Each source port number in the message should be broken out to this field.</p>		
8.3.1.2	Field	destPortNum_u	Spec Ref	IETF RFC 793
	Definition	The TCP Destination Port number		
	Details	<p>Implementation Info: This field is implemented as multi-value field. Each destination port number in the message should be broken out to this field.</p>		

### 8.3.2 Capture Buffer Indices

N/A

### 8.3.3 Call Trace Assistance

N/A

### 8.3.4 Inner IP address extracted for IP-in-IP stack

IP Stack	Inner (or upper) IP	One IPv4	One IPv6	IPv4	IPv6	IPv6	IPv4
	Outer (or lower) IP			IPv4	IPv4	IPv6	IPv6
DrData Tag	DRDATA_FROM_IP_ADDRESS_TAG	Y		Y(Inner)			Y(Inner)
	DRDATA_TO_IP_ADDRESS_TAG	Y		Y(Inner)			Y(Inner)
	DRDATA_IPV6_SRC_ADDRESS_TAG		Y		Y(Inner)	Y(Inner)	
	DRDATA_IPV6_DEST_ADDRESS_TAG		Y		Y(Inner)	Y(Inner)	
	OUTER_IPV4_SRC_ADDR <i>(TBA: To Be Added if we have a valid requirement in future)</i>			TBA(Outer)	TBA(Outer)		
	OUTER_IPV4_DEST_ADDR (TBA)			TBA(Outer)	TBA(Outer)		
	OUTER_IPV6_SRC_ADDR (TBA)					TBA(Outer)	TBA(Outer)
	OUTER_IPV6_DEST_ADDR (TBA)					TBA(Outer)	TBA(Outer)

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<b>IPFIX IE</b>	sourceIPv4Address (8)	Y		Y(Inner)			Y(Inner)
	destinationIPv4Address (12)	Y		Y(Inner)			Y(Inner)
	sourceIPv6Address (27)		Y		Y(Inner)	Y(Inner)	
	destinationIPv6Address (28)		Y		Y(Inner)	Y(Inner)	
	Will add new IEs to support outer IP layer later if required.						

## 8.4 User Datagram Protocol (UDP)

### 8.4.1 Fields

The following fields should be extracted from all messages which contain them.

MSU Breakout Fields					
8.4.1.1	Field	srcPortNum_u	Spec Ref	IETF RFC 768	
	Definition	The UDP Source Port number			
	Details	Implementation Info: This field is implemented as multi-value field. Each source port number in the message should be broken out to this field.			
8.4.1.2	Field	destPortNum_u	Spec Ref	IETF RFC 768	
	Definition	The UDP Destination Port number			
	Details	Implementation Info: This field is implemented as multi-value field. Each destination port number in the message should be broken out to this field.			

### 8.4.2 Capture Buffer Indices

N/A

### 8.4.3 Call Trace Assistance

N/A

## **8.5 Transport Adapter Layer Interface (TALI)**

No specific support is currently required for this protocol other than the capability to navigate the message structure to reach the encapsulated protocol message. For details of the protocol see 2.3.74.

### **8.5.1 Fields**

N/A

### **8.5.2 Capture Buffer Indices**

N/A

### **8.5.3 Call Trace Assistance**

N/A

## 8.6 Stream Control Transmission Protocol (SCTP)

### 8.6.1 Fields

The following fields should be extracted from all messages which contain them.

MSU Breakout Fields				
<b>8.6.1.1</b>	Field	<b>srcPortNum_u</b>	Spec Ref	IETF RFC 2960 Section 3.1
	Definition	The SCTP Source Port number		
	Details	Implementation Info:		
<b>8.6.1.2</b>	Field	<b>destPortNum_u</b>	Spec Ref	IETF RFC 2960 Section 3.1
	Definition	The SCTP Destination Port number		
	Details	Implementation Info:		
<b>8.6.1.3</b>	Field	<b>sctpChunkType_b</b>	Spec Ref	IETF RFC 2960 Section 3.2
	Definition	The SCTP Chunk Type value, either Payload Data (0) or one of many Control Chunk values.		
	Details	<p>Implementation Info: The sctpChunkType_b field should be extracted from all SCTP messages which contain Chunk Type field.</p> <p>Notes: When an SCTP message enters the BPP, the destreamer will act on the message prior to the breakouts and get the stream broken down one chunk at a time. Thus only one chunk type field is required.</p>		
<b>8.6.1.4</b>	Field	<b>sctpStreamID_u</b>	Spec Ref	IETF RFC 2960 Section 3.3.1
	Definition	The SCTP Stream Identifier		
	Details	<p>Implementation Info: This value identifies the stream to which the user data belongs. The sctpDataStreamID_u field should be extracted from any SCTP messages which contain it.</p>		
<b>8.6.1.5</b>	Field	<b>sctpA_Rwnd_m</b>	Spec Ref	IETF RFC 2960 Section 3.3.4
	Definition	The SCTP Advertised Receiver Window Credit (a_rwnd)		
	Details	<p>Implementation Info: This field indicates the buffer space in bytes (Advertised Receiver Window Credit) i.e the amount of buffer space the data receiver. The sctpSackA_Rwnd_u field should be extracted from any SCTP messages which contain it.</p>		

<b>8.6.1.6</b>	Field	<b>sctpChunkLength_u</b>	Spec Ref	IETF RFC 2960 Section 3.2
	Definition	The SCTP Chunk Length field.		
	Details	<p>Implementation Info: This value represents the size of the chunk in bytes including the Chunk Type, Chunk Flags, Chunk Length and Chunk Value fields. Therefore, if the Chunk Value field is zero-length, the Length field will be set to 4. The Chunk Length field does not count any padding.</p>		
<b>8.6.1.7</b>	Field	<b>sctpErrorCause_m</b>	Spec Ref	IETF RFC 2960 Section 3.3.10
	Definition	One or more SCTP Error Cause fields.		
	Details	<p>Implementation Info: This field should be extracted from any message that contains it. This field is implemented as a multi-value field. Notes: The SCTP Operation Errors (Chunk Type=9) and Aborts (Chunk Type=6) may contain one or more SCTP Error Cause fields.</p>		
<b>8.6.1.8</b>	Field	<b>payloadProtocolId_m</b>	Spec Ref	IETF RFC 2960 Section 3.3.1
	Definition	This element represents an application (or upper layer) specified protocol identifier. It is an unsigned integer (32 bits).		
	Details	<p>Implementation Info: This field shall be extracted from all SCTP messages. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_SCTP_PPI_SUA</li> <li>K_GG59_SCTP_PPI_M2PA</li> <li>K_GG59_SCTP_PPI_V5UA</li> <li>K_GG59_SCTP_PPI_GCP</li> <li>K_GG59_SCTP_PPI_BICC</li> <li>K_GG59_SCTP_PPI_TALI</li> <li>K_GG59_SCTP_PPI_DUA</li> <li>K_GG59_SCTP_PPI_ASAP</li> <li>K_GG59_SCTP_PPI_ENRP</li> <li>K_GG59_SCTP_PPI_H323</li> <li>K_GG59_SCTP_PPI_QIPC</li> <li>K_GG59_SCTP_PPI_SIMCO</li> <li>K_GG59_SCTP_PPI_DDP_SC</li> <li>K_GG59_SCTP_PPI_DDP_SSC</li> <li>K_GG59_SCTP_PPI_S1AP</li> <li>K_GG59_SCTP_PPI_RUA</li> <li>K_GG59_SCTP_PPI_HNBAP</li> </ul>		

## 8.6.2 Capture Buffer Indices

N/A

## 8.6.3 Call Trace Assistance

N/A

## 8.7 SS7 MTP2-User Peer-to-Peer Adaptation Layer (M2PA)

For details of the protocol see 2.3.75.

### 8.7.1 Fields

MSU Breakout Fields				
<b>8.7.1.1</b>	Field	<b>sctpUaMessageClass_b</b>	Spec Ref	IETF RFC 4165 Section 2.1.3
	Definition	This field specifies the SCTP UA message class (e.g. MGMT, Transfer, SSNM, ASPSM, ASPTM, RKM).		
	Details	Implementation Info: This field should be set to K_GG59_SCTPUA_M2PA for M2PA messages.		
<b>8.7.1.2</b>	Field	<b>sctpUaMessageType_u</b>	Spec Ref	IETF RFC 4165 Section 2.1.4
	Definition	This two-octet field specifies both the SCTP UA message class and type.		
	Details	Implementation Info: This field is a two-octet combined field to indicate both the SCTP UA message class and type. The value should be equal to (messageClass * 256 + messageType). For M2PA messages, it should be set to one of: K_GG59_SCTPUA_M2PA_USERDATA (for User Data) K_GG59_SCTPUA_M2PA_LINKSTATUS (for Link Status)		
<b>8.7.1.3</b>	Field	<b>LSSUstatus_m</b>	Spec Ref	IETF RFC4165 Section 2.3.2
	Definition	The State field in a Link Status message..		
	Details	Implementation Info: This field is extracted from any MP2A message if the message type is Link Status. One of: K_GG59_M2PA_ALIGNMENT K_GG59_M2PA_PROVNORMAL K_GG59_M2PA_PROVEMERGENCY K_GG59_M2PA_READY K_GG59_M2PA_PROCOUTAGE K_GG59_M2PA_PROCOUTAGEEND K_GG59_M2PA_BUSY K_GG59_M2PA_BUSYEND K_GG59_M2PA_OUTOFSERVICE K_GG59_M2PA_V2_INSERVICE K_GG59_M2PA_V2_PROCOUTAGE K_GG59_M2PA_V2_PROCOUTAGEEND K_GG59_M2PA_V2_BUSY K_GG59_M2PA_V2_BUSYEND		

### 8.7.2 Call Trace Assistance

N/A

### 8.7.3 Call Trace Assistance

N/A

## 8.8 SS7 MTP2-User Adaptation Layer (M2UA)

For details of the protocol see 2.3.76.

### 8.8.1 Fields

MSU Breakout Fields					
	Field	sctpUaMessageClass_b	Spec Ref	IETF RFC 3331 Section 3.1.3	
8.8.1.1	Definition	This field specifies the SCTP UA message class (e.g. MGMT, Transfer, SSNM, ASPSM, ASPTM, RKM).			
8.8.1.1	Details	Implementation Info: This field should be set for M2UA messages. One of: K_GG59_SCTPUA_MGMT K_GG59_SCTPUA_ASPSM K_GG59_SCTPUA_ASPTM K_GG59_SCTPUA_M2UA K_GG59_SCTPUA_IIM			
8.8.1.2	Field	sctpUaMessageType_u	Spec Ref	IETF RFC 3331 Section 3.1.4	
8.8.1.2	Definition	This two-octet field specifies both the SCTP UA message class and type.			
8.8.1.2	Details	Implementation Info: This field is a two-octet combined field to indicate both the SCTP UA message class and type. The value should be equal to (messageClass * 256 + messageType).			
8.8.1.3	Field	sctpUaErrorCode_m	Spec Ref	IETF RFC 3331 Section 3.3.3.1	
8.8.1.3	Definition	The Error Code parameter indicates the reason for the SCTP user adaptation layer error.			
8.8.1.3	Details	Implementation Info: This field should be extracted from any message that contains it.			

### 8.8.2 Capture Buffer Indices

N/A

### 8.8.3 Call Trace Assistance

N/A

## 8.9 MTP3 User Adaptation Layer (M3UA)

### 8.9.1 Fields

The following fields should be extracted from all messages which contain them. All references are to draft-ietf-sigtran-m3ua-05.txt (see 2.3.73) unless otherwise stated.

MSU Breakout Fields					
8.9.1.1	Field	networkAppearance_m	Spec Ref	3.3.1	
	Definition	M3UA Network Appearance flag, allows you to distinguish between multiple distinct SS7 networks, with potentially different pointcode formats.			
	Details	Implementation Info: n/a			
8.9.1.2	Field	m3uaMessageClass_b	Spec Ref	IETF RFC 3332 Section 3.1.2	
	Definition	This field specifies the M3UA message class (e.g. MGMT, Transfer, SSNM, ASPSM, ASPTM, RKM).			
	Details	Implementation Info: n/a			
8.9.1.3	Field	m3uaMessageType_u	Spec Ref	IETF RFC 3332 Section 3.1.2	
	Definition	This two-octet field specifies both the M3UA message class and type			
	Details	Implementation Info: m3uaMessageType_u field is a two-octet combined field to indicate both M3UA message class and type. The value should be equal to (messageClass * 256 + messageType).			
8.9.1.4	Field	sctpUaMessageClass_b	Spec Ref	IETF RFC 3332 Section 3.1.2	
	Definition	This field specifies the SCTP UA message class (e.g. MGMT, Transfer, SSNM, ASPSM, ASPTM, RKM).			
	Details	Implementation Info: This field should be copied from m3uaMessageClass_b for all M3UA messages.			
8.9.1.5	Field	sctpUaMessageType_u	Spec Ref	IETF RFC 3332 Section 3.1.2	
	Definition	This two-octet field specifies both the SCTP UA message class and type			
	Details	Implementation Info: This field should be copied from m3uaMessageType_u for all M3UA messages.			
8.9.1.6	Field	sifLength_u	Spec Ref	IETF RFC 3332 Section 3.3.1	
	Definition	This is the length of the MSU from the start of the Signalling Information Field.			
	Details	Implementation Info: This field should be the length of Protocol Data parameter, excluding Tag and Length.			

<b>8.9.1.7</b>	Field	<b>serviceInd_b</b>	Spec Ref	IETF RFC 3332 Section 3.3.1
	Definition	The Service Indicator field.		
	Details	Implementation Info: n/a		
<b>8.9.1.8</b>	Field	<b>opc_m</b>	Spec Ref	IETF RFC 3332 Section 3.3.1
	Definition	The Originating Point Code		
	Details	Implementation Info: The Network Indicator bits should then be ORed into the appropriate bits of opc_m using the P7SET_NI macro (see 3.5).		
<b>8.9.1.9</b>	Field	<b>dpc_m</b>	Spec Ref	IETF RFC 3332 Section 3.3.1
	Definition	The Destination Point Code		
	Details	Implementation Info: The Network Indicator bits should then be ORed into the appropriate bits of dpc_m using the P7SET_NI macro (see 3.5).		
<b>8.9.1.10</b>	Field	<b>ssf_b</b>	Spec Ref	IETF RFC 3332 Section 3.3.1
	Definition	The fake Sub-Service Field.		
	Details	Implementation Info: This fake field should be calculated as the following formula: $ssf\_b = ((NI \& 3) << 2) + (MP \& 3)$ .		
<b>8.9.1.11</b>	Field	<b>sio_b</b>	Spec Ref	IETF RFC 3332 Section 3.3.1
	Definition	The fake Service Information Octet.		
	Details	Implementation Info: This fake field should be calculated as the following formula: $sio\_b = (serviceInd\_b \& 15) + (ssf\_b << 4)$ .		
<b>8.9.1.12</b>	Field	<b>slc_b</b>	Spec Ref	IETF RFC 3332 Section 3.3.1
	Definition	The Signalling Link Selection (SLS) field.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		
<b>8.9.1.13</b>	Field	<b>concernedDPC_m</b>	Spec Ref	IETF RFC 3332 Section 3.4.4
	Definition	The optional Concerned Destination parameter is only used if the SCON message is sent from an ASP to the SGP. It contains the point code of the originator of the message that triggered the SCON message.		
	Details	Implementation Info: This field should be extracted from any message that contains it.		

<b>8.9.1.14</b>	Field	<b>sctpUaErrorCode_m</b>	Spec Ref	IETF RFC 3332 Section 3.8.1	
	Definition	The Error Code parameter indicates the reason for the SCTP user adaptation layer error.			
	Details	Implementation Info: This field should be extracted from any message that contains it.			

<b>8.9.1.15</b>				
Field	Status->Status Type Status->Status Information	Spec Ref	RFC3332 Section 3.8.2	
TsdBreakout	m3uaStatus( <b>new</b> )	Format	m(value)	
Details	<p>The Status Type and Status Information should be extracted from M3UA Management (MGMT) Message Type Notify (NTFY).</p> <p>m3uaStatus is a combined field. It should be calculated as following formula:</p> $\text{m3uaStatus} = (\text{Status Type} \ll 16)   \text{Status Information}$ <p>The raw value of Status Type could be get via :  <code>M_GG59_GET_M3UA_STATUS_TYPE(m3uaStatus)</code></p> <p>The raw value of Status Information could be get via:  <code>M_GG59_GET_M3UA_STATUS_INFO(m3uaStatus)</code></p>			

## 8.9.2 Capture Buffer Indices

N/A

## 8.9.3 Call Trace Assistance

N/A

## 8.10 Null Layer 1

### 8.10.1 Fields

The Null Layer 1 Protocol is used as a LAP layer protocol within the acceSS7 layering model for non-SS7 scenarios. It is an internal concept and is not associated with any specification.

MSU Breakout Fields					
8.10.1.1	Field	ulp_b	Spec Ref	n/a	
	Definition	The value of the Upper Layer Protocol Indicator set by the de-streamer module.			
	Details	<p>Implementation Info:            Breakout from the correct position in the pre-payload area of the message. The following defines are to be used by applications accessing this field:</p> <ul style="list-style-type: none"> <li>K_GG59_ULP_TALI</li> <li>K_GG59_ULP_UNKNOWN</li> <li>K_GG59_ULP_MGCP</li> <li>K_GG59_ULP_GTP</li> <li>K_GG59_ULP_RLM</li> <li>K_GG59_ULP_Q931</li> <li>K_GG59_ULP_SIP</li> <li>K_GG59_ULP_M2UA</li> <li>K_GG59_ULP_M3UA</li> <li>K_GG59_ULP_IUA</li> <li>K_GG59_ULP_SUA</li> <li>K_GG59_ULP_M2PA</li> </ul>			

### 8.10.2 Capture Buffer Indices

N/A

### 8.10.3 Call Trace Assistance

N/A

## 8.11 GPRS Tunneling Protocol Version 0 (GTPv0)

### 8.11.1 Fields

The following fields should be extracted from all messages which contain them. All references are to GSM 09.60 version 7.3.1 Release 1998 (see 2.3.77) unless otherwise stated.

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.11.1.1</b>	Field	<b>messageType_b</b>	Spec Ref	GSM 09.60 - Section 7.2
	Definition	This is the unique Message Type identifier of the GTP message.		
	Details	Implementation info: The Message Type is extracted from the GTP header for every signalling message.		
<b>8.11.1.2</b>	Field	<b>gtpSequenceNumber_u</b>	Spec Ref	GSM 09.60 - Section 7.3
	Definition	This is the Sequence Number from the GTP header.		
	Details	Implementation info: The Sequence Number is a transaction ID for signalling messages and is extracted from the GTP header of every signalling message.		
<b>8.11.1.3</b>	Field	<b>IMSI.telno</b>	Spec Ref	GSM 09.60 - Section 6.0 & 7.9.2
	Definition	This is the unique IMSI for the MS.		
	Details	Implementation Info: The IMSI is extracted from any message that contains it. For some Location Management and Mobility Management messages, this shall be located in their respective GTP Information Elements, otherwise the IMSI is stored in the Tunnel ID part of the GTP header. For Tunnel Management messages the IMSI is stored in the Tunnel ID part of the GTP header. TID Ref : GSM 03.60 - Section 14.5.		
<b>8.11.1.4</b>	Field	<b>gtpCauseValue_u</b>	Spec Ref	GSM 09.60 - Section 7.9.1
	Definition	This is the Cause Information Element contained in certain PDUs.		
	Details	Implementation Info: The Cause Value is extracted from any message that contains it.		
<b>8.11.1.5</b>	Field	<b>gtpMsgDirectionFlg_b</b>	Spec Ref	N/A
	Definition	This is the flag to indicate the direction of each message relative to the signalling node which initiated the transaction.		
	Details	Implementation Info: This is set to K_GG59_GTP_FROMSRC for all GTP Request messages and SGSN Context Acknowledge message. This is set to K_GG59_GTP_TOSRC for all GTP Response messages and Error Indication message.		

<b>8.11.1.6</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	GSM 09.60 - Section 7.9.24
	Definition	The nature of address subfield of the MSISDN.		
	Details	Implementation Info: The MSISDN should be extracted from all Create PDP Context Request messages.		
<b>8.11.1.7</b>	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	GSM 09.60 - Section 7.9.24
	Definition	The numbering plan subfield of the MSISDN.		
	Details	Implementation Info: The MSISDN should be extracted from all Create PDP Context Request messages.		
<b>8.11.1.8</b>	Field	<b>PDPAddress.organisation_b</b>	Spec Ref	GSM 09.60 -section 7.9.18
	Definition	The organisation from the GTP End User address		
	Details	n/a		
<b>8.11.1.9</b>	Field	<b>PDPAddress.type_b</b>	Spec Ref	GSM 09.60 -section 7.9.18
	Definition	The type of the GTP End User address		
	Details	Access: The organisation_b field should be checked when using the type as the specification makes not requirement that the values will not clash for different organisations. Macros which do this for each defined value are provided e.g. M_GG61_isIPv4_PDPADR.		
<b>8.11.1.10</b>	Field	<b>PDPAddress.numOctets_b</b>	Spec Ref	GSM 09.60 -section 7.9.18
	Definition	The number of octets used in the PDPAddress.addrOctets_ba field.		
	Details	n/a		
<b>8.11.1.11</b>	Field	<b>PDPAddress.addrOctets_b</b>	Spec Ref	GSM 09.60 -section 7.9.18
	Definition	The address octets of the GTP End User address		
	Details	Implementation: The octets should be extracted as is from the message.  Access: The macro M_GG61_getIPv4_PDPADDR is provided to extract an IPv4 address from a PDP Address. The macro M_GG61_isIPv4_PDPADDR can be used to first check that the address does contain a IPv4 address.		
<b>8.11.1.12</b>	Field	<b>APNLength_u</b>	Spec Ref	GSM 09.60 -section 7.9.21
	Definition	Length of the Access Point Name (APN) in octets		
	Details	n/a		

<b>8.11.1.13</b>	Field	<b>APN_pb</b>	Spec Ref	GSM 09.60 -section 7.9.21
	Definition	Pointer to the start of the Access Point Name parameter data.		
	Details	Implementation: This should be set to point to the first octet of the APN after the length.		
<b>8.11.1.14</b>	Field	<b>TLLI_m</b>	Spec Ref	GSM 09.60 -section 7.9.4
	Definition	The Temporary Logical Link Identifier.		
	Details	Implementation: This is extracted from SGSN Context Request messages.		
<b>8.11.1.15</b>	Field	<b>routingAreaId_ba</b>	Spec Ref	GSM 09.60 -section 7.9.3
	Definition	The Routing Area Identification field.		
	Details	Implementation: This is extracted from SGSN Context Request and Identification Request messages.		
<b>8.11.1.16</b>	Field	<b>authTriplets_sa</b>	Spec Ref	GSM 09.60 - sections 7.7.2, 7.9.8 & 7.7.4, 7.9.19.
	Definition	An authentication triplet contains a random key (RAND), a signed response (SRES) and a ciphering key (Kc). The <i>authTriplets_sa</i> field is a array of authentication triplet structures containing these values.		
	Details	<p>Implementation Info:  <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 8.11.1.32 for the new field.</b>            Authentication triplets should be broken out from the following messages</p> <ul style="list-style-type: none"> <li>1) Identification Response (optional — conditional on the Identification Request being accepted); and</li> <li>2) SGSN Context Response (mandatory — conditional on the Context Request being accepted).</li> </ul> <p>For each authentication triplet the RAND, SRES and Kc should be broken out to the appropriate field in the next available array element. A maximum of <i>K_GG59_AUTHTRIPLETS_NUM</i> triplets may be broken out.</p>		
<b>8.11.1.17</b>	Field	<b>numAuthTriplets_b</b>	Spec Ref	GSM 09.60 - sections 7.7.2 & 7.7.4, 7.9.19.
	Definition	The number of authentication triplets that are broken out of a GTP message.		
	Details	<p>Implementation Info:  <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 8.11.1.32 for the new field.</b>            The Identification Response message does not explicitly identify how many triplets the message contains so this value is calculated from the number of triplets broken out of the message.            The MM Context information element of the SGSN Context Response message explicitly includes the number of authentication triplets contained.</p>		

<b>8.11.1.18</b>	Field	<b>GTP_cipherKey_ba</b>	Spec Ref	GSM 09.60 - section 7.7.4, 7.9.19.
	Definition	The ciphering key (Kc) that is currently in use by the old SGSN when a transfer between SGSNs occurs at the Inter SGSN Routing Update procedure.		
	Details	<p>Implementation Info:  <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 8.11.1.33 for the new field.</b>  The Kc occurs individually, i.e. not as part of an authentication triplet, in an SGSN Context Response message MM Context information element.</p>		
<b>8.11.1.19</b>	Field	<b>PTMSI.telno</b>	Spec Ref	GSM 09.60 - section 7.9.5.
	Definition	The Packet Temporary Mobile Subscriber Identifier		
	Details	<p>Implementation Info:  The PTMSI value should be extracted from every SGSN IDENTIFICATION REQUEST message than contains it</p>		
<b>8.11.1.20</b>	Field	<b>gtpCipheringAlg_b</b>	Spec Ref	GSM 09.60 - section 7.9.19.
	Definition	Indicates the ciphering algorithm that is in use		
	Details	<p>Implementation Info:  The Used Cipher value should be extracted from the MM Context information element of every SGSN CONTEXT RESPONSE message than contains it</p>		
<b>8.11.1.21</b>	Field	<b>gtpTunnelID_ba</b>	Spec Ref	GSM 09.60 - Section 6
	Definition	The Tunnel ID contained within the GTP header.		
	Details	<p>Implementation Info:  The full Tunnel ID should be extracted from all GTP messages. This includes an IMSI which may also be broken out as per 8.1.11.3.</p>		
<b>8.11.1.22</b>	Field	<b>gtpHeaderFlowLabel_u</b>	Spec Ref	GSM 09.60 - Section 6
	Definition	The Flow Label contained in the GTP header.		
	Details	<p>Implementation Info:  The Flow Label should be extracted from the header of all GTP messages.</p>		
<b>8.11.1.23</b>	Field	<b>gtpFlowLabelSignal_u</b>	Spec Ref	GSM 09.60 - Section 7.9.15
	Definition	The Flow Label (Signalling)		
	Details	<p>Implementation Info:  The Flow Label Signalling Information Element should be extracted from all messages that it appears in.</p>		

<b>8.11.1.24</b>	Field	<b>gtpFlowLabelData_u</b>	Spec Ref	GSM 09.60 - Section 7.9.14 & 7.9.16
	Definition	The Flow Label (Data)		
	Details	<p>Implementation Info: The Flow Label Data I Information Element should be extracted from all messages that it appears in.</p> <p>The Downlink Flow Label Data field from the Flow Label Data II Information Element should be extracted whenever it appears.</p> <p>When multiple instances of this field appear in the same message, the final one should be broken out.</p>		
<b>8.11.1.25</b>	Field	<b>gtpFlowLabelDataNSAPI_b</b>	Spec Ref	GSM 09.60 - Section 7.9.16
	Definition	The NSAPI Accompanying the Downlink Flow Label (Data)		
	Details	<p>Implementation Info: The NSAPI field from the Flow Label Data II Information Element should be extracted whenever it appears.</p> <p>When multiple instances of this field appear in the same message, the last one should be broken out.</p>		
<b>8.11.1.26</b>	Field	<b>gtpSGSNSignalAddr</b>	Spec Ref	GSM 09.60 - Section 7.9.23
	Definition	Structure containing the SGSN Signalling Address within the current message.		
	Details	<p>Implementation Info: The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6. The <b>numOctets_b</b> field should be populated with the length of the address. The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:</p> <p>Create PDP Context Request (GSM 09.60 - Section 7.5.1) - 1st occurrence of I.E. in message. Update PDP Context Request (GSM 09.60 - Section 7.5.3) - 1st occurrence of I.E. in message. Create AA PDP Context Request (GSM 09.60 - Section 7.5.7) - 1st occurrence of I.E. in message.</p>		

<b>8.11.1.27</b>	Field	<b>gtpSGSNDataAddr</b>	Spec Ref	GSM 09.60 - Section 7.9.23
	Definition	Structure containing the SGSN Data Address within the current message.		
	Details	<p>Implementation Info:</p> <p>The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG</p> <p>The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.</p> <p>The <b>numOctets_b</b> field should be populated with the length of the address.</p> <p>The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:</p> <ul style="list-style-type: none"> <li>Create PDP Context Request (GSM 09.60 - Section 7.5.1) - 2nd occurrence of I.E. in message.</li> <li>Update PDP Context Request (GSM 09.60 - Section 7.5.3) - 2nd occurrence of I.E. in message.</li> <li>Create AA PDP Context Request (GSM 09.60 - Section 7.5.7) - 2nd occurrence of I.E. in message.</li> <li>SGSN Context Acknowledge (GSM 09.60 - Section 7.7.5)</li> </ul>		
<b>8.11.1.28</b>	Field	<b>gtpGGSNSignalAddr</b>	Spec Ref	GSM 09.60 - Section 7.9.23
	Definition	Structure containing the GGSN Signalling Address within the current message.		
	Details	<p>Implementation Info:</p> <p>The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG</p> <p>The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.</p> <p>The <b>numOctets_b</b> field should be populated with the length of the address.</p> <p>The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:</p> <ul style="list-style-type: none"> <li>Create PDP Context Response (GSM 09.60 - Section 7.5.2) - 1st occurrence of I.E. in message.</li> <li>Update PDP Context Response (GSM 09.60 - Section 7.5.4) - 1st occurrence of I.E. in message.</li> <li>Create AA PDP Context Response (GSM 09.60 - Section 7.5.8) - 1st occurrence of I.E. in message.</li> </ul>		

<b>8.11.1.29</b>	Field	<b>gtpGGSNDataAddr</b>	Spec Ref	GSM 09.60 - Section 7.9.23
	Definition	Structure containing the GGSN Data Address within the current message.		
	Details	<p>Implementation Info:</p> <p>The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG</p> <p>The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.</p> <p>The <b>numOctets_b</b> field should be populated with the length of the address.</p> <p>The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:</p> <ul style="list-style-type: none"> <li>Create PDP Context Response (GSM 09.60 - Section 7.5.2) - 2nd occurrence of I.E. in message.</li> <li>Update PDP Context Response (GSM 09.60 - Section 7.5.4) - 2nd occurrence of I.E. in message.</li> <li>Create AA PDP Context Response (GSM 09.60 - Section 7.5.8) - 2nd occurrence of I.E. in message.</li> </ul>		
<b>8.11.1.30</b>	Field	<b>QoSProfile_ba</b>	Spec Ref	GSM 09.60 - Section 7.9.6 GSM 04.08 - Section 10.5.6.5
	Definition	The Quality of Service Profile		
<b>8.11.1.31</b>	Field	<b>APNSelectionMode_b</b>	Spec Ref	GSM 09.60 - Section 7.9.13
	Definition	The APN Selection Mode		
<b>8.11.1.32</b>	Field	<b>authVectorSet</b>	Spec Ref	3GPP TS 29.060, Section 7.7.7, 7.7.35 & 7.7.28
	Definition	This is the set of Authentication Vectors.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. It is implemented as a multi-value structure field, each value being a single authentication vector. All the instances of authentication vectors should be extracted. The gg59 API getMValCount(tag) can be used to discover the actual number of authentication vectors extracted.</p>		

<b>8.11.1.33</b>	Field	<b>securityInfo</b>	Spec Ref	3GPP TS 29.060, Section 7.7.28
	Definition	This is the type of security key present in the message and the cipher and integrity key values as appropriate.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>		

## 8.11.2 Capture Buffer Indices

Capture Buffer Indices			
	I7526_hashAddCpctTelno (numbers)	I7524_hashAdd3Val (datasets)	
<b>8.11.2.1</b>	GTP Messages Containing an IMSI (Note: IMSI is in header, therefore all Tunnel Management messages)	IMSI.telno	M_GG59_DIGITS_LOWER_32 (gtpTunnelID_ba), M_GG59_DIGITS_UPPER_32 (gtpTunnelID_ba), 0
<b>8.11.2.2</b>	GTP Request Messages		innerIPv4SrcAddress_m, gtpSequenceNumber_u, 0
<b>8.11.2.3</b>	GTP Response Messages		innerIPv4DestAddress_m, gtpSequenceNumber_u, 0
<b>8.11.2.4</b>	Version Not Supported		innerIPv4SrcAddress_m, gtpSequenceNumber_u, 0
<b>8.11.2.5</b>	Error Indication		innerIPv4DestAddress_m, gtpSequenceNumber_u, 0
<b>8.11.2.6</b>	SGSN Context AcknowledgeMessage		innerIPv4SrcAddress_m, gtpSequenceNumber_u, 0
<b>8.11.2.7</b>	GTP Messages Containing MSISDN	callingParty.telno	n/a
<b>8.11.2.8</b>	SGSN Context Request	n/a	TLLI_m, M_GG59_RAI_LOWER_32(routingAreaId_ba), M_GG59_RAI_UPPER_32(routingAreaId_ba)

### 8.11.3 Call Trace Assistance

Call Trace Assistance															
8.11.3.1	Create PDP Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI	X				X	X							
		GTPID	X												
		CALLING	X				X								
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
8.11.3.2	Send RoutInfo GPRS Request Failure Report Request Note MS GPRS Present Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI (see note a)	X				X	X							
		GTPIPSEQ	X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"Send RoutInfo for GPRS Request" "Failure Report Request" "Note MS GPRS Present Request"								

Call Trace Assistance															
<b>8.11.3.3</b>	Update PDP Context Request Delete PDP Context Request PDU Notification Request PDU Notification Reject Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI (see note a)	X				X	X							
		GTPTID	X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"Update PDP Context Request" "Delete PDP Context Request" "PDU Notification Request" "PDU Notification Reject Request"								
<b>8.11.3.4</b>	Identification Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		GTPIPSEQ	X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"Identification Request"								

Call Trace Assistance															
<b>8.11.3.5</b>	Error Indication	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI					X		X						
		GTPTID		X	X	X									
		MATCHRULE													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			0		n/a		n/a		5000						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"Error Indication"								
<b>8.11.3.6</b>	SGSN Context Response <sup>a</sup>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		IMSI (see note b)	X				X								
		GTPIPSEQ		X	X										
		MATCHRULE													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		60		n/a		5000						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"SGSN Context Response"								

Call Trace Assistance																
<b>8.11.3.7</b>	Send Routeing Info GPRS Response	CTFlags Critter GTPIPSEQ	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
				X		X										
	Failure Report Response	MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
	Note MS GPRS Present Response		0		n/a		n/a		n/a							
	Cross Triggers	Local					Global									
							X									
	State of Call	CTState					CTEnhState									
		n/a					"Send Routeing Info for GPRS Response" "Failure Report Response" "Note MS GPRS Present Response"									
<b>8.11.3.8</b>	Create PDP Context Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
				X		X										
	Update PDP Context Response	MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
	Delete PDP Context Response		0		n/a		n/a		n/a							
	Cross Triggers	Local					Global									
							X									
	PDU Notification Response	State of Call	CTState				CTEnhState									
			n/a				"Create PDP Context Response" "Update PDP Context Response" "Delete PDP Context Response" "PDU Notification Response" "PDU Notify Reject Response"									

Call Trace Assistance															
<b>8.11.3.9</b>	Identification Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X				X		X						
		GTPIPSEQ		X	X	X									
		MATCHRULE													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			0		n/a		n/a		5000						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"Identification Response"								
<b>8.11.3.10</b>	SGSN Context Acknowledge	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
				X		X									
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			0		n/a		n/a		n/a						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"SGSN Context Acknowledge"								

Call Trace Assistance																
<b>8.11.3.11</b>	Echo Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
			X													
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				"Echo Request"									
<b>8.11.3.12</b>	Echo Response  Version Not Supported	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		GTPIPSEQ				X										
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				"Echo Response" "Version Not Supported"									

Call Trace Assistance														
<b>8.11.3.13</b>	Create AA PDP Context Request Delete AA PDP Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		GTPTID	X											
		IMSI	X				X	X	X					
		MATCHRULE	AND											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		5		n/a		n/a					
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
			n/a				"Create AA PDP Context Request" "Delete AA PDP Context Request"							
<b>8.11.3.14</b>	Create AA PDP Context Response Delete AA PDP Context Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		GTPTID				X								
		MATCHRULE	AND											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			0		5		n/a		n/a					
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
			n/a				"Create AA PDP Context Response" "Delete AA PDP Context Response"							

Call Trace Assistance															
<b>8.11.3.15</b>	Node Alive Request Redirection Request Data Record Transfer Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X												
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
		State of Call	CTState				CTEnhState								
			n/a				'Node Alive Request' 'Redirection Request' 'Data Record Transfer Request'								
<b>8.11.3.16</b>	Node Alive Response Redirection Response Data Record Transfer Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
						X									
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
		State of Call	CTState				CTEnhState								
			n/a				'Node Alive Response' 'Redirection Response' 'Data Record Transfer Response'								

Call Trace Assistance															
8.11.3.17	SGSN Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
	IMSI (see notes *)	X					X								
	GTPIPSEQ	X													
	TLLIRAI							X							
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
		n/a		5		n/a		n/a							
	Cross Triggers	Local				Global									
						X									
	State of Call	CTState				CTEnhState									
		n/a				"SGSN Context Request "									

a. For Mobility Management SGSN Context Request message, the IMSI is conditional. The IMSI is only present if the "MS Validated" Information Element is true.

## 8.12 Cisco Q.931+

### 8.12.1 Fields

The following fields should be extracted from all messages which contain them. References are to AT&T TR-4159 (see 2.3.78) except for the **q931plusOperation\_b** field which refers to Cisco ENG-22743 (see 2.3.79).

MSU Breakout Fields					
8.12.1.1	Field	<b>q931ProtDiscMsgType_u</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.2 & 3.6.4	
	Definition	The Q.931 Protocol Discriminator and Q.931 Message Type. The Protocol Discriminator is contained in the MSB and the Message Type is contained in the LSB.			
	Details	Implementation Info: The Protocol Discriminator (MSB) will have one of the following values:- Q.931 Maintenance Messages = K_GG59_Q931PROTDISC_MAINT (0x03) Q.931 User-Network Call Control Messages = K_GG59_Q931PROTDISC_CONTR (0x08) Q.931+ NI2 Maintenance Messages = K_GG59_Q931PROTDISC_NI2MAINT (0x43)			
8.12.1.2	Field	<b>messageType_b</b>	Spec Ref	Not populated for this protocol. See above.	
	Definition	n/a			
	Details	n/a			
8.12.1.3	Field	<b>q931plusOperation_b</b>	Spec Ref	Cisco ENG-22743: 8.5	
	Definition	The Q.931+ Operation.			
	Details	Implementation Info: Instead of defining lots of new message types Q.931+ defines 3 message types (Req, Resp, Conf) which contain an operation (c.f. the TCAP Package + Operation split).			
8.12.1.4	Field	<b>q931CallRefFlag_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.3	
	Definition	The Q.931 Call Reference Flag. One bit flag extracted from the Call Reference parameter.			
	Details	Implementation Info: Indicates the direction of the message relative to the call originator. If SET the message is in the OPPOSITE direction to the SETUP message. K_GG59_Q931MSGDIR_FROMSRC and K_GG59_Q931MSGDIR_TOSRC #defines have been created to simplify access to this field i.e. if the field equals _FROMSRC the message is in the same direction as the SETUP.  Broken out to a separate field because the flag value varies while the rest of the Call Reference is constant for a particular call.			

<b>8.12.1.5</b>	Field	<b>q931CallRef_m</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.3														
	Definition	The Q.931 Call Reference i.e. excluding the length and flag.																
	Details	<p>Implementation Info:  Note that the Cisco ENG-22743 spec (see 2.3.ttttt) defines the length of the field as 2 octets (MSB, LSB), therefore the call reference will fit in a 32 bit value. However code must be able to handle a 1 octet value.</p>																
<b>8.12.1.6</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.7														
	Definition	The Type of Number subfield from the Called Party Number parameter.																
	Details	<p>Implementation Info:  The field is mapped to the equivalent ISUP values i.e.</p> <table> <thead> <tr> <th>Q.931</th> <th>ISUP</th> <th>Desc</th> </tr> </thead> <tbody> <tr> <td>000</td> <td>002</td> <td>Unknown</td> </tr> <tr> <td>001</td> <td>004</td> <td>International</td> </tr> <tr> <td>002</td> <td>003</td> <td>National</td> </tr> <tr> <td>004</td> <td>001</td> <td>Subscriber</td> </tr> </tbody> </table> <p>All other Q.931 values should be left unchanged.  NOTE: This means an invalid Q.931 value of 3 would look like a valid ‘National’ number.</p>			Q.931	ISUP	Desc	000	002	Unknown	001	004	International	002	003	National	004	001
Q.931	ISUP	Desc																
000	002	Unknown																
001	004	International																
002	003	National																
004	001	Subscriber																
<b>8.12.1.7</b> (1)	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.7														
	Definition	The Numbering Plan Identification subfield from the Called Party Number parameter.																
	Details	<p>Implementation Info:  Although the spec specifies this as a 4-bit field, values are compatible with the ISUP 3-bit field.</p>																
	Field	<b>calledParty.telno</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.7														
	Definition	The Number Digits subfield from the Called Party Number parameter.																
(2)	Details	<p>Implementation Info:  Convert from IA5 characters to standard compact telno format e.g. “1”, “2”, “3”, “4”, “5” =&gt; 0x21, 0x43, 0x05.  NOTE: The spec defines characters “0” to “9”. Any values outwith this range should be mapped to 0x0f e.g. “1”, “A”, “2” =&gt; 0xf1, 0x02.</p>																
	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.9														
<b>8.12.1.8</b>	Definition	The Type of Number subfield from the Calling Party Number parameter.																
	Details	<p>Implementation Info:  The field is mapped to the equivalent ISUP values i.e.</p> <table> <thead> <tr> <th>Q.931</th> <th>ISUP</th> <th>Desc</th> </tr> </thead> <tbody> <tr> <td>000</td> <td>002</td> <td>Unknown</td> </tr> <tr> <td>001</td> <td>004</td> <td>International</td> </tr> <tr> <td>002</td> <td>003</td> <td>National</td> </tr> <tr> <td>004</td> <td>001</td> <td>Subscriber</td> </tr> </tbody> </table> <p>All other Q.931 values should be left unchanged.  NOTE: This means an invalid Q.931 value of 3 would look like a valid ‘National’ number.</p>			Q.931	ISUP	Desc	000	002	Unknown	001	004	International	002	003	National	004	001
Q.931	ISUP	Desc																
000	002	Unknown																
001	004	International																
002	003	National																
004	001	Subscriber																
Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.9															

<b>8.12.1.9</b>	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.9
	Definition	The Numbering Plan Identification subfield from the Calling Party Number parameter.		
	Details	<p>Implementation Info: Although the spec specifies this as a 4-bit field, values are compatible with the ISUP 3-bit field.</p>		
<b>8.12.1.10</b>	Field	<b>callingParty.telno</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.9
	Definition	The Number Digits subfield from the Calling Party Number parameter.		
	Details	<p>Implementation Info: Convert from IA5 characters to standard compact telno format e.g. “1”, “2”, “3”, “4”, “5” =&gt; 0x21, 0x43, 0x05. NOTE: The spec defines characters “0” to “9”. Any values outwith this range should be mapped to 0x0f e.g. “1”, “A”, “2” =&gt; 0xf1, 0x02.</p>		
<b>8.12.1.11</b>	Field	<b>typeOfMessage_b</b>	Spec Ref	N/A
	Definition	Protocol-independent indication for Call Control messages (used by Call Trace).		
	Details	<p>Implementation Info: The field is set according to the following mapping: K_GG59_INITIAL for SETUP messages K_GG59_FINAL for RELEASE COMPLETE messages K_GG59_CALLCTL for any other message with a Call Reference parameter 0 for any other message without a Call Reference parameter - if such a thing exists.</p>		
<b>8.12.1.12</b>	Field	<b>releaseCode_u</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.11
	Definition	The Cause Value subfield of the Cause Indicators Parameter. This is information sent in either direction containing the reason for sending the message in which it is contained.		
	Details	<p>Implementation Info: It should only be extracted from Release or Release Complete messages. This is a ‘protocol independent’ release code which should be mapped onto the ANSI ISUP values (new values can be added assuming they don’t clash with existing values). An offset of 600 (dec) is used to ensure a clash doesn’t occur.</p>		
<b>8.12.1.13</b>	Field	<b>abnormalFlag_b</b>	Spec Ref	n/a
	Definition	This is a flag that should be set to TRUE or FALSE depending on the value of releaseCode_u.		
	Details	<p>Implementation Info: This should be set to TRUE if releaseCode_u is considered ABNORMAL. Unless otherwise stated below, the only Cause values that are considered NORMAL are those in Classes 000, 001 (normal event) and 111 (interworking).</p>		
<b>8.12.1.14</b>	Field	<b>relCauseLocn_b</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.11
	Definition	The Location subfield of the Cause Indicators Parameter. This is information sent in either direction which identifies the network in which it originated.		
	Details	n/a		

<b>8.12.1.15</b>	Field	<b>causeIndicators_ba</b>	Spec Ref	AT&T TR-4159 Part III: 3.6.5.11
	Definition	The value of the first two octets of the Cause Indicators Parameter (excluding the identifier and length).		
	Details	n/a		

## 8.12.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>8.12.2.1</b>	SETUP	calledParty.telno callingParty.telno	n/a
<b>8.12.2.2</b>	Other <sup>a</sup>	n/a	If q931CallRefFlag_b = 0 [ innerIPDestAddr_m, q931CallRef_m, 0 ] If q931CallRefFlag_b = 1 [ innerIPSrcAddr_m, q931CallRef_m, 0 ]

a. The given scheme only supports tracing a call across a failover to the Standby Signaling Controller for Signaling Controller initiated calls. This should be OK, as in Internet Offload applications you would expect all calls to be in the Subscriber -> ISP direction, i.e. from the SS7 network to the NAS.

### 8.12.3 Call Trace Assistance

Call Trace Assistance																	
8.12.3.1	Setup	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		CALLED	X				X	X									
		CALLING	X				X	X									
		NASIP_CREF	X														
		MATCHRULE	AND														
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u									
			n/a		n/a		7	n/a									
		Cross Triggers	Local				Global										
							X										
		State of Call	CTState				CTEnhState										
			Setting Up				n/a										
8.12.3.2	Release Complete	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH							
		NASIP_CREF		X		X											
			CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u	trawlBackTime_u									
		Time Outs	2 (NASIP_CREF)		n/a		n/a	n/a									
		Cross Triggers	Local				Global										
							X										
		State of Call	CTState				CTEnhState										
			Released				n/a										

Call Trace Assistance														
<b>8.12.3.3</b>	Other	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		NASIP_CREF		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local			Global								
			n/a			n/a								
		State of Call	CTState			CTEnhState								
			Appropriate Call State Msg <b>OR</b> K_ANLS_NOCHANGE			n/a								

## 8.13 Generic Data Interface (GDI)

Notes: The GDI Protocols and the Breakout requirements are NOT implemented yet.

### 8.13.1 Fields

The following fields should be extracted from all messages which contain them.

MSU Breakout Fields				
	Field		Spec Ref	
<b>8.13.1.1</b>	Field	<b>gdiConnectionId_m</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1
	Definition	Bytes 1,2 and 3 of this field identify the permanent connection to be used for the reply.		
	Details	Implementation info: The gdiConnectionId_m is to be extracted for every GDI signalling message.		
<b>8.13.1.2</b>	Field	<b>gdiIncrementValue_m</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1
	Definition	A three byte incremental value.		
	Details	Implementation info: The gdiIncrementValue_m is to be extracted for every GDI signalling message..		
<b>8.13.1.3</b>	Field	<b>gdiResult_u</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1
	Definition	The gdiResult_u is a field used to store the result of GDI route response message.		
	Details	Implementation Info: The gdiResult_u field is to be extracted only from the GDI route response message.		
<b>8.13.1.4</b>	Field	<b>txNum[0].telno</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1
	Definition	The fieldcontains the routing number. Its length is at maximum 24 ditgits.		
	Details	Implementation Info: The GDI routing number should be extracted from all GDI Routing response messages it appears in.		
<b>8.13.1.5</b>	Field	<b>callingParty.telno</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1
	Definition	The digits of the calling party.		
	Details	Implementation Info: Calling Line Identity should be extracted to callingParty for every GDI message it appears in.		

<b>8.13.1.6</b>	<b>(1)</b>	Field	<b>calledParty.telno</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1	
		Definition	The digits of the called party.			
		Details	Implementation Info: The Dialed Number parameter should be extracted to calledParty.telno for every GDI message it appears in.			
<b>(2)</b>		Field	<b>messageType_b</b>	Spec Ref	3CL 02322 TATT SPZZQ, Version 3.1	
		Definition	The operation requested can range from 1 - 4 depending on the type of GDI message.			
		Details	Implementation Info: The operation requested parameter should be extracted for every GDI message.			

## 8.13.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>8.13.2.1</b>	All GDI messages		gdiIncrementValue_m, gdiConnectionId_m, 0

### 8.13.3 Call Trace Assistance

Call Trace Assistance															
<b>8.13.3.1</b>	Request route	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		CALLING	X				X	X							
		GDITID	X												
		CALLED	X				X	X							
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5		n/a		n/a						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"GDI Request "								
<b>8.13.3.2</b>	Route (response)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		GDITID		X	X	X									
			X				X								
		MATCHRULE	AND												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			2		5		n/a		5000						
		Cross Triggers	Local				Global								
							X								
		State of Call	CTState				CTEnhState								
			n/a				"GDI Request Response "								

Call Trace Assistance																
<b>8.13.3.3</b>	Route response (wait)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		GDITID		X												
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		36000		“n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“GDI Response (wait) “									
<b>8.13.3.4</b>	End Transaction	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		GDITID		X		X										
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			2		5		“n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“GDI End Transaction “									
<b>8.13.3.5</b>	Operator_Info	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		GDITID		X												
		MATCHRULE	AND													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
			n/a		5		n/a		n/a							
		Cross Triggers	Local				Global									
							X									
		State of Call	CTState				CTEnhState									
			n/a				“GDI Operator_Info ”									

## 8.14 SNDCP

### 8.14.1 Fields

The following fields should be extracted from all messages which contain them. References are to:

1. GPRS MS-SGSN SubNetwork Dependent Convergence Protocol (SNDCP): GSM 04.65 version 6.4.0 Release 1997 (see 2.3.84)
2. Internet Protocol Specification, IETF RFC 791, September 1981 (see 2.3.68)
3. Transmission Control Protocol, IETF RFC 793, September 1981 (see 2.3.70)
4. Assigned Numbers, IETF RFC 1700, October 1994 (see 2.3.85)
5. Point-to-Point Protocol (PPP), IETF RFC 1661, July 1994 (see 2.3.86)
6. Hypertext Transfer Protocol -- HTTP/1.1, IETF RFC 2068, January 1997 (see 2.3.87)

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.14.1.1</b>	Field	<b>sndcpInfoByte_b</b>	Spec Ref	GSM 04.65 - section 7.2.
	Definition	The first octet of the SNDCP header, that contains: Bits 1-4: Network Layer Service Access Point Identifier (NSAPI). Bit 5: More bit (M). Bit 6: SN-PDU Type bit (T). Bit 7: First segment indicator bit (F). Bit 8: Spare bit (X), should always be set to 0.		
	Details	Implementation Info: Every SNDCP message contains this octet, and it should always be extracted.		
<b>8.14.1.2</b>	Field	<b>sndcpCompAlgFlg_b</b>	Spec Ref	GSM 04.65 -sections 6.5, 6.6 and 7.2.
	Definition	The Optional second octet of the SNDCP header, where the 4 LSBs give the Protocol Control Information Compression coding (PCOMP) and the 4 MSBs give the Data Compression coding (DCOMP).		
	Details	Implementation Info: This octet is only include in the first SN-PDU of a N-PDU. The PCOMP refers to compression of the header of higher layer protocol headers, e.g. TCP/IP, whereas the DCOMP indicates compression of the entire SN-PDU data segment, including the higher layer protocol headers. If no compression coding is used the PCOMP and DCOMP are both set to 0, valid coding algorithms are identified by values in the range 1-14, and 15 is reserved.  Thus, if either PCOMP or DCOMP are non-zero the higher layer protocol headers will be compressed and information will not be able to be broken out. As only the higher layer header information is of interest, a wrapper should simply return FALSE if PCOMP and DCOMP both equal 0, or to TRUE otherwise.		

<b>8.14.1.3</b>	<b>Field</b>	<b>snrcepIpHeader_pb</b>	<b>Spec Ref</b>	GSM 0.465 - section 7.2. RFC 1661 - section 2.
	<b>Definition</b>	Pointer to the start of the IP header in the data segment of an SNDCP PDU.		
	<b>Details</b>	<p>Implementation Info:            If there is no PPP layer used to carry the IP payload in the SNDCP data segment the following approach (a) can be used to determine the value of <i>snrcep.ipHeader_pb</i>. Otherwise, approach (b) should be used.</p> <p>(a) If the IP header directly follows the SNDCP header.</p> <p>There is no value for the length of an SNDCP header that can be directly broken out to determine the start of the IP header from the pointer to the start of the user layer, <i>userDataStart_pb</i>. Instead the T-bit and F-bit have to be used to determine the SNDCP header length (in octets) for each format, using the following simple algorithm:</p> <pre> if (F_BIT == 1) {                                // First segment of N-PDU     if (T_BIT == 1) {         SNDCP_HEADER_LEN = 4;                    // SN-UNITDATA     } else         SNDCP_HEADER_LEN = 3;                  // SN-DATA } else {     if (T_BIT == 1) {                            // Not first segment of a N-PDU         SNDCP_HEADER_LEN = 3;                  // SN-UNITDATA     } else         SNDCP_HEADER_LEN = 1;                  // SN-DATA } </pre> <p>The IP header is only included in the first SN-PDU used to transfer all or a part of an N-PDU, thus in subsequent SN-PDUs, when the F-bit = 0, the <i>snrcep.ipHeader_pb</i> should be set to NULL. Otherwise, the value of <i>snrcep.ipHeader_pb</i> can be calculated from the number of SNDCP header octets, <i>SNDCP_HEADER_LENGTH</i>, from the pointer to the start of the SNDCP header, <i>userDataStart_pb</i>.</p> <p>(b) If the IP header in the SNDCP data segment is preceded by a PPP layer.</p> <p>The PPP layer can either be one or two octets in length, with a value of 0x21 or 0x0021 used respectively to indicate the carriage of non-compressed To differentiate between a one or two octet PPP layer, the first octet of an IP header, and any other header type, e.g. X.25, the first and second octet following the SNDCP header should be examined as follows:</p> <ol style="list-style-type: none"> <li>1. If the first octet is 0x21, it can be assumed that this is the first and only octet of the PPP layer, and that the next octet is the first octet of the IP header.</li> <li>2. If the first octet is 0x00 and the second octet is 0x21, it can be assumed that these are the two octets of a PPP layer, and that the next octet is the first octet of the IP header.</li> </ol> <p>In these cases the one or two octets length can be added to the <i>SNDCP_HEADER_LENGTH</i> calculated in (a) to determine the value of <i>snrcep.ipHeader_pb</i> from <i>userDataStart_pb</i>. To cover the remaining cases:</p> <ol style="list-style-type: none"> <li>3. If the first octet is within the range 0x45 and 0x4f, it can be assumed that the current octet is the first octet of IP header; as detailed in (a).</li> <li>4. If the first octet is any other value, including 0x7e for X.25, the payload is either compressed or an alternative protocol we are not interested in, and <i>snrcep.ipHeader_pb</i> should be set to <i>NULL</i>.</li> </ol>		

<b>8.14.1.4</b>	Field	<b>sndcpIpv4SrcAddress_m</b>	Spec Ref	RFC 791 - section 3.1.
	Definition	Source IP address.		
	Details	<p>Implementation Info: The Source IP address<sup>a</sup> takes up the 13th to 16th octet of the IP header, inclusive, and should be removed from every message that contains it.<sup>b</sup></p>		
<b>8.14.1.5</b>	Field	<b>sndcpIpv4DestAddress_m</b>	Spec Ref	RFC 791 - section 3.1.
	Definition	Destination IP address.		
	Details	<p>Implementation Info: The Destination IP address takes up the 17th to 20th octet of the IP header, inclusive, and should be removed from every message that contains it.</p>		
<b>8.14.1.6</b>	Field	<b>sndcpNextIPprotocol_b</b>	Spec Ref	RFC 791 - section 3.1; and RFC 790 - section 1.0.
	Definition	Value that identifies the next level protocol sitting above IP in the stack. Valid values range from 1-254, although a number of these are unassigned. Values of interest are (decimal): 6 - Transmission Control Protocol (TCP). 17 - User Datagram Protocol (UDP).		
	Details	<p>Implementation Info: The 10th octet of the IP header indicates the next level protocol used in the data portion of the IP datagram. This value should be extracted from every message that contains it.</p>		
<b>8.14.1.7</b>	Field	<b>sndcpSrcPortNum_u</b>	Spec Ref	RFC 793 - section 3.1; and RFC 768 - section 1.0.
	Definition	The source port number, in both TCP and UDP headers. <sup>c</sup>		
	Details	<p>Implementation Info: In both TCP and UDP, the source port number is the first and second octet of the header, and should be extracted from every message that contains this header.</p>		
<b>8.14.1.8</b>	Field	<b>sndcpDestPortNum_u</b>	Spec Ref	RFC 793 - section 3.1; and RFC 768 - section 1.0.
	Definition	The destination port number, in both TCP and UDP headers.		
	Details	<p>Implementation Info: In both TCP and UDP, the destination port number is the third and fourth octet of the header, and should be extracted from every message that contains this header.</p>		
<b>8.14.1.9</b>	Field	<b>PAsigInfoLength_u</b>	Spec Ref	GSM 04.65 - Section 7.2
	Definition	The length of the signaling information in a data message that is to be truncated in PA, from the first octet of the message to the first data octet at the point of truncation, given by the pointer <i>PAtruncationPoint_pb</i> .		
	Details	<p>Implementation Info: This can be calculated using pointer arithmetic to determine the difference between the pointer to the start of the message, <i>startOfSU_pb</i>, and the pointer to the start of the data octets, <i>PAtruncationPoint_pb</i>. The result of this will give the number of octets of the signaling information in a data message that are to be retained.</p>		

<b>8.14.1.1</b>	Field	<b>snrcepPDUlength_u</b>	Spec Ref	GSM 04.64 - section 5.1 GSM 08.18 - section 11.3.15	
	Definition	The length of the SNDCP PDU in octets, from the first octet of its header to the last octet of the data segment.			
	Details	<p>Implementation Info:            The length of the SNDCP header varies with the type and number of SN-PDU in a series, and can be calculated as shown in subsection 8.14.1.3 on page 469. The remaining length of the data segment can be calculated using the LLC_PDU length octet, which is the last octet in the BSSGP header.</p> <p>The <i>serviceStart_pb</i> will point to the first octet of the LLC header, and the LLC-PDU length is given by the immediately preceding octet, which can be used to determine a pointer to the end of the LLC PDU, e.g. <i>serviceEnd_pb</i>. Pointer arithmetic can then be used to determine the number of octets from the start of the SNDCP header, <i>userDataStart_pb</i>, to the end of the LLC PDU, <i>serviceEnd_pb</i>. Subtracting the 3 octets of the LLC Frame Check Sequence (FCS) from the result will give the number of octets in the SNDCP PDU.</p>			
<b>8.14.1.11</b>	Field	<b>PAtruncationPoint_pb</b>	Spec Ref	RFC 791 - section 3.1; RFC 793 - section 3.1; and RFC 768 - section 1.0.	
	Definition	Pointer to the data octet in a message where PA will truncate the message. <sup>d</sup>			
	Details	<p>Implementation Info:            For SNDCP there are six cases to consider:</p> <ol style="list-style-type: none"> <li>1) If there is no SNDCP header, and no further conditions outwith SNDCP messages, <i>PAtruncationPoint_pb</i> should be set to NULL.</li> <li>2) If the SNDCP data segment is compressed, i.e. the wrapper from <i>snrcepCompAlgFlg_b</i> returns TRUE, <i>PAtruncationPoint_pb</i> should point to the first octet following the SNDCP header.</li> <li>3) If there are no IP, TCP or UDP headers <i>PAtruncationPoint_pb</i> should point to the first octet following the SNDCP header. This can arise in two situations:               <ol style="list-style-type: none"> <li>i) The first SN-PDU used to transfer all or a part of an N-PDU also contains an IP header and TCP header before the actual data segment proper begins. However, if a series of SN-PDUs is used to transfer an N-PDU, subsequent SN-PDUs do not contain the IP or TCP headers, and in this case the data segment begins immediately after the SNDCP header. Therefore, the <i>PAtruncationPoint_pb</i> will be SNDCP_HEADER_LEN octets, see subsection 8.14.1.3 on page 469, from the pointer to the start of the user layer, <i>userDataStart_pb</i>.</li> <li>ii) When an alternative Packet Data Protocol (PDP) to IP is used, such as X.25.</li> </ol> </li> <li>4) If there is an IP but no TCP or UDP headers, <i>PAtruncationPoint_pb</i> should point to the first octet following the IP header.</li> </ol> <p>When the protocol above IP is not TCP or UDP, for example ICMP, as there is no protocol kit that supports ICMP/IP, this would simply be displayed as raw hex. As the facility is there to snarf SNDCP data messages, the ICMP portion of the SNDCP data segment should be removed, but the IP header that precedes it should still be captured and displayed.</p>			

	<p><b>Details</b></p> <p>A pointer to the start of the next level protocol above IP can easily be established using the pointer to the start of the IP header - <i>sndcpIpHeader_pb</i> - and the Internet Header Length (IHL). The IHL gives the length of the IP header in 32 bit words, and is the 4 MSBs of the first octet in the IP header. Therefore, this number simply has to be multiplied by 4 to get the offset for the <i>PAtruncationPoint_pb</i> from <i>sndcpIpHeader_pb</i>.</p> <p>n.b. An optional PP layer of two octets can occur prior to the IP header, although if this should have already been taken into account in calculating the value of <i>sndcpIpHeader_pb</i>.</p> <p>5) If there are TCP/IP or UDP/IP headers and no HTTP message following these headers, <i>PAtruncationPoint_pb</i> should point to the first octet following the TCP/UDP header.</p> <p>The presence of an HTTP message above TCP/IP or UDP/IP can be determined by the source and destination port numbers in the TCP and UDP layers, <i>sndcpSrcPortNum_u</i> and <i>sndcpDestPortNum_u</i> respectively. If either port number is equal to the decimal value 80, then it can be assumed that an HTTP request or response is being carried. Therefore, for this condition neither source number should be 80, and therefore no HTTP message follows the TCP/IP or UDP/IP headers.</p> <p>To determine the point at which the data segment begins in the first SN-PDU containing either TCP/IP or UDP/IP, the length of the IP, TCP and UDP headers have to be calculated. This is a much simpler process than for the SNDCP header, as both IP and TCP headers contains an explicit header length value, and UDP headers are of a fixed length:</p> <ul style="list-style-type: none"> <li>i) IP header: contains the IHL, as mentioned above.</li> <li>ii) TCP header: the 4 MSBs of the 13 octet of the TCP header contains the Data Offset (DO) value, which also gives the number of 32 bit words in the TCP header, and thus can simply be multiplied by 4 again to give the number of octets.</li> <li>iii) UDP header: has a fixed length of 8 octets.</li> </ul> <p>Using these values the <i>PAtruncationPoint_pb</i> pointer can be calculated as an offset from the pointer to the start of the IP header, <i>sndcpIpHeader_pb</i>.</p> <p>n.b. An optional PP layer of two octets can occur prior to the IP header, although if this should have already been taken into account in calculating the value of <i>sndcpIpHeader_pb</i>.</p> <p>6) If there are either TCP/IP or UDP/IP headers followed by an HTTP message, <i>PAtruncationPoint_pb</i> should point to the first octet following the first CRLF of the HTTP message.</p> <p>As mentioned above if either the source or destination TCP/UDP port numbers equal 80, then it can be assumed that an HTTP message is being carried. The number of octets from the pointer to the start of the IP header, <i>sndcpIpHeader_pb</i>, to the start of the HTTP message can be calculated as described in option (5). The header line of an HTTP message is ended by a Carriage-Return Line-Feed (CRLF), which have the respective ASCII hex values of 0A and 0D. Therefore, <i>PAtruncationPoint_pb</i> should point to the octet following the first occurrence of these pair of values in the HTTP message.</p> <p>This field should be set for all messages on any GPRS interface that are to be truncated by PA and should be place in the expansion area of gg59. It is not specific to SNDCP messages on the Gb interface, but that is the extent of the definition covered here.</p>
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- a. For all IP/TCP/UDP fields that are broken out, we should look at reusing the existing TCP/UDP/IP breakout code as much as possible since the requirements here are basically to breakout all the same protocol fields, but into different fields of gg59.

- b. Before breaking out this information it should be ensured that IP is indeed the version of internetwork general protocol above SNDNP, and, for example, X.25 is not being used. This can be checked by the 4-bit version number given by the 4 LSBs of the first octet of the protocol header above SNDNP (IP = 4). An optional PPP layer can occur before the IP header in the SNDNP data segment (hex value=0021), but this should not prevent values from the IP header being broken out correctly.
- c. Whether the header format is TCP or UDP can be determined from sndcpNextIPprotocol\_b.
- d. This field is not specific to SNDNP, but it's definition here only covers SNDNP. It is expected that this field shall be used in the future for alternative message types on different GPRS interfaces.

## 8.14.2 Capture Buffer Indices

N/A

## 8.14.3 Call Trace Assistance

Call Trace Assistance														
<b>8.14.3.1</b>	SNDNP PDU	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		NODETLLI- VAL	X	X				X						
		IMSI <sup>a</sup>	X					X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		5		n/a		n/a					
		Cross Triggers	Local				Global							
							X							
		State of Call	CTState				CTEnhState							
			n/a				n/a							

a. For Call Trace performance consideration, SNDNP does not set MATCH on the IMSI (downlink messages). Therefore SNDNP will not start a call and can only be tied to a call already being traced.

## 8.15 LLC

### 8.15.1 Fields

The following fields should be extracted from all messages which contain them. References are to Logical Link Control (LLC) Protocol: GSM 04.64 version 7.0.0 Release 1998 (see 2.3.88).

<b>8.15.1.1</b>	Field	<b>LLC_sapi_b</b>	Spec Ref	GSM 04.64 -section 6.2.3.																			
	Definition	Service Access Point Identifier (SAPI) that identifies the point at which LLC services are provided by a Logical Link Entity (LLE) to a layer-3 entity. The SAPI is 4-bits in length, and is the 4 LSBs of the first octet of the LLC header, the layer-3 values are: 1 - GMM 7 - SMS 3, 5, 9, and 11 - User Data 1-4 for SNDCP. All other values in the range 0-15 are reserved.																					
	Details	Implementation Info: This value should be broken out from all messages that contain it.																					
<b>8.15.1.2</b>	Field	<b>LLC_CommandResponseFlg_b</b>	Spec Ref	GSM 04.64 - section 6.2.2.																			
	Definition	A flag that indicates whether the LLC frame is a command or a response.																					
	Details	Over the Gb interface, the MS side sends commands with the C/R bit set to 0 and responses with it set to 1. However, the SGSN does the opposite, i.e., commands are sent with the C/R bit set to 1 and responses with it set to 0.  Implementation Info: Use the <i>bssgpPDUType_b</i> to determine the direction of a particular message - this has the value K_GG59_BSSGP_DL_UNITDATA for frames from the SGSN to the MS and K_GG59_BSSGP_UL_UNITDATA for frames from the MS to the SGSN. This field can be set according to the following rules:  <table> <thead> <tr> <th>C/R bit</th> <th><i>bssgpPDUType_b</i></th> <th><b>LLC_CommandResponseFlg_b</b></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>K_GG59_BSSGP_DL_UNITDATA</td> <td>K_GG59_LLC_RESPONSE</td> </tr> <tr> <td>0</td> <td>K_GG59_BSSGP_UL_UNITDATA</td> <td>K_GG59_LLC_COMMAND</td> </tr> <tr> <td>1</td> <td>K_GG59_BSSGP_DL_UNITDATA</td> <td>K_GG59_LLC_COMMAND</td> </tr> <tr> <td>1</td> <td>K_GG59_BSSGP_UL_UNITDATA</td> <td>K_GG59_LLC_RESPONSE</td> </tr> <tr> <td>X</td> <td>any other value</td> <td>K_GG59_LLC_UNKNOWN_TYPE</td> </tr> </tbody> </table>				C/R bit	<i>bssgpPDUType_b</i>	<b>LLC_CommandResponseFlg_b</b>	0	K_GG59_BSSGP_DL_UNITDATA	K_GG59_LLC_RESPONSE	0	K_GG59_BSSGP_UL_UNITDATA	K_GG59_LLC_COMMAND	1	K_GG59_BSSGP_DL_UNITDATA	K_GG59_LLC_COMMAND	1	K_GG59_BSSGP_UL_UNITDATA	K_GG59_LLC_RESPONSE	X	any other value	K_GG59_LLC_UNKNOWN_TYPE
C/R bit	<i>bssgpPDUType_b</i>	<b>LLC_CommandResponseFlg_b</b>																					
0	K_GG59_BSSGP_DL_UNITDATA	K_GG59_LLC_RESPONSE																					
0	K_GG59_BSSGP_UL_UNITDATA	K_GG59_LLC_COMMAND																					
1	K_GG59_BSSGP_DL_UNITDATA	K_GG59_LLC_COMMAND																					
1	K_GG59_BSSGP_UL_UNITDATA	K_GG59_LLC_RESPONSE																					
X	any other value	K_GG59_LLC_UNKNOWN_TYPE																					

<b>8.15.1.3</b>	Field	<b>LLC_ControlFieldFormat_b</b>	Spec Ref	GSM 04.64 - section 6.3.1, 6.3.2, 6.3.3, 6.3.4 and Figure 8.											
	Definition	Indicates whether the control field format of a frame is I (Information transfer), S (Supervisory), UI (Unconfirmed Information) or U (Unnumbered).													
	Details	<p>This value can be used in combination with <i>LLC_MessageType_b</i> to unambiguously identify the commands and responses</p> <p><b>Implementation Info:</b> This field is set to the following values as appropriate:</p> <table> <tr><td>I Format</td><td>-&gt;</td><td>K_GG59_LLC_CTRL_I_FORMAT</td></tr> <tr><td>S Format</td><td>-&gt;</td><td>K_GG59_LLC_CTRL_S_FORMAT</td></tr> <tr><td>UI Format</td><td>-&gt;</td><td>K_GG59_LLC_CTRL_UI_FORMAT</td></tr> <tr><td>U Format</td><td>-&gt;</td><td>K_GG59_LLC_CTRL_U_FORMAT</td></tr> </table>			I Format	->	K_GG59_LLC_CTRL_I_FORMAT	S Format	->	K_GG59_LLC_CTRL_S_FORMAT	UI Format	->	K_GG59_LLC_CTRL_UI_FORMAT	U Format	->
I Format	->	K_GG59_LLC_CTRL_I_FORMAT													
S Format	->	K_GG59_LLC_CTRL_S_FORMAT													
UI Format	->	K_GG59_LLC_CTRL_UI_FORMAT													
U Format	->	K_GG59_LLC_CTRL_U_FORMAT													
<b>8.15.1.4</b>	Field	<b>LLC_EncryptionModeFlg_b</b>	Spec Ref	GSM 04.64 - section 6.3.5.5.1.											
	Definition	A boolean flag that indicates whether or not the LLC UI frame's information field, i.e., the GMM/SM, SMS or SNDCP portion of the message, is encrypted.													
	Details	<p>This value can be derived from the Encryption mode bit (E) of the UI control field format.</p> <p><b>Implementation Info:</b> If the E bit is set to 1 (to indicate an encrypted frame) this flag should be set TRUE, otherwise it should be set FALSE.</p> <p>Note 1: The system does not currently support decryption. If this flag is set to TRUE to indicate an encrypted information field then the system should be inhibited from running any higher layer breakouts.</p> <p>Note 2: When the system supports decryption the PAP will perform a decryption function on the information field. However, the message will still indicate that the information field is encrypted. This will require that the breakouts function differently on the PAP and the site/server/workstation to take account of whether information is or is not actually encrypted.</p>													
<b>8.15.1.5</b>	Field	<b>LLC_SequenceNumber_u</b>	Spec Ref	GSM 04.64 - sections 6.3.5.4.3 & 6.3.5.5.4.											
	Definition	For UI frames this is the Unconfirmed Sequence Number, N(U), of transmitted UI frames, whereas for I frames this is the Send Sequence number, N(S), of transmitted I frames.													
	Details	<p><b>Implementation Info:</b> The sequence number should only be broken out for all LLC frames with either UI or I control field formats, and the appropriate value broken out in each case.</p>													

<b>8.15.1.6</b>	Field	<b>LLC_MessageType_b</b>	Spec Ref	GSM 04.64 - section 6.3.																																													
	Definition	The LLC command/response type, one of: <table> <thead> <tr> <th>Message</th> <th>CMD</th> <th>RSP</th> <th>LLC_MessageType_b</th> </tr> </thead> <tbody> <tr> <td>RECEIVE READY (RR)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_RECEIVE_READY</td> </tr> <tr> <td>ACKNOWLEDGEMENT (ACK)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_ACKNOWLEDGEMENT</td> </tr> <tr> <td>SELECTIVE ACKNOWLEDGEMENT (SACK)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_SELECTIVE_ACK</td> </tr> <tr> <td>RECEIVE NOT READY (RNR)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_RECEIVE_NOT_READY</td> </tr> <tr> <td>SET ASYNCHRONOUS BALANCE MODE (SABM)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_SET_ASYNC_BAL_MODE</td> </tr> <tr> <td>DISCONNECT (DISC)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_DISCONNECT</td> </tr> <tr> <td>UNNUMBERED ACKNOWLEDGEMENT (UA)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_UNNUMBERED_ACK</td> </tr> <tr> <td>DISCONNECTED MODE (DM)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_DISCONNECTED_MODE</td> </tr> <tr> <td>FRAME REJECT (FRMR)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_FRAME_REJECT</td> </tr> <tr> <td>EXCHANGE IDENTIFICATION (XID)</td> <td>Y</td> <td>Y</td> <td>K_GG59_LLC_EXCHANGE_ID</td> </tr> </tbody> </table>				Message	CMD	RSP	LLC_MessageType_b	RECEIVE READY (RR)	Y	Y	K_GG59_LLC_RECEIVE_READY	ACKNOWLEDGEMENT (ACK)	Y	Y	K_GG59_LLC_ACKNOWLEDGEMENT	SELECTIVE ACKNOWLEDGEMENT (SACK)	Y	Y	K_GG59_LLC_SELECTIVE_ACK	RECEIVE NOT READY (RNR)	Y	Y	K_GG59_LLC_RECEIVE_NOT_READY	SET ASYNCHRONOUS BALANCE MODE (SABM)	Y	Y	K_GG59_LLC_SET_ASYNC_BAL_MODE	DISCONNECT (DISC)	Y	Y	K_GG59_LLC_DISCONNECT	UNNUMBERED ACKNOWLEDGEMENT (UA)	Y	Y	K_GG59_LLC_UNNUMBERED_ACK	DISCONNECTED MODE (DM)	Y	Y	K_GG59_LLC_DISCONNECTED_MODE	FRAME REJECT (FRMR)	Y	Y	K_GG59_LLC_FRAME_REJECT	EXCHANGE IDENTIFICATION (XID)	Y	Y	K_GG59_LLC_EXCHANGE_ID
Message	CMD	RSP	LLC_MessageType_b																																														
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ACKNOWLEDGEMENT (ACK)	Y	Y	K_GG59_LLC_ACKNOWLEDGEMENT																																														
SELECTIVE ACKNOWLEDGEMENT (SACK)	Y	Y	K_GG59_LLC_SELECTIVE_ACK																																														
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EXCHANGE IDENTIFICATION (XID)	Y	Y	K_GG59_LLC_EXCHANGE_ID																																														
	Details	<p>Implementation Info:  The RR, ACK, SACK and RNR commands/responses occur in LLC frames with I or S format control fields. The supervisory function bits (S1-S2) in the I/S format control field - 2 LSBs of the last octet - can be used to identify the type of command/response for RR, ACK, SACK and RNR LLC frames, and therefore set <i>LLC_MessageType_b</i> to the appropriate K_GG59_LLC_* #define value.</p> <p>The SABM, DISC, UA, DM, FMFR and XID commands/responses occur in LLC frames with U format control field. The unnumbered function bits (M1-M4) in the U format control field - 4 LSBs of the U format control field octet - can be used to identify the type of command/response for SABM, DISC, UA, DM, FMFR and XID LLC frames, and therefore set <i>LLC_MessageType_b</i> to the appropriate K_GG59_LLC_* #define value.</p> <p>Note: RR, ACK, SACK, RNR and XID frames have the same bit pattern value for commands and responses, and therefore the command/response flag, <i>LLC_CommandResponseFlg_b</i>, should be used to distinguish between the two if necessary.</p>																																															
<b>8.15.1.7</b>	Field	<b>LLC_UIframeIOV_m</b>	Spec Ref	GSM 04.64 - sections 6.4.1.6 and 8.9.2.																																													
	Definition	The Input Offset Value for UI frames (IOV-UI). IOV is a random 32-bit value generated by the SGSN and used for ciphering.																																															
	Details	<p>Implementation Info:  The IOV-UI is an XID parameter (type == 1), that can either occur in an XID command/response, or as part of an SABM command. It's value should be extracted from every LLC frame that contains it.</p>																																															
<b>8.15.1.8</b>	Field	<b>LLC_IframeIOV_m</b>	Spec Ref	GSM 04.64 - sections 6.4.1.6 and 8.9.2.																																													
	Definition	The Input Offset Value for I frames (IOV-I). IOV is a random 32-bit value generated by the SGSN and used for ciphering.																																															
	Details	<p>Implementation Info:  The IOV-I is an XID parameter (type == 2), that can either occur in an XID command/response, or as part of an SABM command. It's value should be extracted from every LLC frame that contains it.</p>																																															

<b>8.15.1.9</b>	Field	<b>PAttruncationPoint_pb</b>	Spec Ref	n/a
	Definition	Pointer to the data octet in a message where PA will truncate the message. <sup>a</sup>		
	Details	<p>Implementation Info: For LLC there is one case to consider based upon the value of <i>LLC_EncryptionModeFlg_b</i>.</p> <p>If <i>LLC_EncryptionModeFlg_b</i> is set to TRUE, for all messages captured on the Gb interface, i.e. GMM/SM, SMS or SNDCP, the truncation pointer <i>PAttruncation_pb</i> should be set to the start of the user layer, which is given by the pointer, <i>userDataStart_pb</i>.</p> <p>The setting of this pointer due to these rules overrides any other rules that have been declared for <i>PAttruncation_pb</i> for higher layer protocols on the Gb interface.</p> <p>For the non-deciphering version of the LLC protocol the field should be set to point to the start of the user layer for all I frames and any encrypted UI frames otherwise it should be left null. For the deciphering version of the LLC protocol the field should be set to point to the start of the user layer only for I frames or encrypted UI frames that could not be deciphered or for I frames where it could not be determined if the frame was encrypted or not (these cases are indicated by the <i>frameDecipherC</i> function returning FALSE).</p>		
<b>8.15.1.10</b>	Field	<b>PAsigInfoLength_u</b>	Spec Ref	n/a
	Definition	The length of the signaling information in a data message that is to be truncated in PA, from the first octet of the message to the first data octet at the point of truncation, given by the pointer <i>PAttruncationPoint_pb</i> .		
	Details	<p>Implementation Info: This can be calculated using pointer arithmetic to determine the difference between the pointer to the start of the message, <i>startOfSU_pb</i>, and the pointer to the start of the data octets, <i>PAttruncationPoint_pb</i>. The result of this will give the number of octets of the signaling information in a data message that are to be retained.</p>		
<b>8.15.1.11</b>	Field	<b>LLC_Reset_b</b>	Spec Ref	GSM 04.64 - section 6.4.1.1, 6.4.1.3, 6.4.1.6
	Definition	A boolean flag that indicates whether or not a Reset parameter is carried in a LLC XID, SABM or UA frame		
	Details	<p>Implementation Info: If the Reset parameter is carried in the LLC XID, SABM or UA frame then this flag should be set to TRUE, otherwise it should be set to FALSE</p>		

<b>8.15.1.12</b>	Field	llcDecipheringInd_b	Spec Ref	n/a
	Definition	The new llcDecipheringInd value, populated by the LLC deciphering routine or breakouts as required.		
	Details	<p><u>Implementation Info:</u> Indication values defined as:</p> <p><b>NOT_IMPLEMENTED:</b> This value is not actually set by the deciphering routine but is the value this field will have when the LLC protocol used by the system does not implement deciphering support the field will have this value regardless of the frame type.</p> <p><b>FRAME_NOT_CIPHERED:</b> For I frames that were received during an unciphered session and did not require deciphering. Also set by the breakouts (not the LLC Deciphering Routine) for unciphered UI frames.</p> <p><b>FRAME_ASSUMED_CIPHERED:</b> For I frames, where it was not possible to determine if the session is ciphered (or not)</p> <p><b>FRAME_IS_CIPHERED:</b> For I frames and UI frames, frame was received ciphered and it was not possible to decipher the frame</p> <p><b>FRAME_WAS_CIPHERED_NOW_DECIPHERED:</b> For I frames and UI frames, frame was received ciphered and it has been deciphered</p>		
<b>8.15.1.13</b>	Field	llcDecipheredAmount_m	Spec Ref	n/a
	Definition	The number of octets that were deciphered.		
	Details	Function “frameDecipherC” will provide this value		
<b>8.15.1.14</b>	Field	LLC_PDU_Length_u	Spec Ref	GSM 0818 -section 11.3.15.
	Definition	The length of an LLC PDU in octets as specified by the length indicator octet of an LLC-PDU IE.		
	Details	<p><u>Implementation Info:</u> This value should be broken out from all messages that contain it.</p>		

a.This field is not specific to LLC, but it's definition here only covers LLC.

## 8.15.2 Capture Buffer Indices

N/A

## 8.15.3 Call Trace Assistance

N/A

## 8.16 BSSGP

### 8.16.1 Fields

The following fields should be extracted from all messages which contain them. References are to BSS GPRS Protocol (BSSGP): GSM 08.18 version 6.6.0 Release 1997 (see 2.3.89).

<b>8.16.1.1</b>	Field	<b>CTAppLevel_b</b> (expansionArea.appLevel_b)	Spec Ref	n/a	
	Definition	The field is set by the breakouts and indicates what type of information has been broken out.			
	Details	Implementation Info: This field should be set to K_GG59_GB_EXPINFO for all BSSGP messages.			
<b>8.16.1.2</b>	Field	<b>bssgpPDUType_b</b>	Spec Ref	GSM 08.18 -section 11.3.24	
	Definition	The type of the PDU.			
	Details	Implementation Info: This field should be extracted all BSSGP messages. Notes: The type of the errored PDU should not be extracted to this field.			
<b>8.16.1.3</b>	Field	<b>bssgpCause_b</b>	Spec Ref	GSM 08.18 -section 11.3.8	
	Definition	Cause parameter.			
	Details	n/a			
<b>8.16.1.4</b>	Field	<b>bssgpPDUInErrorType_b</b>	Spec Ref	GSM 08.18 -section 11.3.22/24	
	Definition	The type of the errored PDU carried by a STATUS PDU			
	Details	n/a			
<b>8.16.1.5</b>	Field	<b>bssgpRadioCause_b</b>	Spec Ref	GSM 08.18 -section 11.3.27	
	Definition	The Radio Cause parameter.			
	Details	Definition: Gives the reason for an exception on the Radio Interface.			
<b>8.16.1.6</b>	Field	<b>bssgpRACapUpdCause_b</b>	Spec Ref	GSM 08.18 -section 11.3.28	
	Definition	The RA-Cap-UPD-Cause parameter.			
	Details	Definition: Indicates success or failure reason of the RA-CAPABILITY-UPDATE procedure.			
<b>8.16.1.7</b>	Field	<b>TLLI_m</b>	Spec Ref	GSM 08.18 -section 11.3.33	
	Definition	The (current) Temporary Logical Link Identifier.			
	Details	n/a			

<b>8.16.1.8</b>	Field	<b>oldTLLI_m</b>	Spec Ref	GSM 08.18 -section 11.3.33
	Definition	The old Temporary Logical Link Identifier.		
	Details	Implementation: Extracted from the TLLI (old) parameter from every DL-UNITDATA PDU that contains it.		
<b>8.16.1.9</b>	Field	<b>bssgpTMSI.telno</b>	Spec Ref	GSM 08.18 -section 11.3.34
	Definition	The Temporary Mobile Subscriber Identifier from BSSGP PDUs.		
	Details	Implementation: Extracted from every PAGING-CS and RADIO-STATUS PDU that contains it.		
<b>8.16.1.10</b>	Field	<b>PTMSI.telno</b>	Spec Ref	GSM 08.18 -section 11.3.34
	Definition	The Packet Temporary Mobile Subscriber Identifier from BSSGP PDUs.		
	Details	Implementation: Extracted from every PAGING-PS PDU that contains it.		
<b>8.16.1.11</b>	Field	<b>IMSI.telno</b>	Spec Ref	GSM 08.18 -section 11.3.14
	Definition	The InternationalMobile Subscriber Identifier.		
	Details	n/a		
<b>8.16.1.12</b>	Field	<b>routingAreaId_ba</b>	Spec Ref	3GPP TS 48.018, Section 11.3.9
	Definition	The Routing Area The Routing Area Identification of Cell Identifier		
	Details	Implementation: (1) The Routing Area should be extracted from any BSSGP message that contains it.  (2) The Routing Area Identification of Cell Identifier (the first 6 octets, not including Cell Identity) should only be extracted when ( ( bssgpPDUType_b == K_GG59_BSSGP_UL_UNITDATA ) && ( gprsmmMsgType_b == K_GG59_GPRSMM_DETACHREQ ) ).  Notes: Although it's a BSSGP field, it can only be implemented in GMMSM.		
<b>8.16.1.13</b>	Field	<b>bssgpLocationAreaId_ba</b>	Spec Ref	GSM 08.18 -section 11.3.17
	Definition	The Location Area from BSSGP PDUs.		
	Details	n/a		
<b>8.16.1.14</b>	Field	<b>cellId_ba</b> (Synonym: bssgpCellId_ba)	Spec Ref	GSM 08.18 -section 11.3.9
	Definition	The Cell Identifier from BSSGP PDUs, not including Cell Identifier (Serving) or Cell Identifier (Target).		
	Details	Implementation: This field should be extracted from any message that contains it, not including Cell Identifier (Serving) or Cell Identifier (Target). See also 8.16.1.19 aggregateCellId.		

<b>8.16.1.15</b>	Field	<b>bssgpNewBVCI_u</b>	Spec Ref	GSM 08.18 - section 11.3.6	
	Definition	The new BSSGP Virtual Connection Identifier (BVCI) value.			
	Details	<p>Implementation:</p> <p>The value of the new BVCI is to be used to populate this field. It should only be extracted from all BSSGP messages that contains this field.</p>			
<b>8.16.1.16</b>	Field	<b>bssgpBVCI_u</b>	Spec Ref	GSM 08.18 - section 11.3.6	
	Definition	The BSSGP Virtual Connection Identifier (BVCI) value.			
	Details	<p>Implementation:</p> <p>The value of the current or old BVCI is to be used to populate this field. It should only be extracted from all BSSGP messages that contains this field.</p>			
<b>8.16.1.17</b>	Field	<b>MSRadioAccCap_ba</b>	Spec Ref	3GPP TS 48.018, Section 11.3.22 3GPP TS 24.008, Section 10.5.5.12a	
	Definition	The MS Radio Access Capability Information Element.			
	Details	<p>Implementation:</p> <p>This field should be extracted from any BSSGP message that contains it, including the following BSSGP PDU types:</p> <ul style="list-style-type: none"> <li>- DL-UNITDATA</li> <li>- RA-CAPABILITY</li> <li>- RA-CAPABILITY-UPDATE-ACK</li> </ul> <p>In R99, R4 and R5, the maximum length of the IE could be 51 octets. If the length is bigger than K_GG59_GPRSMM_MS_RADIOACCCAP_SIZE (14), the rest octets should be truncated.</p> <p>The IE could also be present in GMM (see also 8.17.1.35). If the IE is present in both BSSGPP and GMM within same message, this field will be overwritten by the one in GMM.</p>			
<b>8.16.1.18</b>	Field	<b>bssgpQoSProfile_ba</b>	Spec Ref	3GPP TS 48.018, Section 11.3.9	
	Definition	This is the BSSGP Quality Of Service Profile field.			
	Details	<p>Implementation:</p> <p>This field should be extracted from BSSGP message that contains it.</p> <p>This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet.</p>			
<b>8.16.1.19</b>	Field	<b>aggregateCellId</b>	Spec Ref	3GPP TS 48.018, Section 11.3.9	
	Definition	The Cell Identifier from BSSGP PDUs, This is a list of aggregate and unified Cell Identifier fields, including Cell Identifier (no name), Cell Identifier (Serving) and Cell Identifier (Target).			

	Details	<p>Implementation:</p> <ol style="list-style-type: none"> <li>(1) This field is implemented as multi-value field. It should be extracted from any message that contains it, including Cell Identifier subfield in the RIM Routing Information parameter.</li> <li>(2) The subfield a7CellIdType_b indicates the type of Cell Identifier. One of: K_GG59_A7_CITYPE_NOTYPE (default) K_GG59_A7_CITYPE_SERVING (for Cell Identifier (Source)) K_GG59_A7_CITYPE_TARGET (for Cell Identifier (Target))</li> <li>(3) The subfield discriminator_b indicates the detail coding format of Cell identification. To differentiate from A Interface, the value should be set to K_GG59_CIDISC_RAI_CI.</li> <li>(4) The subfields value.string_ba[] and value.length_m indicate the Cell identification value.</li> </ol>			
<b>8.16.1.20</b>	Field	<b>sourceRNCId_ba</b>	Spec Ref	3GPP TS 48.018, Section 11.3.87	
	Definition	This is the Source RNC Id field.			
	Details	<p>Implementation:</p> <p>This field should be extracted from any message that contains it. This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The array length will be K_GG59_BSSGP_RNCID_SIZE.</p>			
<b>8.16.1.21</b>	Field	<b>targetRNCId_ba</b>	Spec Ref	3GPP TS 48.018, Section 11.3.87	
	Definition	This is the Target RNC Id field.			
	Details	<p>Implementation:</p> <p>This field should be extracted from any message that contains it. This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The array length will be K_GG59_BSSGP_RNCID_SIZE.</p>			
<b>8.16.1.22</b>					
Field	NAS container for PS Handover ->Type of ciphering algorithm	Spec Ref	3GPP TS 48.018 Section 11.3.81 3GPP TS 24.008 Section 10.5.1.14		
TsdBreak out	cipheringAlgorithm	Format	m(value)		
Details	This field should be extracted from any message that contains it.				
<b>8.16.1.23</b>					
Field	NAS container for PS Handover ->IOV-UI	Spec Ref	3GPP TS 48.018 Section 11.3.81 3GPP TS 24.008 Section 10.5.1.14		
TsdBreak out	LLC_UIframeIOV	Format	m(value)		
Details	This field should be extracted from any message that contains it.				

## 8.16.2 Capture Buffer Indices

N/A

### 8.16.3 Call Trace Assistance

Call Trace Assistance														
<b>7.13.3.0</b>	All message types (unless otherwise stated)	Timeouts	CTFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u								
			n/a	n/a	n/a	n/a								
		MATCHRULE	AND											
		Cross Triggers	Local				Global							
							X							
<b>8.16.3.1</b>	RA-CAPABILITY-UPDATE RA-CAPABILITY-UPDATE-ACK <sup>a</sup> SUSPEND SUSPEND-ACK SUSPEND-NACK RESUME RESUME-ACK RESUME-NACK FLUSH-LL FLUSH-LL-ACK FOW-CONTROL-MS FOW-CONTROL-MS-ACK	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
				X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				X							
		State of Call	CTState				CTEnhState							
			N/A				“BSSGP RA CAPABILITY UPDATE” “BSSGP RA CAPABILITY UPDATED” “BSSGP SUSPEND” “BSSGP SUSPENDED” “BSSGP SUSPEND Reject” “BSSGP RESUME” “BSSGP RESUMED” “BSSGP RESUME Reject” “BSSGP FLUSH” “BSSGP FLUSHED” “BSSGP FLOW CONTROL” “BSSGP FLOW CONTROL ACK”							
<b>8.16.3.2</b>	PAGING-PS (no P-TMSI)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X	X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		2		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				X							
		State of Call	CTState				CTEnhState							
			N/A				“Packet Switched PAGING (re-attach)”							

Call Trace Assistance														
<b>8.16.3.3</b>	PAGING-PS (P-TMSI present)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X	X						
		PTMSI	X				X	X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				X							
		State of Call	CTState				CTEnhState							
			N/A				“Packet Switched PAGING”							
<b>8.16.3.4</b>	PAGING-CS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X				X		X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				X							
		State of Call	CTState				CTEnhState							
			N/A				“Circuit Switched PAGING”							

Call Trace Assistance														
<b>8.16.3.5</b>	RADIO-STATUS	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		NODETLLI- VAL (if pres- ent)		X										
		IMSI (if pres- ent)						X						
		TMSI (if pres- ent)						X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				X							
		State of Call	CTState				CTEnhState							
			N/A				“BSSGP RADIO STATUS”							
<b>8.16.3.6</b>	LLC-DIS- CARDED	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		NODETLLI- VAL (if pres- ent)		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			N/A				“LLC Frames Discarded ”							

Call Trace Assistance															
<b>8.16.3.7</b>	CREATE-BSS-PFC	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
		NODETLLI-VAL	X												
		IMSI (if present)	X				X	X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		n/a		n/a		n/a						
		Cross Triggers	Local				Global								
			n/a				n/a								
		State of Call	CTState				CTEnhState								
			N/A				"BSSGP Create BSS PFC "								
<b>8.16.3.8</b>	DOWNLOAD-BSSPFC	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
	CREATE-BSS-PFCACK	NODETLLI-VAL		X											
	CREATE-BSS-PFCNACK	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u						
	MODIFY-BSS-PFC		n/a		n/a		n/a		n/a						
	MODIFY-BSS-PFCACK	Cross Triggers	Local				Global								
			n/a				n/a								
	State of Call	CTState				CTEnhState									
		N/A				"BSSGP Download BSS PFC " "BSSGP Create BSS PFC ACK " "BSSGP Create BSS PFC NACK " "BSSGP Modify BSS PFC " "BSSGP Modify BSS PFC ACK "									
<b>8.16.3.9</b>	DELETE-BSS-PFC	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
	DELETE-BSS-PFCACK	NODETLLI-VAL		X		X									
	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u							
		[NODETLLIVAL]=2		n/a		n/a		n/a							
	Cross Triggers	Local				Global									
		n/a				n/a									
	State of Call	CTState				CTEnhState									
		N/A				"BSSGP Delete BSS PFC " "BSSGP Delete BSS PFC ACK "									

- a.The IMSI is Conditional IE of RA-CAPABILITY-UPDATE-ACK. In CT design, it's not required to set CT flags on IMSI.

## 8.17 GPRS MM/MM

### 8.17.1 Fields

The following fields should be extracted from all messages which contain them. References are to:

1. ETSI Mobile radio interface layer 3 spec: GSM 04.08 version 7.4.0. Release 1998 (see 2.3.90)
2. 3GPP TS 24.008, V4.14.0, Release 4 (see 2.3.121).

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.17.1.1</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See 7.2.1.10		
	Details	Implementation: This should be set to K_GG59_BSSAP_INFO.		
<b>8.17.1.2</b>	Field	<b>bssapProt_b</b>	Spec Ref	GSM 04.08 -section 10.1/2
	Definition	The GPRS MM Message Type.		
	Details	Implementation: The Protocol Discriminator is extracted into this field, regardless of its value. The following #defines are provided for GPRS MM and SM values K_GG59_GPRS_MM 8 K_GG59_GPRS_MM 10		
<b>8.17.1.3</b>	Field	<b>gprsmmMsgType_b</b>	Spec Ref	GSM 04.08 -section 10.4
	Definition	The GPRS MM Message Type.		
	Details	n/a		
<b>8.17.1.4</b>	Field	<b>gprsmmCause_b</b>	Spec Ref	GSM 04.08 -section 10.5.5.14
	Definition	The GPRS MM Cause parameter.		
	Details	n/a		
<b>8.17.1.5</b>	Field	<b>routingAreaId_ba</b>	Spec Ref	GSM 04.08 -section 10.5.5.15
	Definition	The Routing Area Identification.		
	Details	Implementation: This field should be extracted from any message that contains it. When GPRS MM Detach Request Message in MS to network direction (if bssgpPDUType_b == KGG59_BSSGP_UL_UNITDATA), the field BSSGP cellId_ba should be copied to routingAreaId_ba. See TSDcs00447 for more details.		
<b>8.17.1.6</b>	Field	<b>gprssmMsgType_b</b>	Spec Ref	GSM 04.08 -section 10.4
	Definition	The GPRS SM Message Type.		
	Details	n/a		

<b>8.17.1.7</b>	Field	<b>gprssmCause_b</b>	Spec Ref	GSM 04.08 -section 10.5.6.6
	Definition	The GPRS SM Cause parameter.		
	Details	n/a		
<b>8.17.1.8</b>	Field	<b>transIdValue_m</b> (Synonym: gprssmTransId_b)	Spec Ref	GSM 04.08 -section 10.3.2
	Definition	The Transaction Identifier extacted from GPRS SM messages.		
	Details	Implementation Info: It's only required for Release 98 protocol (GSM.98.GMMSM). For UMTS protocol (3GPP.SM), refer to 8.17.1.40.		
<b>8.17.1.9</b>	Field	<b>gprssmNSAPI_b</b>	Spec Ref	GSM 04.08 -section 10.5.6.2
	Definition	The requested Network Service Access Point Identifier (NSAPI).		
	Details	n/a		
<b>8.17.1.1</b>	Field	<b>PDPAddress.organisation_b</b>	Spec Ref	GSM 04.08 -section 10.5.6.4
	Definition	The organisation from the GPRS SM PDP Context address		
	Details	n/a		
<b>8.17.1.11</b>	Field	<b>PDPAddress.type_b</b>	Spec Ref	GSM 04.08 -section 10.5.6.4
	Definition	The type of the GPRS SM PDP Context address		
	Details	Access: The organisation_b field should be checked when using the type as the specification makes not requirement that the values will not clash for different organisations. Macros which do this for each defined value are provided e.g. M_GG61_isIPv4_PDPADDR.		
<b>8.17.1.12</b>	Field	<b>PDPAddress.numOctets_b</b>	Spec Ref	GSM 04.08 -section 10.5.6.4
	Definition	The number of octets used in the PDPAddress.addrOctets_ba field.		
	Details	n/a		
<b>8.17.1.13</b>	Field	<b>PDPAddress.addrOctets_ba</b>	Spec Ref	GSM 04.08 -section 10.5.6.4
	Definition	The address octets of the GPRS SM PDP Context address		
	Details	Implementation: The octets should be extracted as is from the message.  Access: A macro to convert the octets into a IPv4 address is provided M_GG61_getIPv4PDPADDR. The type of the address should be checked to ensure it is an IPv4 address.		
<b>8.17.1.14</b>	Field	<b>APNLength_u</b>	Spec Ref	GSM 04.08 -section 10.5.6.1
	Definition	Length of the Access Point Name (APN) in octets		
	Details	n/a		

<b>8.17.1.15</b>	<b>Field</b>	<b>APN_pb</b>	<b>Spec Ref</b>	GSM 04.08 -section 10.5.6.1
	<b>Definition</b>	Pointer to the start of the Access Point Name parameter data.		
	<b>Details</b>	Implementation: This should be set to point to the first octet of the APN after the length.		
<b>8.17.1.16</b>	<b>Field</b>	<b>IMSI.telno</b>	<b>Spec Ref</b>	GSM 04.08 -section 10.5.1.4
	<b>Definition</b>	This is the International Mobile Subscriber Identity field.		
	<b>Details</b>	Implementation: Extracted from the Mobile Identity parameter when type of identity = IMSI		
<b>8.17.1.17</b>	<b>Field</b>	<b>PTMSI.telno</b>	<b>Spec Ref</b>	GSM 04.08 -section 10.5.1.4
	<b>Definition</b>	This is the Packet-Temporary Mobile Subscriber Identity field.		
	<b>Details</b>	<p>Implementation: Extracted from the Mobile Identity digit to PTMSI.telno when type of identity is TMSI/P-TMSI for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) "P-TMSI or IMSI" (Mobile Identity) in Message Attach Request</li> <li>(2) "Allocated P-TMSI" (Mobile Identity) in Message Attach Accept</li> <li>(3) "Allocated P-TMSI" (Mobile Identity) in Message P-TMSI Reallocation Command</li> <li>(4) "Allocated P-TMSI" (Mobile Identity) in Message Routing Area Update Accept</li> <li>(5) "Allocated P-TMSI" (Mobile Identity) in Message Activate Aa Pdp Context Accept (R98 only)</li> <li>(6) "P-TMSI" (Mobile Identity) in Message Detach Request (UMTS only)</li> <li>(7) "P-TMSI" (Mobile Identity) in Message Routing Area Update Request (UMTS only)</li> <li>(8) "P-TMSI" (Mobile Station Identity) in Message Service Request (UMTS only)</li> </ul> <p>Extracted from the Mobile Identity digit to PTMSI.telno when type of identity is TMSI/P-TMSI and both of the 2 most significant bits of the 4th octet (see Figure 10.5.4 of Section 10.5.1.4 Mobile Identity) are set for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) "Mobile Identity" (Mobile Identity) in Message Identity response</li> </ul>		
<b>8.17.1.18</b>	<b>Field</b>	<b>TMSI.telno</b>	<b>Spec Ref</b>	GSM 04.08 -section 10.5.1.4
	<b>Definition</b>	This is the Temporary Mobile Subscriber Identity field.		
	<b>Details</b>	<p>Implementation: Extracted from the Mobile Identity digit to TMSI.telno when type of identity is TMSI/P-TMSI for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) "MS Identity" (Mobile Identity) in Message Attach Accept</li> <li>(2) "MS Identity" (Mobile Identity) in Message Routing Area Update Accept</li> <li>(3) "IMEISV" (Mobile identity) in Message Authentication And Ciphering Response</li> </ul> <p>Extracted from the Mobile Identity digit to TMSI.telno when type of identity is TMSI/P-TMSI and any of the 2 most significant bits of the 4th octet (see Figure 10.5.4 of Section 10.5.1.4 Mobile Identity) are not set for the following parameters:</p> <ul style="list-style-type: none"> <li>(1) "Mobile Identity" (Mobile Identity) in Message Identity response</li> </ul>		

<b>8.17.1.19</b>	Field	<b>IMEI.telno</b>	Spec Ref	GSM 04.08 -section 10.5.1.4
	Definition	This is the International Mobile Equipment Identity field.		
	Details	<u>Implementation:</u> Extracted from the Mobile Identity parameter when type of identity = IMEI or IMEISV. When type of identity = IMEISV, the software version digits should be ignored.		
<b>8.17.1.20</b>	Field	<b>gprsmmAttachType_b</b>	Spec Ref	GSM 04.08 -section 10.5.5.2
	Definition	The type of attach requested		
	Details	<u>Implementation:</u> The IEI bits must not be extacted i.e. only the “Type of Attach”field bits.		
<b>8.17.1.21</b>	Field	<b>gprsmmDetachType_b</b>	Spec Ref	GSM 04.08 -section 10.5.5.5
	Definition	The type of detach.		
	Details	<u>Implementation:</u> The IEI bits must not be extacted i.e. only the “Type of Attach” and “Power off” field bits.		
<b>8.17.1.22</b>	Field	<b>gprsmmUpdateType_b</b>	Spec Ref	GSM 04.08 -section 10.5.5.18
	Definition	The type of update from for the location update procedure.		
	Details	<u>Implementation:</u> The IEI bits must not be extacted i.e. only the “Update Type Value” field bits.		
<b>8.17.1.23</b>	Field	<b>gprsmmUpdateResult_b</b>	Spec Ref	GSM 04.08 -section 10.5.5.17
	Definition	The result of the location update procedure.		
	Details	<u>Implementation:</u> The IEI bits must not be extacted i.e. only the “Update Result Value” field bits.		
<b>8.17.1.24</b>	Field	<b>gprsmmRANDauthParam_ba</b>	Spec Ref	GSM 04.08 - section 10.5.3.1.
	Definition	RAND authentication parameter field, that provides the MS with a non-predictable number used to calculate the SRES and ciphering key, Kc.		
	Details	<u>Implementation Info:</u> The RAND authentication parameter is a parameter of the following messages: 1) AUTHENTICATION AND CIPHERING REQUEST (optional).		
<b>8.17.1.25</b>	Field	<b>gprsmmSRESauthParam_m</b>	Spec Ref	GSM 04.08 - section 10.5.3.2.
	Definition	SRES authentication parameter field, that provides the network with the authentication response signature calculated in the MS.		
	Details	<u>Implementation Info:</u> The SRES authentication parameter is a parameter of the following messages: 1) AUTHENTICATION AND CIPHERING RESPONSE (optional).		

<b>8.17.1.26</b>	Field	<b>gprsmmCipheringAlg_b</b>	Spec Ref	GSM 04.08 - section 10.5.5.3.
	Definition	Identifies the ciphering algorithm that is used above the LLC layer, currently only one value is specified; the GPRS Encryption Algorithm.		
	Details	<p>Implementation Info:            The ciphering algorithm type is a mandatory field of the following messages:</p> <p>1) AUTHENTICATION AND CIPHERING REQUEST (mandatory).</p> <p>A value of zero indicates no algorithm is used, otherwise <i>GMM_CipheringAlg_b</i> should be set to the appropriate K_GG59_LCC_* value, e.g., K_GG59_GMM_GPRS_ENCRYPT_ALG</p>		
<b>8.17.1.27</b>	Field	<b>QoSProfile_ba</b>	Spec Ref	3GPP TS 24.008, Section 10.5.6.5
	Definition	This is the Quality Of Service field. It is to specify the QoS parameters for a PDP context. In 3GPP protocol specs, the QoS IE is defined to allow backward compatibility to earlier version of Session Management Protocol.		
	Details	<p>Implementation Info:  <b>This field should be extracted from octet 3-5 of all occurrences of the Quality of Service Information Element.</b>            This field should be extracted from any message that contains it.            This field was originally implemented as 3-octet static array field. It's changed to dynamic variable octet array to meet the size extension in 3GPP specifications. The protocols should allocate the dynamic array with a minimum size of 3 octets to be compatible with the original static array field size.            This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet.</p>		
<b>8.17.1.28</b>	Field	<b>gprssmRadioPriority_b</b>	Spec Ref	GSM 04.08 - section 10.5.7.2.
	Definition	The Radio Priority Information Element contained in SM messages		
	Details	<p>Implementation Info:            The lower 4 bits should be extracted from all occurrences of the Radio Priority Information Element.</p>		
<b>8.17.1.29</b>	Field	<b>gprssmLLCSAPI_b</b>	Spec Ref	GSM 04.08 10.5.6.9.
	Definition	The Requested LLC SAPI field contained in SM messages.		
	Details	<p>Implementation Info:            The lower 4 bits of the LLC Service Access Point Identifier Information Element should be extracted from every message in which it appears.</p>		
<b>8.17.1.30</b>	Field	<b>gprsmmDRXParam_u</b>	Spec Ref	GSM 04.08 10.5.5.6.
	Definition	The DRX Parameter Information Element contained in MM messages.		
	Details	<p>Implementation Info:            Octets 2 and 3 (i.e. everything bar the IEI) should be extracted from all occurrences of the DRX Parameter Information Element</p>		

<b>8.17.1.31</b>	Field	<b>gprsmmMSNetwrkCap_u</b>	Spec Ref	GSM 04.08 10.5.5.12.
	Definition	The MS Network Capability Information Element contained in MM messages		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from all occurrences of the MS Network Capability Information Element.</p> <p>It should be noted that while the currently supported version of GSM 04.08 is 7.4.0, which defines this field as tag, length, plus 1 octet value; version 7.17.0 defines it as having a 2 octet value. Hence this field is to be defined as 16 bit. To prevent ambiguity, octet 3 of this IE should always be broken out to the high byte of gprsmmMSNetwrkCap_u, while octet 4 -when present - should be broken out to the low byte.</p>		
<b>8.17.1.32</b>	Field	<b>gprsmmAttachResult_b</b>	Spec Ref	GSM 04.08 10.5.5.1.
	Definition	The Attach Result Information Element contained in MM messages		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from all occurrences of the Attach Result Information Element. Only the “Result of Attach” bits should be extracted - the “Attach Result IEI” should not be broken out.</p>		
<b>8.17.1.33</b>	Field	<b>gprsmmForceToStandby_b</b>	Spec Ref	GSM 04.08 10.5.5.7.
	Definition	The Force to Standby Information Element contained in MM messages		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from all occurrences of the Force to Standby Information Element.</p> <p>Only the “Force to Standby value” bits should be extracted - the “Force to Standby IEI” should not be broken out.</p>		
<b>8.17.1.34</b>	Field	<b>gprsmmReadyTimerVal_b</b>	Spec Ref	GSM 04.08 10.5.7.3.
	Definition	The Ready Timer Value Parameter contained in MM messages.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from octet 2 of the GPRS Timer Information Element when present in the following messages. All 8 bits (Timer Value and Unit fields) should be broken out.</p> <ul style="list-style-type: none"> <li>- Routing Area Update Request</li> <li>- Routing Area Update Accept*</li> <li>- Activate AA PDP Context Request</li> <li>- Activate AA PDP Context Accept</li> <li>- Attach Request</li> <li>- Attach Accept*</li> </ul> <p>* The GPRS Timer I.E. appears twice in these messages - once as a mandatory I.E., and once as an optional. Only the optional occurrence should be extracted.</p>		

<b>8.17.1.35</b>	Field	<b>MSRadioAccCap_ba</b> (Synonym: gprsmmMSRadioAccCap_ba)	Spec Ref	GSM 04.08 10.5.5.12a.
	Definition	The MS Radio Access Capability Information Element contained in MM messages.		
	Details	<p>Implementation Info:</p> <p>The value octets (namely octet 3 onwards) of the MS Radio Capability Access Information Element should be extracted from every message in which it occurs.</p>		
<b>8.17.1.36</b>	Field	<b>CTAppLevel_b</b> (expansionArea.appLevel_b)	Spec Ref	n/a
	Definition	The field is set by the breakouts and indicates what type of information has been broken out.		
	Details	<p>Implementation:</p> <p>This field should be set to K_GG59_GB_EXPINFO for any GPRS MM or GPRS SM messages on Gb interface, not on Iu Interface.</p>		
<b>8.17.1.37</b>	Field	<b>identityType_m</b>	Spec Ref	3GPP TS 24.008, Section 10.5.5.9 & 10.5.1.4
	Definition	Either the Identity Type field or the type of identity field of the Mobile Identity field. The Identity Type is used to specify which identity is requested.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from the following parameters:</p> <ul style="list-style-type: none"> <li>- The Identity Type field of Identity Request [9.4.12]</li> <li>- The type of identity subfield of the Mobile Identity field of Identity Response [9.4.13].</li> </ul> <p>One of:</p> <ul style="list-style-type: none"> <li>K_GG59_IDTYPE_NONE</li> <li>K_GG59_IDTYPE_IMSI</li> <li>K_GG59_IDTYPE_IMEI</li> <li>K_GG59_IDTYPE_IMEISV</li> <li>K_GG59_IDTYPE_TMSI</li> </ul>		
<b>8.17.1.38</b>	Field	<b>serviceType_m</b>	Spec Ref	3GPP TS 24.008, Section 10.5.5.20
	Definition	The Service Type field Specifies the purpose of the Service Request message sent by the mobile to the network.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_SERVTYPETYPE_SIGNALLING</li> <li>K_GG59_SERVTYPETYPE_DATA</li> <li>K_GG59_SERVTYPETYPE_PAGINGRESP</li> </ul>		

<b>8.17.1.39</b>	Field	<b>linkedTIFlag_m</b> <b>linkedTIValue_m</b>	Spec Ref	3GPP TS 24.008, Section 10.5.6.7 & 3GPP TS 24.007, Section 11.2.3.1.3	
	Definition	The Linked TI field is to specify the active PDP context from which the PDP address for the new PDP context could be derived by the network.			
	Details	<p>Implementation Info:</p> <p>The 2 fields should be extracted from any message that contains the Linked TI field.</p> <p>The field linkedTIFlag_m identifies who allocated the TI value for this transaction. One of:  <b>K_GG59_TIFLAG_FROM_ORIGINATOR</b>  <b>K_GG59_TIFLAG_TO_ORIGINATOR</b></p> <p>If TI value has no extension (0 -- 6), the field linkedTIValue_m should be binary value of bit7 to bit5 of octet1. If TI value has extension (7 -- 127) , the field linkedTIValue_m should be binary value of bit7 to bit1 of octet2.</p>			
<b>8.17.1.40</b>	Field	<b>transIdFlag_m</b> <b>transIdValue_m</b>	Spec Ref	3GPP TS 24.008, Section 10.3.2 & 3GPP TS 24.007, Section 11.2.3.1.3	
	Definition	The Transaction Identifier field.			
	Details	<p>Implementation Info:</p> <p>The 2 fields should be extracted from any SM message that contains the Transaction identifier field.</p> <p>The field transIdFlag_m identifies who allocated the TI value for this transaction. One of:  <b>K_GG59_TIFLAG_FROM_ORIGINATOR</b>  <b>K_GG59_TIFLAG_TO_ORIGINATOR</b></p> <p>If TI value has no extension (0 -- 6), the field transIdValue_m should be binary value of bit7 to bit5 of octet1. If TI value has extension (7 -- 127) , the field transIdValue_m should be binary value of bit7 to bit1 of octet2.</p>			
<b>8.17.1.41</b>	Field	<b>fullNetworkName.string_pb</b> <b>fullNetworkName.length_u</b>		3GPP TS 24.008, Section 10.5.3.5a & 9.4.19.1	
	Definition	This is the Full Name for Network field.			
	Details	<p>Implementation Info:</p> <p>This is extracted from any GPRS MM message that contains the Full name for network field.</p> <p>The pointer is set to first octet after the length octet.</p>			
<b>8.17.1.42</b>	Field	<b>shortNetworkName.string_pb</b> <b>shortNetworkName.length_u</b>		3GPP TS 24.008, Section 10.5.3.5a & 9.4.19.2	
	Definition	This is the Short Name for Network field.			
	Details	<p>Implementation Info:</p> <p>This is extracted from any GPRS MM message that contains the Short name for network field.</p> <p>The pointer is set to first octet after the length octet.</p>			

<b>8.17.1.43</b>	<b>Field</b>	<b>derivedIMSI.telno</b>		n/a
	<b>Definition</b>	This is the IMSI field populated via ITF for certain Gb messages which don't contain an IMSI. It was ONLY populated on the PAP.		
	<b>Details</b>	<p>Implementation Info:</p> <p>ITF should populate the field on the PAP for Gb messages in the following cases:</p> <ul style="list-style-type: none"> <li>(1) Any ciphered message which ITF knows the IMSI and the BSSGP does not contain the IMSI.</li> <li>(2) The following GPRS MM messages where the SU does not contain an IMSI and ITF has an IMSI for the session.</li> </ul> <p>K_GG59_GPRSMM_ATTACHREQ  K_GG59_GPRSMM_DETACHREQ  K_GG59_GPRSMM_RAUPDATEREQ  K_GG59_GPRSMM_IDRESP  K_GG59_GPRSMM_ATTACHACC  K_GG59_GPRSMM_ATTACHREJ  K_GG59_GPRSMM_RAUPDATEACC  K_GG59_GPRSMM_RAUPDATEREJ  K_GG59_GPRSMM_PTMSIREALLCMD  K_GG59_GPRSMM_AUTHCIPHERREQ</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>(1) The field is only populated by ITF where there is no performance hit in doing so. Therefore if the IMSI has already been extracted this field is not populated. Also, no extra processing is done by ITF, so only the current ciphered and GPRS MM messages that ITF looks at are checked.</li> <li>(2) The field is only available on the PAP.</li> <li>(3) For case2 above ITF must be the highest priority application i.e. run before any other application wishing to use the field. Case1 does not have this restriction since it is done in the frame-Decipher routine which is called before any other application.</li> <li>(4) It's recommend for application to check the presence of IMSI.telno before using the field as a fallback.</li> </ul>		
<b>8.17.1.44</b>	<b>Field</b>	<b>tearDownInd_m</b>		3GPP TS 24.008, Section 10.5.6.10
	<b>Definition</b>	This is the tear down indicator field. It indicates whether only the PDP context associated with this specific TI or all active PDP contexts sharing the same PDP address as the PDP context associated with this specific TI shall be deactivated.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This field should be extracted from any SM message that contains it. One of:</p> <p>K_GG59_TDI_TEARDOWNNOTREQUESTED  K_GG59_TDI_TEARDOWNREQUESTED</p> <p><b>Limitation:</b> For the implementation effort considerations, only part of protocols (3GPP.SM) extracted the field. See 2.4.4 for the latest implementation status.</p>		

## 8.17.2 Capture Buffer Indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>8.17.2.1</b>	Any GPRS MM Messages on Gb Intergace	n/a	monSPUniqueID_m, TLLI_m, K_GG59_GPRSMM_FAKE_TI
<b>8.17.2.2</b>	Any GPRS SM Messages on Gb Interface	n/a	monSPUniqueID_m, TLLI_m, transIdValue_m
<b>8.17.2.3</b>	Any R99 (or above) GPRS MM Messages containing an IMSI	IMSI.telno	n/a
<b>8.17.2.4</b>	Any R99 (or above) GPRS MM Messages containing a TMSI	TMSI.telno	n/a
<b>8.17.2.5</b>	Any GPRS MM or SM Messages containing a PTMSI	PTMSI.telno	n/a
<b>8.17.2.6</b>	Any R99 (or above) GPRS MM Messages containing an IMEI	IMEI.telno	n/a

## 8.17.3 Call Trace Assistance

All the CT flags on dataset NODETLLIVAL and TLLIRAI should be required to set only when the GPRS MM and SM messages run on Gb interface.

Call Trace Assistance						
<b>7.13.3.0</b>	All message types (unless otherwise stated)	Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u	CTMaxCallAge_u	trawlBackTime_u
			n/a	n/a	n/a	n/a
		MATCH-RULE	AND			
		Cross Triggers	Local		Global	
					X	

Call Trace Assistance													
8.17.3.1	Attach Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		NODETLLI-VAL	X										
		IMSI (always)	X				X	X					
		PTMSI	X					X					
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
			n/a			n/a		n/a		n/a			
		Cross Triggers			Local					Global			
										X			
		State of Call			CTState					CTEnhState <sup>a</sup>			
					N/A					"GPRS Attach Request "			
8.17.3.2	Attach Accept	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATCH		
		NODETLLI-VAL		X	X								
		TLLIRAI	X										
		PTMSI	X					X					
			X					X					
		IMSI	X										
		DPCDLR (Only if carried in a SCCP DT)		X	X								
				X	X								
		Time Outs	CTFinalUse Timeout_b			CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u			
			n/a			n/a		n/a		n/a			
		Cross Triggers			Local					Global			
					n/a					X			
		State of Call			CTState					CTEnhState <sup>b</sup>			
					N/A					"GPRS Attach Accept "			
										"Combined GPRS/IMSI Attach Accept "			

Call Trace Assistance																			
<b>8.17.3.3</b>	Detach Request -Network-> MSC <sup>c</sup> (GMM Cause Present)	CTFlags Critter  NODETLLI- VAL  IMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED								
				X															
			X					X											
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u										
			n/a	n/a				n/a	n/a										
		Cross Triggers	Local					Global											
			n/a					X											
		State of Call	CTState					CTEnhState <sup>c</sup>											
			N/A					"N/W Requested Detach " "N/W Requested Detach (reattach) " "N/W Requested IMSI Detach "											
<b>8.17.3.4</b>	Detach Request - MS -> Net- work <sup>d</sup>	CTFlags Critter  NODETLLI- VAL  PTMSI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE <sup>e</sup>	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED								
				X		X													
			X					X			X								
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u										
			[NODETLLIVAL]=2	n/a				n/a	n/a										
		Cross Triggers	Local					Global											
			n/a					X											
		State of Call	CTState					CTEnhState <sup>f</sup>											
			N/A					"GPRS Detach Request " "IMSI Detach Request " "Combined GPRS/IMSI Detach Request "											

Call Trace Assistance																		
<b>8.17.3.5</b>	Detach Accept	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED							
		NODETLLI-VAL		X		X												
		IMSI	X					X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u								
			[NODETLLIVAL]=2		n/a			n/a		n/a								
		Cross Triggers	Local					Global										
			n/a					X										
		State of Call	CTState					CTEnhState										
			N/A					"Detach Accept "										
<b>8.17.3.6</b>	Authentication and Ciphering Response Authentication and Ciphering Reject Authentication and Ciphering Failure	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED							
		NODETLLI-VAL		X														
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u								
			n/a		n/a			n/a		n/a								
		Cross Triggers	Local					Global										
			n/a					X										
		State of Call	CTState					CTEnhState										
			N/A					"Authentication and Ciphering Response " "Authentication and Ciphering Reject " "Authentication and Ciphering Failure "										
<b>8.17.3.7</b>	Identity Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED							
		NODETLLI-VAL		X					X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u								
			n/a		n/a			n/a		n/a								
		Cross Triggers	Local					Global										
			n/a					X										
		State of Call	CTState					CTEnhState										
			N/A					"Identity Request"										

Call Trace Assistance																	
<b>8.17.3.8</b>	Identity Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
		NODETLLI-VAL		X	X												
		IMSI (always)	X					X			X						
		IMEI	X					X									
		TMSI	X					X									
		PTMSI	X					X									
		DPCDLR (Only if carried in a SCCP DT)		X	X												
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			n/a		n/a			n/a		5000							
		Cross Triggers	Local					Global									
			n/a					X									
		State of Call	CTState					CTEnhState									
			N/A					"Identity Response"									

Call Trace Assistance																		
8.17.3.9	Routing Area Update Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED							
			X	X														
			X															
			X					X										
							X											
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u									
				n/a	n/a			n/a	n/a									
			Cross Triggers	Local				Global										
				n/a				X										
			State of Call	CTState				CTEnhState <sup>g</sup>										
				N/A				“Routing Area Update Request “ “Combined RA/LA Update Request “ “RA Update/IMSI Attach Request “ “Periodic RA Update Request “										
8.17.3.10	Routing Area Update Complete Routing Area Update Reject P-TMSI Reallocation Complete	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED							
				X														
			Time Outs	CTFinalUse Timeout_b	CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u									
				n/a	n/a			n/a	n/a									
			Cross Triggers	Local				Global										
				n/a				X										
			State of Call	CTState				CTEnhState										
				N/A				“Routing Area Update Complete “ “Routing Area Update Reject “ “P-TMSI Reallocation Complete “										

Call Trace Assistance															
8.17.3.11	Routing Area Update Accept	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED				
		NODETLLI-VAL		X	X										
		TLLIRAI	X												
		PTMSI (if present)	X						ttt <sup>ttt</sup>						
		IMSI <sup>i</sup> (always)	X					X				X			
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u						
			n/a		n/a			n/a	5000						
		Cross Triggers	Local						Global						
			n/a						X						
		State of Call	CTState						CTEnhState <sup>j</sup>						
8.17.3.12	GMM Status	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		NODETLLI-VAL		X											
		IMSI	X					X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u						
			n/a		n/a			n/a	5000						
		Cross Triggers	Local						Global						
			n/a						X						
		State of Call	CTState						CTEnhState						
			N/A						"GMM Status" "GMM Information"						

Call Trace Assistance																	
8.17.3.13	Authentication and Ciphering Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
		NODETLLI-VAL		X	X					X							
		IMSI	X					X									
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u								
			n/a		n/a			n/a	5000								
		Cross Triggers		Local				Global									
				n/a				X									
		State of Call		CTState				CTEnhState									
				N/A				"Authentication and Ciphering Request "									
		P-TMSI Reallocation Command	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
8.17.3.14	P-TMSI Reallocation Command	NODETLLI-VAL		X	X												
		IMSI	X						X								
		P-TMSI	X														
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u								
			n/a		n/a			n/a	5000								
		Cross Triggers		Local				Global									
				n/a				X									
		State of Call		CTState				CTEnhState									
				N/A				"P-TMSI Reallocation Command"									
		Activate PDP Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED					
8.17.3.15	Activate AA PDP Context Request	NODETLLI-VAL	X							X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u								
			n/a		n/a			n/a	n/a								
		Cross Triggers		Local				Global									
				n/a				X									
		State of Call		CTState				CTEnhState									
				N/A				"Activate PDP Context Request " "Activate AA PDP Context Request "									

Call Trace Assistance																			
<b>8.17.3.16</b>	Activate PDP Context Accept	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED								
		NODETLLI-VAL		X	X														
		IMSI	X					X	X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u									
			n/a		n/a			n/a		5000									
		Cross Triggers	Local					Global											
			n/a					X											
		State of Call	CTState					CTEnhState											
			N/A					"Activate PDP Context Accept "											
<b>8.17.3.17</b>	Deactivate PDP Context Request (MS > GSN on Gb, or both 2 directions on Iu)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED								
		NODETLLI-VAL	X	X					X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u									
			n/a		n/a			n/a		n/a									
		Cross Triggers	Local					Global											
			n/a					X											
		State of Call	CTState					CTEnhState											
			N/A					"Decativate PDP Context Request "											
<b>8.17.3.18</b>	Deactivate PDP Context Accept (GSN -> MS on Gb, or both 2 directions on Iu)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED								
		NODETLLI-VAL		X	X	X													
		IMSI	X					X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u									
			[NODETLLIVAL]=2		n/a			n/a		5000									
		Cross Triggers	Local					Global											
			n/a					X											
		State of Call	CTState					CTEnhState											
			N/A					"Deactivate PDP Context Accept "											

Call Trace Assistance													
8.17.3.19	Deactivate PDP Context Request (GSN -> MS on Gb)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK <sup>k</sup>	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED		
		NODETLLI-VAL	X	X									
		IMSI	X					X	X	X			
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u				
			n/a		n/a			n/a	n/a				
		Cross Triggers		Local				Global					
				n/a				X					
		State of Call		CTState				CTEnhState					
				N/A				"GSN Deactivate PDP Context Request"					
8.17.3.20	Deactivate PDP Context Accept (MS -> GSN on Gb) Deactivate AA PDP Context Accept	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED		
		NODETLLI-VAL		X		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u				
			[NODETTLIVAL]=2		n/a			n/a	n/a				
		Cross Triggers		Local				Global					
				n/a				X					
		State of Call		CTState				CTEnhState					
				N/A				"GSN Deactivate PDP Context Accept" "Deactivate AA PDP Context Accept"					
8.17.3.21	Activate PDP Context Reject Activate AA PDP Context Reject	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED		
		NODETLLI-VAL		X		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u	trawlBackTime_u				
			[NODETTLIVAL]=2		n/a			n/a	0				
		Cross Triggers		Local				Global					
				n/a				n/a					
		State of Call		CTState				CTEnhState					
				N/A				"Activate PDP Context Reject " "Activate AA PDP Context Reject "					

Call Trace Assistance																	
<b>8.17.3.22</b>	Request PDP Context Activation	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
		NODETLLI-VAL	X														
		IMSI	X					X		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			n/a		n/a			n/a		n/a							
		Cross Triggers	Local					Global									
			n/a					X									
		State of Call	CTState					CTEnhState									
			N/A					"Request PDP Context Activation"									
<b>8.17.3.23</b>	Request PDP Context Activation Reject	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
		NODETLLI-VAL		X		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			[NODETTLIVAL]=2		n/a			n/a		n/a							
		Cross Triggers	Local					Global									
			n/a					n/a									
		State of Call	CTState					CTEnhState									
			N/A					"Request PDP Context Activation Reject"									
<b>8.17.3.24</b>	Modify PDP Context Request (R98 Only, Obsoleted by "Modify PDP Context Request (Net to MS)" in R99)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK <sup>1</sup>	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
		NODETLLI-VAL		X													
		IMSI	X					X	X	X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			n/a		n/a			n/a		n/a							
		Cross Triggers	Local					Global									
			n/a					X									
		State of Call	CTState					CTEnhState									
			N/A					"Modify PDP Context Request"									

Call Trace Assistance																	
<b>8.17.3.25</b>	Modify PDP Context Accept (R98 Only, Obsoleted by "Modify PDP Context Accept (MS to Net)" in R99)	CTFlags Critter NODETLLI-VAL	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
	Activate AA PDP Context Accept		X	X													
	Deactivate AA PDP Context Request	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			n/a		n/a			n/a		5000							
	Cross Triggers		Local				Global										
			n/a				n/a										
	SM Status	State of Call	CTState				CTEnhState										
			N/A				"Modify PDP Context Accept" "Activate AA PDP Context Accept " "Deactivate AA PDP Context Request " "SM Status "										
<b>8.17.3.26</b>	Attach Complete	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
		NODETLLI-VAL		X													
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			n/a		n/a			n/a		n/a							
		Cross Triggers	Local				Global										
			n/a				n/a										
		State of Call	CTState				CTEnhState										
			n/a				"Attach Complete"										
<b>8.17.3.27</b>	Attach Reject	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED						
		NODETLLI-VAL		X		X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u			CTMaxCallAge_u		trawlBackTime_u							
			[NODETLLIVAL]=2		n/a			n/a		n/a							
		Cross Triggers	Local				Global										
			n/a				X										
		State of Call	CTState				CTEnhState										
				n/a				"GPRS Attach Reject "									

Call Trace Assistance												
<b>8.17.3.28</b>	Service Request (UMTS only)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
		IMSI	X				X	X				
		TMSI	X					X				
		PTMSI	X					X				
		State of Call	CTState					CTEnhState				
<b>8.17.3.29</b>	Service Accept (UMTS only)	State of Call	CTState					CTEnhState				
			N/A					"Service Request (Signalling) " "Service Request (Data) " "Paging Response " "Service Request " (for unknown ST) dependent on value of ServiceType				
<b>8.17.3.30</b>	Activate Secondary PDP Context Request	State of Call	CTState					CTEnhState				
		CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
		NODETLLI-VAL		X								
	Activate Secondary PDP Context Accept	State of Call	CTState					CTEnhState				
			N/A					"Activate Secondary PDP Context Request " "Activate Secondary PDP Context Accept " "Activate Secondary PDP Context Reject "				
<b>8.17.3.31</b>	Modify PDP Context Request (Net to MS)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	FIRSTUSE RELATED	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED	
		NODETLLI-VAL		X								
		State of Call	CTState					CTEnhState				
			N/A					"Modify PDP Context Request (Net to MS) " "Modify PDP Context Accept (MS to Net) " "Modify PDP Context Request (MS to Net) " "Modify PDP Context Accept (Net to MS) " "Modify PDP Context Reject "				
	Modify PDP Context Accept (MS to Net)											
	Modify PDP Context Request (MS to Net)											
	Modify PDP Context											

a. Set string based on Attach Type parameter.

b. Set string based on Attach Result parameter.

c. Set string based on Detach Type parameter.

d. MS -&gt; Network messages are carried by BSSGP-UL-UNITDATA messages.

- e.Set only if Power Off bit = 1
- f.Set string for Request based on Detach Type parameter.
- g.Set strings based on Update Type parameter.
- h.This is only of use if ITF sends an update for the new P-TMSI.
- i.The IMSI will be present in the BSSGP layer from a periodic updating.
- j.Set strings based on Update Result parameter.
- k.No FIRSTUSEBACK since any messages found would be in a new call (since they would have nothing to tie them to the GMM leg, if present)
- l.No FIRSTUSEBACK since any messages found would be in a new call (since they would have nothing to tie them to the GMM leg, if present)

## 8.18 Radius

### 8.18.1 Fields

MSU Breakout Fields				
<b>8.18.1.1</b>	Field	<b>messageType_b</b>	Spec Ref	RFC2865 [3]
	Definition	The Code field (indicates Packet Type).		
	Details	Implementation Info: The Code is extracted from every RADIUS packet		
<b>8.18.1.2</b>	Field	<b>identifier_m</b>	Spec Ref	RFC2865 [3]
	Definition	The Identifier is extracted from every RADIUS packet.		
	Details	Implementation Info: The Identifier is extracted from every RADIUS packet.		
<b>8.18.1.3</b>	Field	<b>radiusAPN_pb</b>	Spec Ref	3GPP TS 09.61 (16.4.4.30.)
	Definition	Pointer to the start of the Access Point Name contained in Called-Station-Id attribute.		
	Details	Implementation Info: This should be set to point to the start of the APN, after length.		
<b>8.18.1.4</b>	Field	<b>radiusAPNLen_b</b>	Spec Ref	RFC2865 (5.30)
	Definition	Length of the Access Point Name pointed to by calledStationId_pb..		
	Details	Implementation Info: Length from Called-Station-Id attribute, minus 2 octets (Type and Length) to leave length of the APN in octets.		
<b>8.18.1.5</b>	Field	<b>callingParty.telno</b>	Spec Ref	RFC2865 (5.31) and 3GPP TS 09.61 (16.4)
	Definition	The ISDN number of the Mobile Subscriber..		
	Details	Implementation Info: The Calling Station ID (MSISDN of the MS) should be extracted from all RADIUS packets that contain it.  Convert from IA5 characters to standard compact telno format, i.e. subtract 0x30 from Calling-Station-Id value and nibble-swap, e.g. “1”, “2”, “3”, “4”, “5” = 12345 =>0x21, 0x43, 0x05. NOTE: Values a-e should be mapped to 0xa0-0x0e. Other values outwith the range “0”-“9” should be mapped to 0x0f, e.g. “1”, “A”, “2”, “X” => 0xa1, 0xf2.		

<b>8.18.1.6</b>	Field	<b>framedIPAddr_m</b>	Spec Ref	RFC2865 (5.8)
	Definition	The IP Address of the Mobile Subscriber.		
	Details	<p>Implementation Info:            The Framed-IP-Addr attribute is extracted from all RADIUS packets that contain it. Possible values are:-</p> <ul style="list-style-type: none"> <li>0xFFFFFFFF (no address - instruction to prompt user for address)</li> <li>0xFFFFFFF (no address - instruction to assign address from GGSN pool)</li> <li>Other values (MS IP Address)</li> </ul>		
<b>8.18.1.7</b>	Field	<b>directionFlg_b</b>	Spec Ref	-
	Definition	Flag to indicate the direction of each packet relative to the GGSN which assigned the Identifier.		
	Details	<p>Implementation Info:            Set to:-</p> <p>K_GG59_RADIUS_FROMCLIENT if messageType_b is            K_GG59_RADIUS_ACCESSREQUEST or            K_GG59_RADIUS_ACCOUNTREQUEST</p> <p>K_GG59_RADIUS_TOCLIENT if messageType_b is            K_GG59_RADIUS_ACCESSACCEPT or            K_GG59_RADIUS_ACCESSREJECT or            K_GG59_RADIUS_ACCOUNTRESPONSE or            K_GG59_RADIUS_ACCESSCHALLENGE</p>		
<b>8.18.1.8</b>	Field	<b>replyMsgTxtLen_b</b>	Spec Ref	-
	Definition	The length of Reply-Message text, accessed through replyMessage_pb		
	Details	<p>Implementation Info:            Convert the Length from every Reply-Message attribute to the length of the reply text message string ( in octets ) by subtracting 2 (type and length fields)</p>		
<b>8.18.1.9</b>	Field	<b>ReplyMsgTxt_pb</b>	Spec Ref	RFC2865 (5.18)
	Definition	Pointer to failure message in an Access-Reject packet.		
	Details	<p>Implementation Info:            Extracted only from the first Reply-Message attribute contained in a packet where messageType_b is K_GG59_RADIUS_ACCESSREJECT. Points to the octet immediately after the Length field.</p>		
<b>8.18.1.10</b>	Field	<b>acctTerminateCause_m</b>	Spec Ref	RFC2865 (5.10)
	Definition	acct-terminate-cause attribute		
	Details	<p>Implementation Info:            Extract from Accounting-Requests where acctStatusType_m=K_GG59_RADIUS_STOP. Indicates how the session was terminated.</p>		

<b>8.18.1.11</b>	Field	<b>acctStatusType_m</b>	Spec Ref	RFC2865 (5.1)
	Definition	The type of Accounting-Request		
	Details	<p>Implementation Info:  Extracted from all messages where messageType_b is K_GG59_RADIUS_ACCOUNTREQUEST.  One of:-</p> <ul style="list-style-type: none"> <li>K_GG59_RADIUS_START</li> <li>K_GG59_RADIUS_STOP</li> <li>K_GG59_RADIUS_INTERIMUPDATE</li> <li>K_GG59_RADIUS_ACCOUNTINGON</li> <li>K_GG59_RADIUS_ACCOUNTINGOFF</li> </ul> <p>Other values are RESERVED.</p>		
<b>8.18.1.12</b>	Field	<b>r3GPPsessionStopInd_b</b>	Spec Ref	RFC2865 (5.26) and 3GPP TS 09.61 (16.4.7)
	Definition	Flag to indicate that the PDP session has terminated (last PDP context released)		
	Details	<p>Implementation Info:  Set to TRUE if sub-attribute type 11 (3GPP-Session-Stop-Indicator) is present in Vendor-Specific attribute contained in an Accounting-Request where acctStatusType_m is K_GG59_RADIUS_STOP.</p> <p>NB: Call Trace does not use this flag. Instead CT will kill the RADIUS leg when it sees GTP Delete PDP Context Response.</p>		
<b>8.18.1.13</b>	Field	<b>IMSI.telno</b>	Spec Ref	3GPP TS 09.61 (16.4.7)
	Definition	IMSI for this user		
	Details	<p>Implementation Info:  If the MNC is only 2 digits (e.g. MNC=78) its encoding shall be with a leading '0' (e.g. "078").  Convert from IA5 characters to standard compact telno format, i.e. subtract 0x30 from 3GPPimsi attribute value and nibble-swap, e.g. "1", "2", "3", "4", "5" = 12345 =&gt; 0x21, 0x43, 0x05.  NOTE: Values outwith the range "0"- "9" should be mapped to 0x0f, e.g. "1", "A", "2" =&gt; 0xf1, 0x02.</p>		
<b>8.18.1.14</b>	Field	<b>r3GPPnsapi_b</b>	Spec Ref	3GPP TS 09.61 (16.4.7)
	Definition	NSAPI identifying this PDP context from creation to deletion		
	Details	<p>Implementation Info:  Convert from IA5 characters to digits but do not nibble swap.  NOTE: NSAPI value can be in the range 0-15. The hexadecimal representation of the RADIUS attribute is encoded as a single UTF-8 encoded octet, i.e. the ASCII character representation of the hex digit is '0'.. '9', 'A'.. 'F' (or 'a'.. 'f'). So convert back to a hex digit and store without the need to nibble swap.</p>		

<b>8.18.1.15</b>	Field	<b>calledParty.telno</b>	Spec Ref	RFC2865, Section 5.30		
	Definition	The ISDN number of the Called-Station-Id. It indicates the phone number that the user called.				
	Details	Implementation Info: If Called-Station-Id parameter contains the ISDN number, the TBCD digits (0-9, a-f, A-F) should be extracted to calledParty.telno.				
<b>8.18.1.16</b>						
Field	3GPP-IMEISV (3GPP Sub-Attribute 20)	Spec Ref	3GPP TS 29.061 Section 16.4.7			
TsdBreakout	IMEIaddress	Format	s_gg61_addr (static)			
Details	This field should be extracted from any message that contains it. See also 3.4.4 (4) the conversion from UTF8String to standard compact TBCD digit format.					
DrData	DRDATA_IMEI_TAG	Format	CB_TELNO			
Details	This field should be extracted from any message that contains it.					
<b>8.18.1.17</b>						
Field	3GPP-RAT-Type (3GPP Sub-Attribute 21)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.50			
TsdBreakout	ratType	Format	m (value)			
Details	This field should be extracted from any message that contains it.					
DrData	DRDATA_RAT_TYPE_TAG	Format	CB_UBIT32			
Details	This field should be extracted from any message that contains it.					
<b>8.18.1.18</b>						
Field	3GPP-User-Location-Info -> CGI (3GPP Sub-Attribute 22)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.51			
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (dynamic)			
Details	This field should be extracted from CGI digits when 3GPP-User-Location-Info -> Geographic Location Type is 0 Cell Global Identification (CGI). The subfield discriminator_b should be set to K_GG59_CIDISC_CGI (0). See also section 3.4.3 (1) for the coding format of subfield value.					
DrData	DRDATA_UML_CGI_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					
<b>8.18.1.19</b>						
Field	3GPP-User-Location-Info -> SAI (3GPP Sub-Attribute 22)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.51			
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (dynamic)			
Details	This field should be extracted from SAI digits when 3GPP-User-Location-Info -> Geographic Location Type is 1 Service Area Identity (SAI). The subfield discriminator_b should be set to K_GG59_CIDISC_SAI (11). See also section 3.4.3 for the coding format of subfield value.					
DrData	DRDATA_UML_SAI_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					
<b>8.18.1.20</b>						
Field	3GPP-User-Location-Info -> RAI (3GPP Sub-Attribute 22)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.51			
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (dynamic)			
Details	This field should be extracted from RAI digits when 3GPP-User-Location-Info -> Geographic Location Type is 2 Routing Area Identification (RAI). The subfield discriminator_b should be set to K_GG59_CIDISC_RAI (22). See also section					

	3.4.3 (1) for the coding format of subfield value.		
DrData	DRDATA_ULL_RAI_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ULL_LAI_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from LAI digits if one of DRDATA_ULL_CGI_TAG, DRDATA_ULL_SAI_TAG, or DRDATA_RAI_CGI_TAG is present.		
<b>8.18.1.21</b>			
Field	Calling-Station-Id->MSISDN	Spec Ref	RFC 2865 Section 5.31& 3GPP TS 29.061 Section 16.4.1& 3GPP TS 29.061 Section 16.4.3& 3GPP TS 29.061 Section 16.4.4
TsdBreakout	MSISDN	Format	s_gg61_addr (dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MSISDN_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.18.1.22</b>			
Field	User-Name (AVP Code 1; UTF8String)	Spec Ref	RFC 2865 Section 5.1
TsdBreakout	userName	Format	s_gg59_pbString (dynamic)
Field	User-Name -> IMSI	Spec Ref	RFC 2865 Section 5.1
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it. If IMSI presents at User-Name, it should be extracted to IMSIaddress.		
DrData	DRDATA_KEYIMSI_TAG	Format	CB_TELNO
Details	When this field contains the IMSI digits, it will also be extracted to KEYIMSI tag.		
DrData	DRDATA_NAI_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from userName.		
<b>8.18.1.23</b>			
Field	Framed-IPv6-Prefix (AVP Code 97)	Spec Ref	RFC3162 section 2.3
TsdBreakout	userIpAddr	Format	s_gg59_IPAddress (mval)
Details	This field should be extracted from Framed-IPv6-Prefix attribute when prefix-length is 128. If prefix-length isn't 128, this field shouldn't be extracted. The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02) The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.		
DrData	DRDATA_IPV6_MSIP_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains it.		

## 8.18.2 Capture Buffer Indices

### Capture Buffer Indices

		I7526_hashAddCptc-Telno	I7524_hashAdd3Val (RADIUSPID)	I7524_hashAdd3Val (RADIUSMSISDN)
<b>8.18.2.1</b>	RADIUS Request Packets		M_GG59_GetRadiusIpAddr(g59), identifier_m, 0	
<b>8.18.2.2</b>	RADIUS Response Packets		M_GG59_GetRadiusIpAddr(g59), identifier_m, 0	
<b>8.18.2.3</b>	RADIUS Packets Containing MSISDN	calling-Party.telno		

### 8.18.3 Call Trace Assistance

Call Trace Assistance										
8.18.3.1	Access-Request	CTFlags Critter	FIRSTUS E	SUBUSE	FIRSTUS E BACK	FINALUS E	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		RADIUSIPID	X	X						
		CALLING	X				X	X	X (note1)	
		IMSI	X				X	X	X (note1)	
		MATCHRULE	AND							
		Time Outs	CTFinalUse Timeout_b(seconds)	CTPANS TimeOut_b(seconds)	CTMaxCallAge_u(sec- onds)	trawlBackTime_u(milli- seconds)				
			n/a	10		n/a				n/a
		Cross Triggers	Local			Global				
						X				
		State of Call	CTState			CTEnhState				
			n/a			“RADIUS Access-Request”				
8.18.3.2	Access-Accept Access-Reject Access-Challenge Accounting- Reponse	CTFlags Critter	FIRSTUS E	SUBUSE	FIRSTUS E BACK	FINALUS E	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		RADIUSIPID		X		X (note2)				
		Time Outs	CTFinalUse Timeout_b(seconds)	CTPANS TimeOut_b(seconds)	CTMaxCallAge_u(sec- onds)	trawlBackTime_u(milli- seconds)				
			n/a	n/a		n/a				n/a
		Cross Triggers	Local			Global				
						X				
		State of Call	CTState			CTEnhState				
			n/a			“RADIUS Access-Accept” “RADIUS Access-Reject” “RADIUS Access-Challenge” “RADIUS Accounting-Reponse”				

Call Trace Assistance																
<b>8.18.3.3</b>	Accounting-Request ON/OFF	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
	RADIUSIPID	X	X													
	Time Outs	CTFinalUse Timeout_b(seconds)		CTPANS TimeOut_b(seconds)		CTMaxCallAge_u(seconds)	trawlBackTime_u(milliseconds)									
		n/a		10		n/a	n/a									
	Cross Triggers	Local				Global										
						X										
	State of Call	CTState				CTEnhState										
	where AcctStatusType= K_GG59_RADIUS_ACCOUNTINGON K_GG59_RADIUS_ACCOUNTINGOFF Default	n/a				“RADIUS Accounting On” “RADIUS Accounting Off” “RADIUS Accounting-Request”										
<b>8.18.3.4</b>	Accounting-Request Start/Stop/Interim Update	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH						
	RADIUSIPID	X	X													
	CALLING	X					X	X	X (note1)							
	IMSI	X					X	X	X (note1)							
	MATCHRULE	AND														
	Time Outs	CTFinalUse Timeout_b(seconds)		CTPANS TimeOut_b(seconds)		CTMaxCallAge_u(seconds)	trawlBackTime_u(milliseconds)									
		n/a		10		n/a	n/a									
	Cross Triggers	Local				Global										
						X										
	State of Call	CTState				CTEnhState										
	where AcctStatusType= K_GG59_RADIUS_START K_GG59_RADIUS_STOP K_GG59_RADIUS_STOP AND sessionStopIndicator_b=T K_GG59_RADIUS_INTEGRIMUPDATE	n/a				“RADIUS Accounting Start” “RADIUS Accounting Stop” “RADIUS Accounting Session Stop” “RADIUS Interim Update”										

note1: Special code in CT will ensure that MATCHSTALLED will only tie to RADIUS or GTP legs.

note2: RADIUS leg will be terminated by Call Trace when it sees the GTP Delete PDP Context Response.

## 8.19 MGCP

### 8.19.1 Fields

MSU Breakout Fields				
<b>8.19.1.1</b>	Field	<b>calledParty.telno</b>	Spec Ref	Media Gateway Control Protocol, IETF, RFC 2705, October 1999.
	Definition	The (dialed) digits number of the Called Number parameter.		
	Details	<p>Implementation Info:</p> <p>This should be extracted from all MGCP messages that contain it. Convert from ASCII characters to standard compact telno format e.g. ‘1’, ‘2’, ‘3’, ‘4’, ‘5’ =&gt;0x21, 0x43, 0x05.</p> <p>NOTE: The spec defines characters ‘0’ to ‘9’. Additionally, the characters [aAbBcCdDeE] shall be mapped to their hexadecimal equivalent, e.g., ‘1’, ‘a’, ‘2’ =&gt; 0xa1, 0x02. Any values outwith this range should be mapped to 0x0f e.g. ‘1’, ‘G’, ‘2’ =&gt; 0xf1, 0x02.</p>		
<b>8.19.1.2</b>	Field	<b>callingParty.telno</b>	Spec Ref	Media Gateway Control Protocol, IETF, RFC 2705, October 1999.
	Definition	The (dialing) digits number of the Calling Number parameter.		
	Details	<p>Implementation Info:</p> <p>This should be extracted from all MGCP messages that contain it. Convert from ASCII characters to standard compact telno format e.g. ‘1’, ‘2’, ‘3’, ‘4’, ‘5’ =&gt; 0x21, 0x43, 0x05.</p> <p>NOTE: The spec defines characters ‘0’ to ‘9’. Additionally, the characters [aAbBcCdDeE] shall be mapped to their hexadecimal equivalent, e.g., ‘1’, ‘a’, ‘2’ =&gt; 0xa1, 0x02. Any values outwith this range should be mapped to 0x0f e.g. ‘1’, ‘G’, ‘2’ =&gt; 0xf1, 0x02.</p>		
<b>8.19.1.3</b>	Field	<b>messageType_b</b>	Spec Ref	Media Gateway Control Protocol, IETF, RFC 2705, October 1999.
	Definition	The Message Type Code parameter. This uniquely defines the function and format of each MGCP message.		
	Details	<p>Implementation Info:</p> <p>The message type id extracted from every MGCP message. The message type is mapped to a K_GG59_MGCP_COMMAND #define if command, or K_GG59_MGCP_RESPONSE if response.</p>		
<b>8.19.1.4</b>	Field	<b>mgcpResponseCode_u</b>	Spec Ref	Media Gateway Control Protocol, IETF, RFC 2705, October 1999.
	Definition	The response code found in all MGCP Response messages.		
	Details	Implementation Info:		

## 8.19.2 Capture Buffer indices

N/A

## 8.19.3 Call Trace Assistance

(CTEnhState fields only - no CT flag settings)

Call Trace Assistance														
<b>8.19.3.1</b>	MGCP Commands Audit Connection (AUCX) Audit Endpoint (AUEP) Create Connection(CRCX) Delete Connection(DLCX) Endpoint Configuration (EPCF) Modify Connection (MDCX) Notification Request (RQNT) Notify (NTFY) Restart in Progress (RSIP)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			n/a				"MGCP Command - AUCX" "MGCP Command - AUEP" "MGCP Command - CRCX" "MGCP Command - DLCX" "MGCP Command - EPCF" "MGCP Command - MDCX" "MGCP Command - RQNT" "MGCP Command - NTFY" "MGCP Command - RSIP"							
<b>8.19.3.2</b>	MGCP Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
			Local				Global							
		Cross Triggers	n/a				n/a							
			CTState				CTEnhState							
		State of Call	n/a				K_ANLS_NOCHANGE							

## 8.20 SMPP

### 8.20.1 Fields

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.20.1.1</b>	Field	<b>commandId_m</b>	Spec Ref	<b>see ref. [1] section 5.1.2 p109</b>
	Definition	The Command Id field identifies the type of message that the SMPP PDU represents. (this field performs the same function as a message type)		
	Details	Implementation Info: The Command Id field will be copied into commandId_m for all messages.		
<b>8.20.1.2</b>	Field	<b>commandStatus_m</b>	Spec Ref	<b>see ref. [1] section 5.1.3 p112</b>
	Definition	The Command Status field indicates the success or failure of an SMPP request. It is relevant only in the SMPP response message and should be set to NULL in SMPP request messages. (this field is like an error code)		
	Details	Implementation Info: The Command Status field will be copied into commandStatus_m for all messages.		
<b>8.20.1.3</b>	Field	sequenceNumber_m	Spec Ref	<b>see ref. [1] section 5.1.4 p115</b>
	Definition	The Sequence Number is used to tie a response message with its corresponding request PDU. (this field performs the same function as a transaction ID)		
	Details	Implementation Info: The Sequence Number field will be copied into sequenceNumber_m for all messages.		

<b>8.20.1.4 (1)</b>	Field	<b>calledParty.telno</b>	Spec Ref	<b>see ref. [1] sections 5.2.9 and 5.2.10 p119</b>
	Definition	The Address Signal field of the Called Party Number field.		
	Details	<p>Implementation Info: All characters ‘0-9’, ‘a-f’ &amp; ‘A-F’ should not be mapped to any value, but should be copied into the telno struct as is. Only characters outwith this range should be mapped to 0xf. The digits should also be nibble swapped, ie. 0131FRED76531 -&gt;1013ffde673501</p> <p>The Digits of the “esme_addr” parameter should be copied into calledParty.telno in the same form as stored in the messages for the following message type:</p> <ul style="list-style-type: none"> <li>[A] ALERT_NOTIFICATION</li> </ul> <p>The Digits of the “destination_addr” parameter should be copied into calledParty.telno in the same form as stored in the messages for the following message types:</p> <ul style="list-style-type: none"> <li>[B] CANCEL_SM</li> <li>[C] DATA_SM</li> <li>[D] DELIVER_SM</li> <li>[E] SUBMIT_MULTI</li> <li>[F] SUBMIT_MULTI_RESP</li> <li>[G] SUBMIT_SM</li> </ul>		
<b>(2)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	<b>see ref. [1] section 5.2.5 p117</b>
	Definition	The Type of Number to be used in the SME address parameters.		
	Details	<p>Implementation Info: The Type of Number value of the address parameters as specified in (1) should be copied into calledParty.natOfAddr_b in the same form as stored in the messages for all messages specified in (1).</p>		
<b>(3)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	<b>see ref. [1] section 5.2.6 p118</b>
	Definition	The Numeric Plan Indicator to be used in the SME address parameters.		
	Details	<p>Implementation Info: The Numeric Plan Indicator value of the address parameters as specified in (1) should be copied into calledParty.numberingPlan_b in the same form as stored in the messages for all messages specified in (1).</p>		
<b>(4)</b>	Field	<b>calledParty.telnoType_b</b>	Spec Ref	<b>see ref. [1] section 5.2.5 p117</b>
	Definition	The Telno Type subfield of the called party number. It indicates the raw field name information.		
	Details	<p>Implementation Info: The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_DESTADDR (for destination address) K_GG59_TELNOTYPE_ESME (for ESME address)</p>		

<b>8.20.1.5 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	<b>see ref. [1] sections 5.2.7 and 5.2.8 p119</b>
	Definition	The Address Signal field of the Calling Party Number field.		
	Details	<p>Implementation Info: All characters ‘0-9’, ‘a-f’ &amp; ‘A-F’ should not be mapped to any value, but should be copied into the telno struct as is. Only characters outwith this range should be mapped to 0xf. The digits should also be nibble swapped, ie. 0131FRED76531 -&gt;1013ffde673501</p> <p>The Digits of the “address_range” parameter should be copied into callingParty.telno in the same form as stored in the messages for the following message type:</p> <ul style="list-style-type: none"> <li>[A] BIND_RECEIVER</li> <li>[B] BIND_TRANSCEIVER</li> <li>[C] BIND_TRANSMITTER</li> </ul> <p>The Digits of the “source_addr” parameter should be copied into callingParty.telno in the same form as stored in the messages for the following message types:</p> <ul style="list-style-type: none"> <li>[D] ALERT_NOTIFICATION</li> <li>[E] CANCEL_SM</li> <li>[F] DATA_SM</li> <li>[G] DELIVER_SM</li> <li>[H] QUERY_SM</li> <li>[I] REPLACE_SM</li> <li>[J] SUBMIT_MULTI</li> <li>[K] SUBMIT_SM</li> </ul>		
(2)	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	<b>see ref. [1] section 5.2.5 p117</b>
	Definition	The Type of Number to be used in the SME address parameters.		
	Details	<p>Implementation Info: The Type of Number value of the address parameters as specified in (1) should be copied into callingParty.natOfAddr_b in the same form as stored in the messages for all messages specified in (1).</p>		
(3)	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	<b>see ref. [1] section 5.2.6 p118</b>
	Definition	The Numeric Plan Indicator to be used in the SME address parameters.		
	Details	<p>Implementation Info: The Numeric Plan Indicator value of the address parameters as specified in (1) should be copied into callingParty.numberingPlan_b in the same form as stored in the messages for all messages specified in (1).</p>		
(4)	Field	<b>callingParty.telnoType_b</b>	Spec Ref	<b>see ref. [1] section 5.2.8 p119</b>
	Definition	The Telno Type subfield of the calling party number. It indicates the raw field name information.		
	Details	<p>Implementation Info: The telnoType_b subfield should be set as the following: K_GG59_TELNOTYPE_SRCADDR (for source address) K_GG59_TELNOTYPE_ADDRRANGE (for address range)</p>		
<b>8.20.1.6</b>	Field	<b>commandLen_m</b>	Spec Ref	SMPP v3.4 Issue1.2, Section 5.1.1

	Definition	The Command Length parameter indicates the length in octets of the SMPP message. The SMPP message header (including the command_length field itself), the mandatory parameters and the optional parameters are all considered.
	Details	Implementation Info: The Command length field should be extracted for all messages.

## 8.20.2 Capture Buffer indices

Capture Buffer Indices			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>8.20.2.1</b>	SMPP messages containing address_range or source_addr	callingParty.telno	n/a
<b>8.20.2.2</b>	SMPP messages containing destination_addr or esme_range	callingParty.telno	n/a
<b>8.20.2.3</b>	SMPP messages (those defined in 0.1.3.1 to 0.1.3.7)	n/a	innerIPv4SrcAddress_m, innerIPv4DestAddress_m, sequenceNumber_m

## 8.20.3 Call Trace Assistance

Call Trace Assistance										
<b>8.20.3.1</b>	BIND_RECEIVER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			X				X	X		
		SMPPSEQ	X							
		State of Call	CTState				CTEnhState			
							“Bind Receiver”			

Call Trace Assistance											
<b>8.20.3.2</b>	BIND_TRANSCEIVER BIND_TRANSMITTER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X				
			SMPPSEQ	X							
			State of Call	CTState				CTEnhState			
								“Bind Transceiver” “Bind Transmitter”			
<b>8.20.3.3</b>	QUERY_SM REPLACE_SM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X	X		
			SMPPSEQ	X							
			State of Call	CTState				CTEnhState			
								“Query SM” “Replace SM”			
<b>8.20.3.4</b>	CANCEL_SM SUBMIT_MULTI SUBMIT_SM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X	X		
			CALLED	X			X	X	X		
			SMPPSEQ	X							
			State of Call	CTState				CTEnhState			
								“Cancel SM” “Submit Multi” “Submit SM”			
<b>8.20.3.5</b>	DELIVER_SM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X		X		
			CALLED	X			X				
			SMPPSEQ	X							
			State of Call	CTState				CTEnhState			
								“Deliver SM”			

Call Trace Assistance															
<b>8.20.3.6</b>	DATA_SM	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X				X	X	X						
			X				X								
			X												
		State of Call	CTState				CTEnhState								
							“Data SM”								
<b>8.20.3.7</b>	ALERT_NOTIFICATION	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
			X				X	X	X						
		Timeouts	CTFinalUseTimeout_b		CTPANSTimeout_u		CTMaxCallAge_u		trawlBackTime_u						
			n/a		5000(msec)		n/a		n/a						
		State of Call	CTState				CTEnhState								
							“Alert Notification”								
<b>8.20.3.8</b>	BIND_RECEIVER_RESP BIND_TRANSCEIVER_RESP BIND_TRANSMITTER_RESP CANCEL_SM_RESP DATA_SM_RESP DELIVER_SM_RESP QUERY_SM_RESP REPLACE_SM_RESP SUBMIT_MULTI_RESP SUBMIT_SM_RESP	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH					
				X		X									
		SMPPSEQ	CTState				CTEnhState								
							“Bind Receiver Resp” “Bind Transceiver Resp” “Bind Transmitter Resp” “Cancel SM Resp” “Data SM Resp” “Deliver SM Resp” “Query SM Resp” “Replace SM Resp” “Submit SM Resp”								

## 8.21 GTP Version 1

### 8.21.1 Fields

The first 11 fields listed in the table below are in addition to those implemented for GTP v0. The rest of the fields listed below are alterations to existing fields. Any GTP v0 field not listed here (the complete list is found in breakout ERS section 8.11.1 ##), should have the GTP v0 implementation applied for GTP v1.

<b>MSU Breakout Fields</b>					
<b>8.21.1.1</b>	Field	<b>gtpTunnelEptIdHdr_m</b>	Spec Ref	<b>see ref. [2.110] section 6 p12,13</b>	
	Definition	The Tunnel Endpoint Identifier contained within the GTP v1 header.			
	Details	Implementation Info: The full Tunnel Endpoint Identifier should be extracted from all GTP v1 messages.			
<b>8.21.1.2</b>	Field	<b>gtpTunnelEptIdDataI_m</b>	Spec Ref	<b>see ref. [2.110] section 7.7.13 p52</b>	
	Definition	The ‘gtpHeaderFlowLabel_u’ field of GTP v0 has been renamed to ‘Tunnel Endpoint Id Data I’ for v1 of the spec and has doubled in size to 4 octets. A comment should be placed into gg59 indicating that they contain the same info but just for different versions of the spec.			
	Details	Implementation Info: The ‘Tunnel Endpoint Id Data I’ information should be broken out from all GTP messages that contain it.			
<b>8.21.1.3</b>	Field	<b>gtpTunnelEptIdDataII_m</b>	Spec Ref	<b>see ref. [2.110] section 7.7.15 p53</b>	
	Definition	The ‘Tunnel Endpoint Id Data II’ information element contains the Tunnel Endpoint Id for data transmission between old and new SGSNs for a particular PDP context.			
	Details	Implementation Info: The ‘Tunnel Endpoint Id Data II’ information should be broken out from all GTP messages that contain it.			
<b>8.21.1.4</b>	Field	<b>gtpTunnelEptIdCntrlPln_m</b>	Spec Ref	<b>see ref. [2.110] section 7.7.14 p52</b>	
	Definition	The ‘gtpFlowLabelSignal_u’ field of GTP v0 has been renamed to ‘Tunnel Endpoint Id Control Plane’ for v1 of the spec and has doubled in size to 4 octets. A comment should be placed into gg59 indicating that they contain the same info but just for different versions of the spec.			
	Details	Implementation Info: The ‘Tunnel Endpoint Id Control Plane’ information should be broken out from all GTP messages that contain it.			

<b>8.21.1.5</b>	Field	<b>gtpPDPCtxTEIdCntrlPln_ma</b>	Spec Ref	<b>see ref. [2.110] section 7.7.29 p62</b>
	Definition	This is the array of 'Uplink Tunnel Endpoint Id Control Plane' values from the PDP Context parameter.		
	Details	<p>Implementation Info:</p> <p>Up to K_GG59_MAXGTPPDPCONTXT 'Uplink Tunnel Endpoint Id Control Plane' values should be broken out from the PDP Context parameter of either 'SGSN Context Response' or 'Forward Relocation Request' message types.</p>		
<b>8.21.1.6</b>	Field	<b>gtpPDPCtxTEIdDataI_ma</b>	Spec Ref	<b>see ref. [2.110] section 7.7.29 p62</b>
	Definition	This is the array of 'Uplink Tunnel Endpoint Id DATA I' values from the PDP Context parameter.		
	Details	<p>Implementation Info:</p> <p>Up to K_GG59_MAXGTPPDPCONTXT 'Uplink Tunnel Endpoint Id Data I' values should be broken out from the PDP Context parameter of either 'SGSN Context Response' or 'Forward Relocation Request' message types.</p>		
<b>8.21.1.7</b>	Field	<b>gtpPDPCtxGGSNAddrCntrlPln_sa</b>	Spec Ref	<b>see ref. [2.110] section 7.7.29 p62</b>
	Definition	This is the array of 'GGSN Address for Control Plane' values from the PDP Context parameter.		
	Details	<p>Implementation Info:</p> <p>Up to K_GG59_MAXGTPPDPCONTXT 'GGSN Address for Control Plane' values should be broken out from the PDP Context parameter of either 'SGSN Context Response' or 'Forward Relocation Request' message types.</p>		
<b>8.21.1.8</b>	Field	<b>gtpPDPCtxGGSNAddrDataI_sa</b>	Spec Ref	<b>see ref. [2.110] section 7.7.29 p62</b>
	Definition	This is the array of 'GGSN Address for User Traffic' values from the PDP Context parameter.		
	Details	<p>Implementation Info:</p> <p>Up to K_GG59_MAXGTPPDPCONTXT 'GGSN Address for User Traffic' values should be broken out from the PDP Context parameter of either 'SGSN Context Response' or 'Forward Relocation Request' message types.</p>		
<b>8.21.1.9</b>	Field	<b>gtpFlowLabelDataNSAPIList_ba</b>	Spec Ref	<b>see ref. [2.110] section 7.7.15 p53</b>
	Definition	This is the array of 'NSAPI' values from the Tunnel Endpoint Identifier Data II		
	Details	<p>Implementation Info:</p> <p>Up to K_GG59_MAXGTPPDPCONTXT 'NSAPI' values should be broken out from the Tunnel Endpoint Identifier Data II of 'SGSN Context Acknowledge'.</p>		

<b>8.21.1.10</b>	<b>Field</b>	<b>gtpHashValueFlg_b</b>	Spec Ref	<b>n/a</b>																																																																															
	<b>Definition</b>	This is the flag that determines which pairing of numbers is to be used to hash on for a particular message type. If the Capture Buffer Indices (datasets) table changes (5.2), then the flags here will probably have to change also.																																																																																	
	<b>Detail</b>	<p>Implementation Info:</p> <p>Each bit in the flag has a separate meaning:</p> <p>8 7 6 5 4 3 2 1</p> <table> <tr><td> </td><td> </td><td>0 --&gt;</td><td>use gtpSGSNSignalAddr.addrOctets_ba</td></tr> <tr><td> </td><td> </td><td>1 --&gt;</td><td>" innerIPv4DestAddress_m</td></tr> <tr><td> </td><td>  0 -----&gt;</td><td>" gtpSGSNDataAddr.addrOctets_ba</td></tr> <tr><td> </td><td>  1 -----&gt;</td><td>" innerIPv4DestAddress_m</td></tr> <tr><td> </td><td>  0 -----&gt;</td><td>" gtpGGSNSignalAddr.addrOctets_ba</td></tr> <tr><td> </td><td>  1 -----&gt;</td><td>" innerIPv4DestAddress_m</td></tr> <tr><td>0 -----&gt;</td><td>" gtpGGSNDataAddr.addrOctets_ba</td></tr> <tr><td>1 -----&gt;</td><td>" innerIPv4DestAddress_m</td></tr> <tr><td>0 -----&gt;</td><td>" gtpTunnelEptIdCntrlPln_m</td></tr> <tr><td>1 -----&gt;</td><td>" gtpTunnelEptIdHdr_m</td></tr> <tr><td>0 -----&gt;</td><td>" gtpTunnelEptIdDataI_m</td></tr> <tr><td>1 -----&gt;</td><td>" gtpTunnelEptIdHdr_m</td></tr> <tr><td>0 -----&gt;</td><td>" gtpTunnelEptIdCntrlPln_m</td></tr> <tr><td>1 -----&gt;</td><td>" gtpTunnelEptIdHdr_m</td></tr> <tr><td>0 -----&gt;</td><td>" gtpTunnelEptIdDataI_m</td></tr> <tr><td>1 -----&gt;</td><td>" gtpTunnelEptIdHdr_m</td></tr> </table> <p>For each of the message types given below, the flag should be set to show which of the above fields should be used for that particular message type. Where a don't care bit is shown (x = don't care), either a 0 or 1 can be set (the actual value to use is given in the 'set to hex value' column).</p> <table border="1"> <thead> <tr> <th>87654321</th> <th>Message Type</th> <th>Set to hex value</th> </tr> </thead> <tbody> <tr> <td>xx00xx00</td> <td>Create PDP Context Request (IMSI present)</td> <td>0x00</td> </tr> <tr> <td>11001100</td> <td>Create PDP Context Request (IMSI not present)</td> <td>0xcc</td> </tr> <tr> <td>00110011</td> <td>Create PDP Context Response</td> <td>0x33</td> </tr> <tr> <td>11111111</td> <td>Delete PDP Context Request Delete PDP Context Response Error Indication</td> <td>0xff</td> </tr> <tr> <td>xxx1xxx1</td> <td>Forward Relocation Complete Forward Relocation Complete Ack</td> <td>0xff</td> </tr> <tr> <td>xxx0xxx0</td> <td>Forward Relocation Request Forward Relocation Response</td> <td>0x00</td> </tr> <tr> <td>1x1x1x1x</td> <td>G-PDU</td> <td>0xff</td> </tr> <tr> <td>x1xxx1xx</td> <td>PDU Notification Reject Request PDU Notification Reject Response PDU Notification Response</td> <td>0xff</td> </tr> <tr> <td>x0xxx0xx</td> <td>PDU Notification Request</td> <td>0x00</td> </tr> <tr> <td>11001100</td> <td>Update PDP Context Request (IMSI present)</td> <td>0xcc</td> </tr> <tr> <td>11111111</td> <td>Update PDP Context Request (IMSI not present)</td> <td>0xff</td> </tr> <tr> <td>00110011</td> <td>Update PDP Context Response</td> <td>0x33</td> </tr> </tbody> </table>			0 -->	use gtpSGSNSignalAddr.addrOctets_ba			1 -->	" innerIPv4DestAddress_m		0 ----->	" gtpSGSNDataAddr.addrOctets_ba		1 ----->	" innerIPv4DestAddress_m		0 ----->	" gtpGGSNSignalAddr.addrOctets_ba		1 ----->	" innerIPv4DestAddress_m	0 ----->	" gtpGGSNDataAddr.addrOctets_ba	1 ----->	" innerIPv4DestAddress_m	0 ----->	" gtpTunnelEptIdCntrlPln_m	1 ----->	" gtpTunnelEptIdHdr_m	0 ----->	" gtpTunnelEptIdDataI_m	1 ----->	" gtpTunnelEptIdHdr_m	0 ----->	" gtpTunnelEptIdCntrlPln_m	1 ----->	" gtpTunnelEptIdHdr_m	0 ----->	" gtpTunnelEptIdDataI_m	1 ----->	" gtpTunnelEptIdHdr_m	87654321	Message Type	Set to hex value	xx00xx00	Create PDP Context Request (IMSI present)	0x00	11001100	Create PDP Context Request (IMSI not present)	0xcc	00110011	Create PDP Context Response	0x33	11111111	Delete PDP Context Request Delete PDP Context Response Error Indication	0xff	xxx1xxx1	Forward Relocation Complete Forward Relocation Complete Ack	0xff	xxx0xxx0	Forward Relocation Request Forward Relocation Response	0x00	1x1x1x1x	G-PDU	0xff	x1xxx1xx	PDU Notification Reject Request PDU Notification Reject Response PDU Notification Response	0xff	x0xxx0xx	PDU Notification Request	0x00	11001100	Update PDP Context Request (IMSI present)	0xcc	11111111	Update PDP Context Request (IMSI not present)	0xff	00110011	Update PDP Context Response	0x33		
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xxx1xxx1	Forward Relocation Complete Forward Relocation Complete Ack	0xff																																																																																	
xxx0xxx0	Forward Relocation Request Forward Relocation Response	0x00																																																																																	
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11111111	Update PDP Context Request (IMSI not present)	0xff																																																																																	
00110011	Update PDP Context Response	0x33																																																																																	

<b>8.21.1.11</b>	Field	<b>gtpNSAPI_b</b>	Spec Ref	<b>3GPP TS 29.060 V5.2.0 Section 7.7.17, p54</b>	
	Definition	NSAPI identifies a PDP context in a mobility management context specified by the Tunnel Endpoint Identifier Control Plan.			
	Details	<p>Implementation Info:            The NSAPI field should be extracted from all messages that contains it.            Notes: Currently only 3 message types (Delete PDP Context Request, CreatePDP Context Request and Update PDP Context Request) contain it.</p>			
8.11.1.3	Field	<b>IMSI.telno</b>	Spec Ref	<b>see ref. [2.110] section 7.7.2 p48</b>	
	Definition	This is the unique IMSI for the MS.			
	Details	<p>Implementation Info:            The IMSI is extracted from any message that contains it.</p>			
8.11.1.16	Field	<b>authTriplets_sa</b>	Spec Ref	<b>see ref.[2.110]- sections 7.7.7 p50</b>	
	Definition	An authentication triplet contains a random key (RAND), a signed response (SRES) and a ciphering key (Kc). The <i>authTriplets_sa</i> field is a array of authentication triplet structures containing these values.			
	Details	<p>Implementation Info:  <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 8.21.1.31 for the new field.</b>            Authentication triplets should be broken out from the Identification Response message (optional --- conditional on the Identification Request being accepted)            For each authentication triplet the RAND, SRES and Kc should be broken out to the appropriate field in the next available array element. A maximum of K_GG59_AUTHTRIPLETS_NUM triplets may be broken out.</p>			
8.11.1.17	Field	<b>numAuthTriplets_b</b>	Spec Ref	<b>see ref.[2.110]- sections 7.7.7 p50</b>	
	Definition	The number of authentication triplets that are broken out of a GTP message.			
	Details	<p>Implementation Info:  <b>This field should be obsolete and superseded in the next Major release of SWP C.08.10. See 8.21.1.31 for the new field.</b>            The Identification Response message does not explicitly identify how many triplets the message contains so this value is calculated from the number of triplets broken out of the message.</p>			
8.11.1.20	Field	<b>gtpCipheringAlg_b</b>	Spec Ref	<b>see ref.[2.110]- sections 7.7.28 p60</b>	
	Definition	Indicates the ciphering algorithm that is in use.			
	Details	<p>Implementation Info:            The Used Cipher value should be extracted from the MM Context information element of SGSN Context Response and Forward Relocation Request messages.t</p>			
8.11.1.21	Field	<b>gtpTunnelID_ba</b>	Spec Ref	n/a	
	Definition	This field is not used in GTP v1			
	Details	<p>Implementation Info:            The Tunnel ID from GTP v0 is no longer used as the header has changed and now uses the Tunnel Endpoint Identifier field which is broken out into “<b>gtpTunnelEptIdHdr_m</b>”.</p>			

8.11.1.22	Field	<b>gtpHeaderFlowLabel_u</b>	Spec Ref	n/a	
	Definition	This field is not used in GTP v1			
	Details	Implementation Info: n/a			
8.11.1.23	Field	<b>gtpFlowLabelSignal_u</b>	Spec Ref	n/a	
	Definition	This field is not used in GTP v1			
	Details	Implementation Info: This field has been renamed ‘ <b>gtpTunnelEptIdCntrlPln_m</b> ’ and has doubled in size to 4 octets for GTP v1.			
8.11.1.24	Field	<b>gtpFlowLabelData_u</b>	Spec Ref	n/a	
	Definition	This field is not used in GTP v1			
	Details	Implementation Info: This field has been renamed ‘ <b>gtpTunnelEptIdDataI_m</b> ’ and has doubled in size to 4 octets for GTP v1.			
8.11.1.25	Field	<b>gtpFlowLabelDataNSAPI_b</b>	Spec Ref	<b>see ref.[2.110] section 7.7.15 p53</b>	
	Definition	The NSAPI Accompanying the Tunnel Endpoint Id Data II			
	Details	Implementation Info: The NSAPI fields from the Tunnel Endpoint Id Data II information element should be extracted whenever it appears.			
8.11.1.26	Field	<b>gtpSGSNSignalAddr</b>	Spec Ref	<b>see ref.[2.110] section 7.7.32 p65</b>	
	Definition	Structure containing the SGSN Address for Control Plane within the current message -- this has changed from SGSN Signalling Address at GTP v0.			
	Details	Implementation Info: The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG. The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.  The <b>numOctets_b</b> field should be populated with the length of the address. The <b>addrOctets_ba</b> field should be populated with the actual address digits.  The structure should be populated when present in the following messages: Create PDP Context Request (ref. [2] section 7.3.1) - 1st occurrence of ‘GSN Address’ in message. Update PDP Context Request SGSN initiated (ref. [2] section 7.3.3) - 1st occurrence of ‘GSN Address’ in message. Identification Request (ref. [2] section 7.5.1) SGSN Context Request (ref. [2] section 7.5.3) SGSN Context Response (ref. [2] section 7.5.4) Forward Relocation Request (ref. [2] section 7.5.6) Forward Relocation Response (ref. [2] section 7.5.7)			

8.11.1.27	Field	<b>gtpSGSNDataAddr</b>	Spec Ref	<b>see ref.[2.110] section 7.7.32 p65</b>
	Definition	Structure containing the SGSN Address for User Traffic within the current message -- this has changed from SGSN Data Address at GTP v0.		
	Details	<p>Implementation Info:</p> <p>The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG            The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.</p> <p>The <b>numOctets_b</b> field should be populated with the length of the address.            The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:            Create PDP Context Request (ref. [2] section 7.3.1) - 2nd occurrence of I.E. in message.            Update PDP Context Request SGSN initiated (ref. [2] section 7.3.3) - 2nd occurrence of I.E. in message.            SGSN Context Acknowledge (ref. [2] section 7.5.5)</p>		
8.11.1.28	Field	<b>gtpGGSNSignalAddr</b>	Spec Ref	<b>see ref.[2.110] section 7.7.32 p65</b>
	Definition	Structure containing the GGSN Address for Control Plane within the current message-- this has changed from GGSN Signalling Address at GTP v0.		
	Details	<p>Implementation Info:</p> <p>The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG            The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.</p> <p>The <b>numOctets_b</b> field should be populated with the length of the address.            The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:            Create PDP Context Response (ref. [2] section 7.3.2) - 1st occurrence of I.E. in message.            Update PDP Context Response sent by GGSN (ref. [2] section 7.3.4) - 1st occurrence of I.E. in message.            PDU Notification Request (ref. [2] section 7.3.8)</p>		
8.11.1.29	Field	<b>gtpGGSNDataAddr</b>	Spec Ref	<b>see ref.[2.110] section 7.7.32 p65</b>
	Definition	Structure containing the GGSN Address for User Traffic within the current message -- this has changed from GGSN Data Address at GTP v0.		
	Details	<p>Implementation Info:</p> <p>The <b>organisation_b</b> field should be populated with K_GG61_IETF_PDPORG            The <b>type_b</b> field should be populated with either K_GG61_IETF_IPv4_PDPADDR or K_GG61_IETF_IPv6_PDPADDR as appropriate. This should be determined from the length of the address - 4 for IPv4 and 16 for IPv6.</p> <p>The <b>numOctets_b</b> field should be populated with the length of the address.            The <b>addrOctets_ba</b> field should be populated with the actual address digits.</p> <p>The structure should be populated when present in the following messages:            Create PDP Context Response (ref. [2] section 7.3.2) - 2nd occurrence of I.E. in message.            Update PDP Context Response sent by GGSN (ref. [2] section 7.3.4) - 2nd occurrence of I.E. in message.</p>		

8.21.1.30	Field	<b>extHeaderInd_m</b>	Spec Ref	<b>3GPP TS 29.060, Section 6.1</b>	
	Definition	This is the presence indicator field of GTP Extension Headers.			
	Details	<p>Implementation Info:</p> <p>It should be extracted for any message that contains Extension Headers. The GTP v1 message could contain more than 1 Extension Headers. The bit flags should be set for every Extension Header respectively. The following bit flags are defined:</p> <ul style="list-style-type: none"> <li>K_GG59_GTPEXTHDR_PDCP_PDU_NUM</li> <li>K_GG59_GTPEXTHDR_SUSPEND_REQ</li> <li>K_GG59_GTPEXTHDR_SUSPEND_RESP</li> </ul>			
8.21.1.31	Field	<b>authVectorSet</b>	Spec Ref	3GPP TS 29.060, Section 7.7.7, 7.7.35 & 7.7.28	
	Definition	This is the set of Authentication Vectors.			
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. It is implemented as a multi-value structure field, each value being a single authentication vector. All the instances of authentication vectors should be extracted. The gg59 API getMValCount(tag) can be used to discover the actual number of authentication vectors extracted.</p>			
8.21.1.32	Field	<b>securityInfo</b>	Spec Ref	3GPP TS 29.060, Section 7.7.28	
	Definition	This is the type of security key present in the message and the cipher and integrity key values as appropriate.			
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p>			
8.21.1.33	Field	<b>QoSProfile_ba</b>	Spec Ref	3GPP TS 29.060, Section 7.7.34	
	Definition	This is the Quality Of Service Profile field.			
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p> <p>This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet.</p>			
8.21.1.34	Field	<b>aggregateCellId</b>	Spec Ref	3GPP TS 29.060, Section 7.7.73	
	Definition	The Cell Identifier subfield in the Cell Identification parameter, including Cell Identifier (no name), Cell Identifier (Serving) and Cell Identifier (Target).			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This field is implemented as multi-value field. It should be extracted from Source/Target Cell ID in Cell Identification.</li> <li>(2) The subfield a7CellIdType_b indicates the type of Cell Identifier. One of:  <ul style="list-style-type: none"> <li>K_GG59_A7_CITYTYPE_SERVING (for Cell Identifier (Source))</li> <li>K_GG59_A7_CITYTYPE_TARGET (for Cell Identifier (Target))</li> </ul> </li> <li>(3) The subfield discriminator_b indicates the detail coding format of Cell identification.</li> <li>(4) The subfields value.string_ba[] and value.length_m indicate the Cell identification value.</li> </ol>			
8.21.1.35	Field	<b>sourceRNCId_ba</b>	Spec Ref	3GPP TS 29.060, Section 7.7.73	
	Definition	This is the Source RNC Id subfield in Cell Identification parameter.			

	Details	Implementation Info:  This field should be extracted from Source RNCID in Cell Identification.. This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The array length will be K_GG59_GTP_RNCID_SIZE.		
8.21.1.36	Field	UTRAN transparent container/ BSS Container	Spec Ref	TS29.060 section 7.7.38/section 7.7.72
	TsdBreak out	sourceToTargetTransContainer	Format	s_gg59_pbString
	Details	This field should be extracted from UTRAN transparent container/ BSS Container. The pointer subfield string_pb should be set to the first octet of UTRAN transparent container/ BSS Container. This field only is extracted from last one if there are many containers in a message. The subfield length_u should be actual length in octets of UTRAN transparent container/ BSS Container.		

## 8.21.2 Capture Buffer Indices

Capture Buffer Indices (numbers)				
		I7526_hashAddCpctTelno	I7524_hashAdd3Val	
<b>8.21.2.1</b>	GTP Messages Containing an IMSI	IMSI.telno	n/a	
<b>8.21.2.2</b>	GTP Messages Containing an MSISDN	callingParty.telno	n/a	

Capture Buffer Indices (datasets)			
	message	DATASET	I7524_hashAdd3Val
<b>8.21.2.3</b> Create PDP Context Request (the presence of the IMSI tells us that the context is being created as part of the Secondary PDP Context Activation Procedure)	SGSNSIGTEI	gtpSGSNSignalAddr.addrOctets_ba, gtpTunnelEptIdCntrlPIn_m, 0	
	SGSNDATATEI	gtpSGSNDATAaddr.addrOctets_ba, gtpTunnelEptIdDataL_m, 0	
	GGSNSIGTEI (if IMSI not present)	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	GGSNDATATEI (if IMSI not present)	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
<b>8.21.2.4</b> Create PDP Context Response Update PDP Context Response	SGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	SGSNDATATEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	GGSNSIGTEI	gtpGGSNSignalAddr.addrOctets_ba, gtpTunnelEptIdCntrlPIn_m, 0	
	GGSNDATATEI	gtpGGSNDATAaddr.addrOctets_ba, gtpTunnelEptIdDataL_m, 0	
<b>8.21.2.5</b> Delete PDP Context Request Delete PDP Context Response Error Indication	SGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	SGSNDATATEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	GGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	GGSNDATATEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
<b>8.21.2.6</b> Forward Relocation Complete Forward Relocation Complete Ack	SGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
<b>8.21.2.7</b> Forward Relocation Request Forward Relocation Response	SGSNSIGTEI	gtpSGSNSignalAddr.addrOctets_ba, gtpTunnelEptIdCntrlPIn_m, 0	
<b>8.21.2.8</b> T-PDU	SGSNDATATEI	N/A (Removed for performance consideration. See TSDrd80792.)	
	GGSNDATATEI	N/A (Removed for performance consideration. See TSDrd80792.)	
<b>8.21.2.9</b> PDU Notification Reject Request PDU Notification Reject Response PDU Notification Response	GGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	GGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
	GGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0	
<b>8.21.2.10</b> PDU Notification Request	GGSNSIGTEI	gtpGGSNSignalAddr.addrOctets_ba, gtpTunnelEptIdCntrlPIn_m, 0	
<b>8.21.2.11</b> SGSN Context Acknowledgement	GTPIPSEQ	innerIPv4SrcAddress_m, gtpSequenceNumber_u, 0	
<b>8.21.2.12</b> SGSN Context Response	GTPIPSEQ	innerIPv4DestAddress_m, gtpSequenceNumber_u, 0	
<b>8.21.2.13</b> SGSN Context Request	GTPIPSEQ	innerIPv4SrcAddress_m, gtpSequenceNumber_u, 0	
	TLLIRAI	TLLI_m, M_GG59_RAI_LOWER_32(routingAreaId_ba), M_GG59_RAI_UPPER_32(routingAreaId_ba)	

Capture Buffer Indices (datasets)			
<b>8.21.2.14</b>	Update PDP Context Request  (the presence of the IMSI tells us whether or not the upgrade from v0 to v1 is being carried out: if it is, then start a new trace as the TEId in the header is = 0, else if it is not present, use the TEId in the header)	SGSNSIGTEI(if IMSI present)	gtpSGSNSignalAddr.addrOctets_ba, gtpTunnelEptIdCntrlPIn_m, 0
		SGSNDATATEI(if IMSI present)	gtpSGSNDATAaddr.addrOctets_ba, gtpTunnelEptIdDataL_m, 0
		SGSNSIGTEI(if IMSI not present)	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0
		SGSNDATATEI(if IMSI not present)	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0
		GGSNSIGTEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0
		GGSNDATATEI	innerIPv4DestAddress_m, gtpTunnelEptIdHdr_m, 0
<b>8.21.2.15</b>	GTP Request messages using GTPIPSEQ dataset	GTPIPSEQ	innerIPv4SrcAddress_m, gtpSequenceNumber_u, 0
<b>8.21.2.16</b>	GTPResponse messages using GTPIPSEQ dataset	GTPIPSEQ	innerIPv4DestAddress_m, gtpSequenceNumber_u, 0

### 8.21.3 Call Trace Assistance

Call Trace Assistance						
<b>8.21.3.1</b>	All operations (unless otherwise stated)	Timeouts	CTFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u
			n/a	n/a	n/a	n/a
		MATCHRULE	AND			
		Cross Triggers	Local		Global	
			X			

Call Trace Assistance											
8.21.3.2	Create PDP Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
			CALLING	X			X				
			SGSNSIGTEI	X	X						
			SGSNDATATEI	X	X						
			GGSNSIGTEI (only if NO IMSI present)		X						
			GGSN-DATATEI (only if NO IMSI present)		X						
		State of Call	CTState				CTEnhState				
							“Create PDP Context Request”				
8.21.3.3	Update PDP Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
			SGSNSIGTEI	X	X						
			SGSNDATATEI	X	X						
			GGSNSIGTEI	X	X						
			GGSNDATATEI		X						
		State of Call	CTState				CTEnhState				
							“Update PDP Context Request”				
8.21.3.4	PDU Notification Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
			GGSN-SIGTEI	X	X						
			State of Call	CTState				CTEnhState			
								“PDU Notification Request”			

Call Trace Assistance											
8.21.3.5	Forward Relocation Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
		SGSNSIGTEI	X	X							
		State of Call	CTState				CTEnhState				
							“Forward Relocation Request”				
8.21.3.6	SGSN Context Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
			GTPIPSEQ		X	X					
		State of Call	CTState				CTEnhState				
							“SGSN Context Response”				
8.21.3.7	SGSN Context Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
			X								
		GTPIPSEQ									
		TLLIRAI									
8.21.3.8	Failure Report Request Note MS GPRS Present Request Send Routing Info for GPRS Request Relocation Cancel Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X				X	X			
			X								
		State of Call	CTState				CTEnhState				

Call Trace Assistance														
<b>8.21.3.9</b>	Failure Report Response	CTFlags Critter GTPIPSEQ	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
	Note MS GPRS Present Response			X		X								
	Send Routing Info for GPRS Response	State of Call	CTState				CTEnhState							
	Relocation Cancel Response						“Failure Report Response” “Note MS GPRS Present Response” “Send Routing Info for GPRS Response” “Relocation Cancel Response” “SGSN Context Acknowledgement”							
	SGSN Context Acknowledgement													
<b>8.21.3.10</b>	Delete PDP Context Request	CTFlags Critter SGSNSIGTEI SGSNDATAEI GGSNSIGTEI GGSNDATAEI	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
				X										
				X										
				X										
				X										
	State of Call	CTState				CTEnhState								
						“Delete PDP Context Request”								
<b>8.21.3.11</b>	Identification Request	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		GTPIPSEQ	X											
		State of Call	CTState				CTEnhState							
							“Identification Request”							
<b>8.21.3.12</b>	Identification Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		IMSI	X				X	X						
		GTPIPSEQ		X	X	X								
		Timeouts	CTFinalUseTimeout_b		CTPANSTimeout_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		5000(msec)					
		State of Call	CTState				CTEnhState							
							“Identification Response”							

Call Trace Assistance											
8.21.3.13	Create PDP Context Response Update PDP Context Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		SGSNSIGTEI		X							
		SGSNDATATEI		X							
		GGSNSIGTEI	X	X							
		GGSNDATATEI	X	X							
		State of Call	CTState				CTEnhState				
							“Create PDP Contest Response” “Update PDP Context Response”				
8.21.3.14	Forward Relocation Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		SGSNSIGTEI	X	X							
		State of Call	CTState				CTEnhState				
							“Forward Relocation Response”				
8.21.3.15	Forward Relocation Complete Forward Relocation Complete Ack	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		SGSNSIGTEI		X							
		State of Call	CTState				CTEnhState				
							“Forward Relocation Complete” “Forward Relocation Complete Ack”				
8.21.3.16	PDU Notification Reject Request PDU Notification Response PDU Notification Reject Response	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		GGSN SIGTEI		X							
		State of Call	CTState				CTEnhState				
							“PDU Notification Reject Request” “PDU Notification Response” “PDU Notification Reject Response”				

Call Trace Assistance														
8.21.3.17	Delete PDP Context Response Error Indication <small>(a) for Delete PDP Context Response, only set the FINALUSE flag if the Release Cause = 'Request Accepted'</small>	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X			X(a)								
		SGSNSIGTEI		X		X(a)								
		SGSNDATATEI		X		X(a)								
		GGSNSIGTEI		X		X(a)								
		GGSNDATATEI		X		X(a)								
		Timeouts	CTFinalUseTimeout_b		CTPANSTimeout_u		CTMaxCallAge_u		trawlBackTime_u					
			2000(msec)		n/a		n/a		n/a					
		State of Call	CTState				CTEnhState							
							"Delete PDP Context Response" "Error Indication"							
8.21.3.18	G-PDU	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		SGSNDATATEI		X										
		GGSNDATATEI		X										
		State of Call	CTState				CTEnhState							
							"G-PDU"							

a.MATCHCALLS is set by CT (f25.run) on the Server to tie to UMTS RAU Request. See tfa06.c code for more information.

## 8.22 EGCP

### 8.22.1 Fields

MSU Breakout Fields				
<b>8.22.1.1</b>	Field	<b>egcpPrimitiveId_u</b>	Spec Ref	<b>EGCP Section 3.1, p8.</b>
	Definition	EGCP Primitive identifies an EGCP Transaction Message.		
	Details	<p>Implementation Info: This field should be extracted from all EGCP messages. Notes: The EGCP protocol groups its information in four layer, they are primitive(transaction), command, descriptor, and component. The higher layer contains the lower layer, primitive is the highest layer.</p>		
<b>8.22.1.2 (1)</b>	Field	<b>egcpCommandId_ua[K_GG59_EGCP_MAXCOMMANDS]</b>	Spec Ref	<b>EGCP Section 3.3, p10.</b>
	Definition	This is a list of the EGCP Commands in each EGCP Primitive.		
	Details	<p>This field should be extracted from all EGCP messages. Notes: Though each EGCP Primitive can contain one or more Commands, most of EGCP Primitives contain no more than 2 commands in live traffic. If there are more than one sub-fields (such as termination ID) in EGCP Primitive, only single one sub-field will be extracted from the last Command that contain it.</p>		
<b>(2)</b>	Field	<b>egcpNumCommands_u</b>	Spec Ref	<b>N/A</b>
	Definition	This indicates the number of Commands in egcpCommandId_ua[] for each EGCP Primitive.		
	Details	<p>Implementation Info: If there are more than K_GG59_EGCP_MAXCOMMANDS commands in the primitive, this field should indicate the actual number.</p>		
<b>8.22.1.3</b>	Field	<b>egcpSrcTransId_m</b>	Spec Ref	<b>EGCP Section 3.1, p9.</b>
	Definition	This field contains the source Transaction ID of an EGCP Primitive.		
	Details	<p>Implementation Info: The srcTransId_m field should be extracted from all EGCP messages. This field should also be copied to transactionId_m or contextId_m. See also 8.22.1.10 and 8.22.1.11.</p>		
<b>8.22.1.4</b>	Field	<b>egcpDestTransId_m</b>	Spec Ref	<b>EGCP Section 3.3, p9.</b>
	Definition	This field contains the destination Transaction ID of an EGCP Primitive.		
	Details	<p>Implementation Info: This field should be extracted from all EGCP messages. This field should also be copied to transactionId_m or contextId_m. See also 8.22.1.10 and 8.22.1.11.</p>		
<b>8.22.1.5</b>	Field	<b>egcpTerminationId_m</b>	Spec Ref	<b>EGCP Section 3.4.1, p11.</b>

	Definition	This field indicates termination ID for each EGCP command.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from all EGCP Commands that contains it.</p> <p>This field should also be copied to terminationId. See also 8.22.1.12.</p>		
<b>8.22.1.6</b>	Field	<b>egcpReasonCode_u</b>	Spec Ref	<b>EGCP Section 3.4.2, p13-p19.</b>
	Definition	This field indicates the success or error code for each EGCP request command.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from all EGCP Commands that contains it.</p>		
<b>8.22.1.7</b>	Field	<b>egcpLocalBNCID_m</b>	Spec Ref	<b>EGCP Section 3.4.6.2.2, p26.</b>
	Definition	This field identify Backbone Network Connection (ATM voice channel) between 2 MGs, together with the egcpRemoteBNCID_m defined in 8.22.1.8.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from EGCP Primitives which contain ATMBindData in RxDescriptor.</p>		
<b>8.22.1.8</b>	Field	<b>egcpRemoteBNCID_m</b>	Spec Ref	<b>EGCP Section 3.4.6.2.2, p26.</b>
	Definition	This field identify Backbone Network Connection (ATM voice channel) between 2 MGs, together with the egcpLocalBNCID_m defined in 8.22.1.7.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from EGCP Primitives which contain ATMBindData in TxDescriptor.</p>		

<b>8.22.1.9 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	<b>EGCP Section 3.4.10.2, p35.</b>	
	Definition	The Digit field of Calling Line Identification Parameter.			
	Details	<p>Implementation Info:            The Digits of the parameter Calling Line Identification should be extracted from all EGCP Commands that contains it.            The ASCII characters of the Digits should be converted BCD digits and copied into calling-Party.telno.</p> <p>NOTE:            The ASCII characters should be converted to standard compact telno format e.g. "1", "2", "3", "4", "5" =&gt;0x21, 0x43, 0x05. Additionally, the characters [aAbBcCdDeE] shall be mapped to their hexadecimal equivalent, e.g., "1", "a", "2" =&gt; 0xa1, 0x02. Any values outwith this range should be mapped to 0x0f e.g. "1", "G", "2" =&gt; 0xf1, 0x02</p>			
<b>(2)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	N/A	
	Definition	N/A			
	Details	<p>Implementation Info:            N/A</p>			
<b>(3)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	N/A	
	Definition	N/A			
	Details	<p>Implementation Info:            N/A</p>			
<b>8.22.1.10</b>	Field	<b>transactionId_m</b>	Spec Ref	<b>EGCP Section 3.1</b>	
	Definition	This is the Transaction Id (or MGC Call Id) field. It's the EGCP source transaction Id field if the EGCP message is from MGC to MGW, or EGCP destination transaction Id field if the EGCP message is from MGW to MGC.			
	Details	<p>Implementation Info:            This field should be set to the value of Macro M_GG59_Get_EgcptTransactionId(gg59).</p>			
<b>8.22.1.11</b>	Field	<b>contextId_m</b>	Spec Ref	<b>EGCP Section 3.1</b>	
	Definition	This is the Context Id field. It's the EGCP destination transaction Id field if the EGCP message is from MGC to MGW, or EGCP source transaction Id field if the EGCP message is from MGW to MGC.			
	Details	<p>Implementation Info:            This field should be set to the value of Macro M_GG59_Get_EgcptContextId(gg59).</p>			
<b>8.22.1.12</b>	Field	<b>terminationId</b>	Spec Ref	<b>EGCP Section 3.4.1.</b>	
	Definition	This is the Termination Id field.			

	<b>Details</b>	<p><b>Implementation Info:</b></p> <p>This field is implemented as a multi-value field. It should be extracted from any EGCP message that contains it.</p> <p>The subfield a7PresentInd_b should be set to K_GG59_TERMINID_EGCP.</p> <p>The subfield terminId.egcpTerminId_m should be set to the Termination ID field value.</p> <p>Notes: The last instance of this field is also copied to egcpTerminationId_m. See also 8.22.1.5.</p>
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## 8.22.2 Capture Buffer Indices

<b>Capture Buffer Indices (numbers)</b>			
		I7526_hashAddCpctTelno	I7524_hashAdd3Val
<b>8.22.2.1</b>	Any message containing a callingParty	callingParty.telno	n/a
<b>8.22.2.2</b>	When CTFlags are set on [OPCDPCTID]	n/a	innerIPv4SrcAddress_m, innerIPv4DestAddr_m, transactionId_m
<b>8.22.2.3</b>	When CTFlags are set on [OPCDPCTID]	n/a	innerIPv4SrcAddress_m, innerIPv4DestAddr_m, contextId_m
<b>8.22.2.4</b>	When CTFlags are set on [PCTERMINID]  If there are multiple instances of terminationId, every instance should be added.	n/a	M_GG59_Get_EgcpMgwIPv4Addr(gg59), terminationId.terminId.egcpTerminId_m, 0

## 8.22.3 Call Trace Assistance

Call Trace Assistance										
<b>8.22.3.1</b>	All message types (unless otherwise stated)	Timeouts	CTFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u				
			n/a	n/a	n/a	n/a				
		MATCHRULE	OR							
		Cross Triggers	Local		Global					
			n/a		X					
		State of Call	CTState		CTEnhState					
<b>8.22.3.2</b>	Any message containing a calling-Party	The first Transaction Name, one of: "Transaction Request " "Transaction Accept " "Transaction Reject " "Transaction Notify "				In Transaction Request or Transaction Notify, the first Command Name, one of: "Add Request " "Move Request " "Modify Request " "Subtract Request " "Audit Capability Request " "Audit Value Request " "Notify Request " "Attribute Change Request " "Resource Result Request "				
							Or in Transaction Accept or Transaction Reject, one of: "Add Reply " "Move Reply " "Modify Reply " "Subtract Reply " "Audit Capability Reply " "Audit Value Reply " "Notify Reply " "Attribute Change Reply " "Resource Result Reply "			
		CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED
		CALLINGI	X				X	X	X	
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		n/a		7		n/a	

Call Trace Assistance										
<b>8.22.3.3</b>	Add Request (Add command in Transaction Request)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED
		PCTERMINID (if Specific TerminationId)	X					ttt		
		OPCDPCCID (if specific contextId)		X	X					
		OPCDPCTID	X	X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		n/a		7		n/a	
<b>8.22.3.4</b>	Add Reply (Add command in Transaction Accept)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED
		PCTERMINID <sup>b</sup>	X					ttt		
		OPCDPCCID	X	X						
		OPCDPCTID		X	X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		n/a		n/a		n/a	
<b>8.22.3.5</b>	Subtract Command (Subtract command in any Transaction) Transaction Reject	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED
		OPCDPCTID		X	X					
		OPCDPCCID		X	X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			[OPCDPCTID] = 5 [OPCDPCCID] = 5		n/a		n/a		n/a	
<b>8.22.3.6</b>	All other commands containing TransactionId or ContextId	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED
		OPCDPCTID		X						
		OPCDPCCID		X						
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		n/a		n/a		n/a	

a.The MATCHCALLS will compare the EGCP PCTERMINID dataset values against the derived fields derivedMgwAddress\_m and derivedTerminationId of ISUP. See also 6.4.1.31 and 6.4.1.32.

b.Only set if (1) TerminationId is specific; and (2) its type is AAL1\_TRUNK, VOIP\_TRUNK, or AAL2\_TRUNK. The 3 types of TerminationId from MGC in Add Request could possibly be the "CHOOSE" type in EGCP. So the TerminationId from MGW in Add Reply should be set.

## 8.23 GPRS NS

The following fields should be extracted from all messages which contain them. References are to Network Service (NS) Protocol: GSM 08.16 version 7.1.0 Release 1998 (see 2.3.116).

### 8.23.1 Fields

MSU Breakout Fields					
8.23.1.1	Field	gprsNsBVCI	Spec Ref	GSM 08.16 - section 10.3.1	
	Definition	The BSSGP Virtual Connection Identifier (BVCI) value in NS layer.			
	Details	Implementation Info: This field should be extracted from any NS message that contains it.			

### 8.23.2 Capture Buffer Indices

N/A

### 8.23.3 Call Trace Assistance

N/A

## 8.24 SCCP User Adaptation Layer (SUA)

The following fields should be extracted from all messages which contain them. References are to SUA Protocol (see 2.3.119).

### 8.24.1 Fields

MSU Breakout Fields					
8.24.1.1	Field	messageType_b	Spec Ref	RFC 3868, Section 3.1.3	
	Definition	The Message Type Code parameter. This uniquely defines the function and format of each SUA message.			
	Details	<p>Implementation Info:            The Message Class and Type should be packed into one octet.            Bits 8 -- 5 : Message Class            Bits 4 -- 1 : Message Type</p>			
	Field	protIndMsgType_b	Spec Ref	n/a	
	Definition	This is a ‘protocol independent’ [3.4.1] message type code.			
	Details	<p>Implementation Info:</p> <p>(1) This should be mapped onto the generic K_GG59_SCCP #defines, as follows:</p> <ul style="list-style-type: none"> <li>CLDT =&gt; K_GG59_SCCP_UDT (no Segmentation parameter present)               <ul style="list-style-type: none"> <li>=&gt; K_GG59_SCCP_XUDT (Segmentation parameter present)</li> </ul> </li> <li>CLDR =&gt; K_GG59_SCCP_UDTS (no Segmentation parameter present)               <ul style="list-style-type: none"> <li>=&gt; K_GG59_SCCP_XUDTS (Segmentation parameter present)</li> </ul> </li> <li>CORE =&gt; K_GG59_SCCP_CR</li> <li>COAK =&gt; K_GG59_SCCP_CC</li> <li>COREF =&gt; K_GG59_SCCP_CREF</li> <li>RELRE =&gt; K_GG59_SCCP_RLSD</li> <li>RELCO =&gt; K_GG59_SCCP_RLC</li> <li>RESRE =&gt; K_GG59_SCCP_RSR</li> <li>RESCO =&gt; K_GG59_SCCP_RSC</li> <li>CODT =&gt; K_GG59_SCCP_DT1 (SeqNo contains "more")               <ul style="list-style-type: none"> <li>=&gt; K_GG59_SCCP_DT2 (SeqNo contains P(S) and P(R))</li> <li>=&gt; K_GG59_SCCP_ED (no SeqNo present)</li> </ul> </li> <li>CODA =&gt; K_GG59_SCCP_AK (SeqNo present)               <ul style="list-style-type: none"> <li>=&gt; K_GG59_SCCP_EA (no SeqNo present)</li> </ul> </li> <li>COERR =&gt; K_GG59_SCCP_ERR</li> <li>COIT =&gt; K_GG59_SCCP_IT</li> </ul> <p>(2) Invalid values should be mapped to K_GG59_PROT_IND_INVALID_VALUE.</p>			
8.24.1.2	Field	sourceLocalRef_m	Spec Ref	RFC 3868, Section 3.10.4	
	Definition	The Source Local Reference parameter. This contains a reference number which is included in the message to allow the node receiving the message to determine the Destination Local Reference for the message it sends in the reverse direction. It may also be used for verification of connection status.			
	Details	n/a			

<b>8.24.1.3</b>	Field	<b>destLocalRef_m</b>	Spec Ref	RFC 3868, Section 3.10.5	
	Definition	The Destination Local Reference parameter. This contains a reference number which is included in the message to allow the node receiving the message to identify the message with a particular connection section.			
	Details	n/a			
<b>8.24.1.4 (1)</b>	Field	<b>addrInd_b</b>	Spec Ref	RFC 3868, Section 3.10.2	
<b>sccpCalling sccpCalled<sup>a</sup></b>	Definition	This is constructed from the Routing Indicator, the Global Title Indicator and bits indicating whether the PC and SSN sub-parameters are present, in order to be compatible with SCCP. The Source Address parameter is broken out to sccpCalling and the Destination Address parameter is broken out to sccpCalled. Note: sccpCalled and sccpCalling are structures.			
	Details	<p>Implementation Info:</p> <p>The field is formatted as follows:</p> <ul style="list-style-type: none"> <li>Bit 8: always 0 (indicates international formatting)</li> <li>Bit 7: Routing Ind. 0 if routing on Global Title, 1 otherwise.</li> <li>Bits 6-3 Global Title Indicator.</li> <li>Bit 2: SSN Ind. 1 indicates that the address contains a subsystem number.</li> <li>Bit 1: PC Ind. 1 indicates that the address contains a signaling pointcode.</li> </ul>			

(2)	Field	<b>SSN_b</b>	Spec Ref	RFC 3868, Section 3.10.2.5	
	Definition	The Subsystem Number is a sub parameter of the Source/Destination Address parameter. This identifies the user protocol carried by SUA.			
	Details	Note: If this parameter is present, bit 2 in addrInd_b is set.			
(3)	Field	<b>pc_m</b>	Spec Ref	RFC 3868, Section 3.10.2.4	
	Definition	The Signalling Point Code is a sub parameter of the Source/Destination Address parameter.			
	Details	<p>Implementation Info:</p> <p>(1) The Network Indicator bits should be extracted from ssf_b using the P7GET_NIBITS macro and then OR-ed into the appropriate bits of pc_m using the P7SET_NI macro (see 3.5).</p> <p>(2) If this parameter is present, bit 1 in addrInd_b is set.</p>			
(4)	Field	<b>translationType_b</b>	Spec Ref	RFC 3868, Section 3.10.2.3	
	Definition	The Translation Type field. This is a sub-field of the Global Title sub-parameter in the Source/Destination Address parameter. It is used to direct the message to the appropriate global title translation function.			
	Details	n/a			
(5)	Field	<b>addressInfo.natOfAddr_b</b>	Spec Ref	RFC 3868, Section 3.10.2.3	
	Definition	The Nature Of Address field. This is a sub-field of the Global Title sub-parameter in the Source/Destination Address parameter.			
	Details	n/a			
(6)	Field	<b>addressInfo.numberingPlan_b</b>	Spec Ref	RFC 3868, Section 3.10.2.3	
	Definition	The Numbering Plan field. This is a sub-field of Global Title sub-parameter in the Source/Destination Address parameter.			
	Details	n/a			
(7)	Field	<b>addressInfo.encodingScheme_b</b>	Spec Ref	n/a	
	Definition	There is no Encoding Scheme field in the Source/Destination Address parameter, so this field is not set.			
	Details	n/a			
(8)	Field	<b>addressInfo.telno.length_b</b>	Spec Ref	RFC 3868, Section 3.10.2.3	
	Definition	The Number of Digits field. This contains the number of digits in Global Title digits field of the Global Title sub-parameter in the Source/Destination Address parameter.			
	Details	n/a			
(9)	Field	<b>addressInfo.telno.digits_ba</b>	Spec Ref	RFC 3868, Section 3.10.2.3	
	Definition	The digits contained in the Global Title digits field of the Global Title sub-parameter in the Source/Destination Address parameter.			
	Details	<p>Implementation Info:</p> <p>This should be coded in standard gg61_telno digit ordering, with the unused nibble = 0 if an odd number of digits are present.</p>			

<b>8.24.1.5</b>	Field	<b>returnCause_b</b>	Spec Ref	RFC 3868, Section 3.10.6	
	Definition	In the CLDR message the SCCP Cause parameter contains the reason for the message return.			
	Details	n/a			
<b>8.24.1.6</b>	Field	<b>TMServiceAssFailCode_u</b>	Spec Ref	n/a	
	Definition	This is a generic failure code used to count a number of different ‘Service Assurance’ failures.			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) If the Return Cause parameter is present, this should be set to: K_GG59_BASESCCP_RETURNCAUSE + returnCause_b.</li> <li>(2) New failure codes should be added to the NLS catalog (see 3.4)</li> </ol>			
<b>8.24.1.7</b>	Field	<b>SCCPRoutingFailure_u</b>	Spec Ref	n/a	
	Definition	This is a generic routing failure code used to count a number of different SCCP ‘routing failure’ parameters.			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) If SCCP Cause parameter, type Release Cause, is present in the SCCP message, then the value should be set to SCCP Cause value + K_GG59_SCCP_ROUTING_RELCAUSE</li> <li>(2) If SCCP Cause parameter, type Return Cause, is present in the SCCP message, then the value should be set to SCCP Cause value + K_GG59_SCCP_ROUTING_RETCAUSE</li> <li>(3) If SCCP Cause parameter, type Reset Cause, is present in the SCCP message, then the value should be set to SCCP Cause value + K_GG59_SCCP_ROUTING_RESETCAUSE</li> <li>(4) If SCCP Cause parameter, type Refusal Cause, is present in the SCCP message, then the value should be set to SCCP Cause value + K_GG59_SCCP_ROUTING_REFCAUSE</li> </ol>			
<b>8.24.1.8</b>	Field	<b>userData_b</b>	Spec Ref	n/a	
	Definition	This is a flag which is set to TRUE for all (conectionless and connection-oriented), messages when a Data parameter is present in the message, except for messages which contain a Segmentation parameter with bit 8 of octet 1 (ie. sccpSegctl_b, 8.24.1.12) set to 0.			
	Details	n/a			
<b>8.24.1.9</b>	Field	<b>sccpDataParmLen_b</b>	Spec Ref	RFC 3868, Section 3.10.11.	
	Definition	The Data parameter field length.			
	Details	n/a			
<b>8.24.1.10</b>	Field	<b>sccpHopCounter_b</b>	Spec Ref	RFC 3868, Section 3.10.1	
	Definition	The SS7 Hop Counter parameter. This parameter contains a counter which is decremented with each global title translation.			
	Details	n/a			
<b>8.24.1.11</b>	Field	<b>sccpClessSegmentedMsg_b</b>	Spec Ref	n/a	
	Definition	This is a flag which should be set to TRUE if the optional Segmentation parameter is present.			
	Details	n/a			

<b>8.24.1.12</b>	Field	<b>sccpSegCntl_b</b>	Spec Ref	RFC 3868, Section 3.10.23	
	Definition	This is the first octet of the Segmentation parameter.			
	Details	n/a			
<b>8.24.1.13</b>	Field	<b>sccpSegLocalRef_m</b>	Spec Ref	RFC 3868, Section 3.10.23	
	Definition	This is octets 2-4 of the Segmentation parameter			
	Details	n/a			
<b>8.24.1.14</b>	Field	<b>sccpMoreData_b</b>	Spec Ref	RFC 3868, Section 3.10.7	
	Definition	The More Data Indication fields of the Sequence Number parameter			
	Details	n/a			
<b>8.24.1.15</b>	Field	<b>sccpSendSeqNum_b</b>	Spec Ref	RFC 3868, Section 3.10.7	
	Definition	The Sent Sequence Number of the Sequence Number parameter.			
	Details	n/a			
<b>8.24.1.16</b>	Field	<b>sctpUaMessageClass_b</b>	Spec Ref	IETF RFC 3868 Section 3.1.2	
	Definition	This field specifies the SCTP UA message class (e.g. MGMT, Transfer, SSNM, ASPSM, ASPTM, RKM).			
	Details	<u>Implementation Info:</u> This field should be set for SUA messages. One of: K_GG59_SCTPUA_MGMT K_GG59_SCTPUA_SSNM K_GG59_SCTPUA_ASPSM K_GG59_SCTPUA_ASPTM K_GG59_SCTPUA_CL K_GG59_SCTPUA_CO K_GG59_SCTPUA_RKM			
<b>8.24.1.17</b>	Field	<b>sctpUaMessageType_u</b>	Spec Ref	IETF RFC 3868 Section 3.1.3	
	Definition	This two-octet field specifies both the SCTP UA message class and type.			
	Details	<u>Implementation Info:</u> This field should be set for SUA messages. This field is a two-octet combined field to indicate both the SCTP UA message class and type. The value should be equal to (messageClass * 256 + messageType).			
<b>8.24.1.18</b>	Field	<b>sctpUaErrorCode_m</b>	Spec Ref	IETF RFC 3868 Section 3.7.1	
	Definition	The Error Code parameter indicates the reason for the SCTP user adaptation layer error.			
	Details	<u>Implementation Info:</u> This field should be extracted from any message that contains it.			

a.sccpCalling and sccpCalled are structures.

## 8.24.2 Capture Buffer Indices

Capture Buffer Indices									
			I7526_hashAddCpctTelno				I7524_hashAdd3Val		
<b>8.24.2.1</b>	Messages which contain a SRN		n/a				SCCPCallingPc_m, sourceLocalRef_m, 0		
<b>8.24.2.2</b>	Messages which contain a DRN		n/a				dpc_m, destLocalRef_m, 0		

## 8.24.3 Call Trace Assistance

Call Trace Assistance														
<b>8.24.3.1</b>	Connection Request (CORE)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		OPCSLR	X											
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		n/a		n/a		n/a					
		Cross Triggers	Local				Global							
			n/a				n/a							
		State of Call	CTState				CTEnhState							
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE							
<b>8.24.3.2</b>	Connection Ack (COAK)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		OPCSLR	X											
		DPCDLR		X	X									
			CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
		Time Outs	n/a		n/a		n/a		5000					
			Local				Global							
		Cross Triggers	n/a				n/a							
			CTState				CTEnhState							
		K_ANLS_NOCHANGE				K_ANLS_NOCHANGE								

Call Trace Assistance										
8.24.3.3	Connection Refused (COREF)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			DPCDLR	X		X				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		n/a		n/a		n/a	
		Cross Triggers	Local			Global				
			n/a			n/a				
		State of Call	CTState			CTEnhState				
			K_ANLS_NOCHANGE			K_ANLS_NOCHANGE				
8.24.3.4	Release Request (RELRE)	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		OPCSLR		X		X				
	Reset Request (RESRE)	DPCDLR		X		X				
	Reset Confirm (RESCO)	Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u	
			n/a		n/a		n/a		n/a	
	Cross Triggers		Local			Global				
			n/a			n/a				
	State of Call		CTState			CTEnhState				
			K_ANLS_NOCHANGE			K_ANLS_NOCHANGE				

Call Trace Assistance											
8.24.3.5	All other messages containing a SRN and DRN	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		OPCSLR		X							
		DPCDLR		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a		n/a		n/a		n/a		
		Cross Triggers	Local				Global				
			n/a				n/a				
		State of Call	CTState				CTEnhState				
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE				
8.24.3.6	All other messages containing a DLR only	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		DPCDLR		X							
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			n/a		n/a		n/a		n/a		
		Cross Triggers	Local				Global				
			n/a				n/a				
		State of Call	CTState				CTEnhState				
			K_ANLS_NOCHANGE				K_ANLS_NOCHANGE				

## 8.24.4 Additional Access Routines

Same as section 6.3.4.

## 8.25 RANAP

The following fields should be extracted from all messages which contain them. References are to RANAP Protocol: 3GPP TS 25.413 (see 2.3.120).

### 8.25.1 Fields

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.25.1.1</b>	Field	<b>ranapTypeOfMsg_b</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.1</b>
	Definition	This is the RANAP type of message field.		
	Details	Implementation Info: n/a.		
<b>8.25.1.2</b>	Field	<b>ranapProcCode_b</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.1</b>
	Definition	This is the RANAP procedure code field.		
	Details	Implementation Info: n/a.		
<b>8.25.1.3</b>	Field	<b>ranapMessageType_u</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.1</b>
	Definition	This is a fake field to indicate RANAP Message Type. It's a combined field from the type of message field and the procedure code field.		
	Details	Implementation Info: This fake field should be calculated as the following formula: $\text{ranapMessageType\_u} = ((\text{ranapTypeOfMsg\_b} \ll 8)   \text{ranapProcCode\_b})$ .		
<b>8.25.1.4</b>	Field	<b>ranapSigConId_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.38</b>
	Definition	This is the Iu Signalling Connection Identifier.		
	Details	Implementation Info: The field ranapSigConId_m is a multi-value field. This field should be extracted from any message that contains it.		
<b>8.25.1.5</b>	Field	<b>ranapPagingCause_b</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.3</b>
	Definition	This is the Paging Cause to indicate the reason for the Paging message.		

	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. One of            K_GG59_RANAP_PAGINGCAUSE_CONV            K_GG59_RANAP_PAGINGCAUSE_STREAMING            K_GG59_RANAP_PAGINGCAUSE_INTERACTIVE            K_GG59_RANAP_PAGINGCAUSE_BACKGROUND            K_GG59_RANAP_PAGINGCAUSE_LOWPRIORITY            K_GG59_RANAP_PAGINGCAUSE_HIGH_PRIORITY</p> <p>If extension bit indicator of Paging Cause parameter is 1, this field should be the Paging Cause value + K_GG59_RANAP_PAGINGCAUSE_EXT_BASE.</p>		
<b>8.25.1.6 (1)</b>	Field	<b>ranapCauseType_b</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.4</b>
	Definition	This is the RANAP cause type.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as multi-value field. It should be extracted from any message that contains it. One of            K_GG59_RANAP_CAUSETYPE_RADIONETWORK            K_GG59_RANAP_CAUSETYPE_TRANSNETWORK            K_GG59_RANAP_CAUSETYPE_NAS            K_GG59_RANAP_CAUSETYPE_PROTOCOL            K_GG59_RANAP_CAUSETYPE_MISC            K_GG59_RANAP_CAUSETYPE_NONSTANDARD            K_GG59_RANAP_CAUSETYPE_NONSTANDARD            K_GG59_RANAP_CAUSETYPE_RADIONETWORKEXTENSION (0x80)</p> <p>Refer to the Implementation Info of field ranapCause_u for more details.</p> <p>See 8.25.4 for Context Assistance requirement for this field.</p>		
<b>(2)</b>	Field	<b>ranapCause_u</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.4</b>
	Definition	This is the unencoded value of RANAP cause parameter.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. The unencoded value of RANAP cause parameter (e.g., value 98 for "Semantic Error", value 257 for "iP-multicast-address-and-APN-not-valid") should be set for any message that contains it.</p> <p>Both the sub-fields type and value of RANAP Cause parameter are implemented as multi-value fields. The 2 sub-fields are always present at the same time. Protocol Breakouts should ensure the 2 multi-value fields to be extracted at the same time. Applications should keep synchronization when accessing the 2 multi-value fields.</p> <p>See 8.25.4 for Context Assistance requirement for this field.</p>		
<b>8.25.1.7</b>	Field	<b>IMSI.telno</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.9 &amp; 9.2.3.1</b>
	Definition	This is the Permanent UE Identity, or the UE Identity of a CN Invoke Trace on an IMSI.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from the Permanent NAS UE Identity parameter from every message containing it. Also extracted from the UE Identity parameter of the CN Invoke Trace message when it contains an IMSI.</p>		

<b>8.25.1.8</b>	Field	<b>IMEI.telno</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.9</b>	
	Definition	This is the UE Identity of a CN Invoke Trace on an IMEI.			
	Details	<p>Implementation Info: This field should be extracted from the UE Identity parameter of the CN Invoke Trace when it contains an IMEI.</p>			
<b>8.25.1.9</b>	Field	<b>TMSI.telno</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.2</b>	
	Definition	This is the TMSI from the Temporary UE ID parameter.			
	Details	<p>Implementation Info: This field should be extracted from the Temporary UE ID parameter of the PAGING message when it contains a TMSI.</p>			
<b>8.25.1.10</b>	Field	<b>PTMSI.telno</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.2</b>	
	Definition	This is the P-TMSI from the Temporary UE ID parameter.			
	Details	<p>Implementation Info: This field should be extracted from the Temporary UE ID parameter of the PAGING message when it contains a P-TMSI.</p>			
<b>8.25.1.11</b>	Field	<b>ranapLocationAreaId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.6</b>	
	Definition	This is the RANAP Location Area Id (LAI) parameter.			
	Details	<p>Implementation Info: This field should be extracted from any message where the LAI is present. If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).</p> <p>NOTE: For the RANAP Relocation Required message this field contains the requested LAI, for all other cases it contains the current LAI.</p>			
<b>8.25.1.12</b>	Field	<b>routingAreaId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.6 &amp; 9.2.3.7</b>	
	Definition	This is the LAI and RAC combined to form the RAI.			
	Details	<p>Implementation Info: This field should be extracted from messages where the RAC is present. If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).</p> <p>NOTE: For the RANAP Relocation Required message this field contains the requested RAI, for all other cases it contains the current RAI.</p>			
<b>8.25.1.13</b>	Field	<b>layer3Info.string_pb</b> <b>layer3Info.length_u</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.31</b>	
	Definition	This is the L3 Information IE.			
	Details	<p>Implementation Info: This is extracted from any RANAP message containing L3 Information. The pointer is set to first octet after the length octet.</p>			

<b>8.25.1.14</b>	Field	<b>CNDomainInd_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.5</b>
	Definition	This is the RANAP CN Domain Indicator field.		
	Details	<p>Implementation Info: This field should be extracted from any message that contains it. One of K_GG59_CNDOMAIN_CS K_GG59_CNDOMAIN_PS</p>		
<b>8.25.1.15</b>	Field	<b>RABId_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.2</b>
	Definition	This is the RANAP RAB Id. It uniquely identifies the radio access bearer for a specific CN domain for a particular UE, which makes the RAB ID unique over one Iu connection.		
	Details	<p>Implementation Info: This field is implemented as a multi-value field. It should be extracted from any message that contains it.  See 8.25.4 for Context Assistance requirement for this field.</p>		
<b>8.25.1.16</b>	Field	<b>relocationType_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.23</b>
	Definition	This is the enumerated value of Relocation Type field. It indicates whether the relocation of SRNS is to be executed with or without involvement of the UE.		
	Details	<p>Implementation Info: This field should be extracted from any message that contains it. One of TBD</p>		
<b>8.25.1.17</b>	Field	<b>cellId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.25</b>
	Definition	This is the LAI and CI combined to form the CGI.		
	Details	<p>Implementation Info: This field should be extracted from any messages where the CI is present. This field should be formed by concatenating the CI octet to the end of the ranapLocationAreaId_ba octets. If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).</p>		
<b>8.25.1.18</b>	Field	<b>serviceAreaId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.9</b>
	Definition	This is the Service Area Identifier (SAI) field combined from LAI and SAC. It is used to identify an area consisting of one or more cells belonging to the same Location Area. Such an area is called a Service Area and can be used for indicating the location of a UE to the CN.		
	Details	<p>Implementation Info: This field should be extracted from any messages where the SAI is present. This field should be formed by concatenating the SAC octet to the end of the ranapLocationAreaId_ba octets. If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8). This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. For RANAP protocol, the array length will be K_GG59_RANAP_SAI_SIZE.</p>		

<b>8.25.1.19</b>	Field	<b>sourceRNCId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.24</b>
	Definition	This is the Source RNC Id field.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.            If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).            This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. For RANAP protocol, the array length will be K_GG59_RANAP_SOURCERNCID_SIZE.</p>		
<b>8.25.1.20</b>	Field	<b>targetRNCId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.25</b>
	Definition	This is the Target RNC Id field.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.            If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).            This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. For RANAP protocol, the subfield RAC should always be present towards the PS domain and never towards the CS domain. So, the array length will be K_GG59_RANAP_PS_TARGETRNCID_SIZE or K_GG59_RANAP_CS_TARGETRNCID_SIZE.</p>		
<b>8.25.1.21</b>	Field	<b>globalRNCId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.39</b>
	Definition	This is the Global RNC Id field. It is used to globally identify an RNC.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.            If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).            This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. For RANAP protocol, the array length will be K_GG59_RANAP_GLOBALRNCID_SIZE.</p>		
<b>8.25.1.22</b>	Field	<b>globalCNId_ba</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.46</b>
	Definition	This is the Global CN Id field. It is used to globally identify a CN node.		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.            If MNC is 3 digits, Breakout will adjust the order of 3-digit MNC to provide unitive format when populated from RANAP (See 3.8).            This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. For RANAP protocol, the array length will be K_GG59_RANAP_GLOBALCNID_SIZE.</p>		

<b>8.25.1.23</b>	Field	<b>RequestedLocRelDataType_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.19</b>	
	Definition	This is the Requested Location Related Data Type field. It indicates the type of the requested location related data for the indicated positioning method.			
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_DECIPHKEYSUEBASEDOTDOA</li> <li>K_GG59_DECIPHKEYSASSGPS</li> <li>K_GG59_DEDICASSDATAUEBASEDOTDOA</li> <li>K_GG59_DEDICASSDATAASSGPS</li> </ul>			
<b>8.25.1.24</b>	Field	<b>GPSAssistanceData.string_pb</b> <b>GPSAssistanceData.length_u</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.3.19</b> <b>3GPP TS 24.080, Section 4.4.3.44</b> <b>3GPP TS 49.031, Section 10.10</b>	
	Definition	This is the Requested GPS Assistance Data field. It provides the assistance data for the Assisted GPS positioning method.			
	Details	<p>Implementation Info:</p> <p>This is extracted from any message that contains the Requested GPS Assistance Data. The pointer is set to first octet after the length octet.</p>			
<b>8.25.1.25</b>	Field	<b>traceType_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.6</b> <b>GSM TS 12.08, Section 6</b> <b>(or 3GPP TS 32.108, Section 6)</b>	
	Definition	This is the Trace Type field. It indicates the type of trace information to be recorded			
	Details	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p> <p>Notes: The trace type field is quite complex. In R96 spec (GSM 12.08 V5.1.1), 2 sets of descriptions were defined. In R5 spec (3GPP TS 32.108 V0.1.0), 4 sets of descriptions were defined.</p>			
<b>8.25.1.26</b>	Field	<b>requestTypeEvent_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.16</b>	
	Definition	This is the Request Type Event field.			
	Details	<p>Implementation Info:</p> <p>It should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_EVENT_STOPCHANGEOFSA</li> <li>K_GG59_EVENT_DIRECT</li> <li>K_GG59_EVENT_CHANGEOFSA</li> <li>K_GG59_EVENT_EXT_STOPDIRECT</li> </ul>			
<b>8.25.1.27</b>	Field	<b>reportArea_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.16</b>	
	Definition	This is the Report Area field.			
	Details	<p>Implementation Info:</p> <p>It should be extracted from any message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_SERVICEAREA</li> <li>K_GG59_GEOGRAPHICALAREA</li> </ul>			

<b>8.25.1.28</b>	Field	<b>accuracyCode_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.16</b>																																																																																																																																																																																																												
	Definition	This is the Accuracy Code field.																																																																																																																																																																																																														
	Details	Implementation Info: n/a.																																																																																																																																																																																																														
<b>8.25.1.29(1)</b>	Field	<b>geoInfo.a7GeoType_b</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.16</b>																																																																																																																																																																																																												
	Definition	This is the protocol independent Geographical Type indicator. It indicates the presences of sub-fields of geoInfo.geoDetails.																																																																																																																																																																																																														
	Details	<p>Implementation Info:</p> <p>(1) It should be set according to the type of the Geographical Area field. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_A7_NO_GEODETAILS (0)</li> <li>K_GG59_A7_ELLIPSOIDPOINT (1)</li> <li>K_GG59_A7_POINT_UNCCIRCLE (2)</li> <li>K_GG59_A7_POINT_UNCELLIPSE (5)</li> <li>K_GG59_A7_POLYGON (7)</li> <li>K_GG59_A7_POINT_ALTITUDE (8)</li> <li>K_GG59_A7_POINT_ALT_UNCELLIPSOID (9)</li> <li>K_GG59_A7_ELLIPSOIDARC (10)</li> <li>K_GG59_A7_POINT_UNC_CONF (3, N/A for RANAP)</li> <li>K_GG59_A7_POINT_ALT_UNC (4, N/A for RANAP)</li> <li>K_GG59_A7_ELLIPSOIDCIRCLESECTOR (6, N/A for RANAP)</li> </ul> <p>(2) The presences of subfields vs. a7GeoType_b are the as the following:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>a7GeoType_b</th> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> <th>9</th> <th>10</th> </tr> </thead> <tbody> <tr> <td>point.longitude_l</td> <td>Y</td> </tr> <tr> <td>point.latitude_m</td> <td>Y</td> </tr> <tr> <td>point.latitudeSign_b</td> <td>Y</td> </tr> <tr> <td>point.altitude_u</td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td>Y</td> <td>Y</td> <td>Y</td> <td></td> </tr> <tr> <td>point.altitudeSign_b</td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td>Y</td> <td>Y</td> <td>Y</td> <td></td> </tr> <tr> <td>point.uncertRadius_b</td> <td></td> <td></td> <td>Y</td> <td>Y</td> <td>Y</td> <td></td> <td>Y</td> <td></td> <td></td> <td>Y</td> <td></td> </tr> <tr> <td>point.uncertAltitude_b</td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> </tr> <tr> <td>point.uncertSemimajor_b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> </tr> <tr> <td>point.uncertSeminor_b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> </tr> <tr> <td>point.orientOfMajorAxis_b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> </tr> <tr> <td>point.confidence_b</td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td>Y</td> <td>Y</td> <td>Y</td> <td>Y</td> <td>Y</td> <td></td> </tr> <tr> <td>point.innerRadius_u</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> </tr> <tr> <td>point.offsetAngle_b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td>Y</td> <td></td> <td></td> </tr> <tr> <td>point.includedAngle_b</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td>Y</td> <td></td> <td></td> </tr> <tr> <td>polygon.numOfPoints_m</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td></td> </tr> <tr> <td>polygon.points[]</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Y</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				a7GeoType_b	0	1	2	3	4	5	6	7	8	9	10	point.longitude_l	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	point.latitude_m	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	point.latitudeSign_b	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	point.altitude_u					Y			Y	Y	Y		point.altitudeSign_b					Y			Y	Y	Y		point.uncertRadius_b			Y	Y	Y		Y			Y		point.uncertAltitude_b				Y					Y			point.uncertSemimajor_b						Y			Y			point.uncertSeminor_b						Y			Y			point.orientOfMajorAxis_b						Y			Y			point.confidence_b					Y	Y	Y	Y	Y	Y		point.innerRadius_u										Y		point.offsetAngle_b							Y		Y			point.includedAngle_b							Y		Y			polygon.numOfPoints_m								Y				polygon.points[]								Y		
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point.latitude_m	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y																																																																																																																																																																																																					
point.latitudeSign_b	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y																																																																																																																																																																																																					
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point.orientOfMajorAxis_b						Y			Y																																																																																																																																																																																																							
point.confidence_b					Y	Y	Y	Y	Y	Y																																																																																																																																																																																																						
point.innerRadius_u										Y																																																																																																																																																																																																						
point.offsetAngle_b							Y		Y																																																																																																																																																																																																							
point.includedAngle_b							Y		Y																																																																																																																																																																																																							
polygon.numOfPoints_m								Y																																																																																																																																																																																																								
polygon.points[]								Y																																																																																																																																																																																																								
<b>8.25.1.29 (2)</b>	Field	<b>geoInfo.typeOfShape_b</b> <b>geoInfo.locPresRestrInd_b</b> <b>geoInfo.screeningInd_b</b>	Spec Ref	<b>n/a</b>																																																																																																																																																																																																												
	Definition	n/a																																																																																																																																																																																																														
	Details	Implementation Info: These subfields are not required for RANAP.																																																																																																																																																																																																														

<b>8.25.1.29 (3)</b>	<b>Field</b>	<b>geoInfo.geoDetails</b>	<b>Spec Ref</b>	<b>3GPP TS 25.413, Section 9.2.3.11</b>
	<b>Definition</b>	This is a list of the subfields of Geographical Area field. It is used to identify an area using geographical coordinates.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) All the subfields of geoDetails should be extracted from any message that contains Geographical Area field. The presences of the subfields should refer to 8.25.1.29 (1).</li> <li>(2) The subfield longitude_l is signed integer between -8388608 and 8388607. It's coded in 2s complement binary. The macro M_GG59_GET_DEGREEOFLONGITUDE(longitude_l) could be used to get the degree of longitude, expressed between -180 and 180 in double.</li> <li>(3) The subfield latitude_m is unsigned integer between 0 and 8388607. The macro M_GG59_GET_DEGREEOFLATITUDE(latitude_m) could be used to get the degree of latitude, expressed between 0 and 90 in double.</li> <li>(4) The subfield latitudeSign_b is to indicate North or South. One of: K_GG59_LATITUDESIGN_NORTH K_GG59_LATITUDESIGN_SOUTH</li> <li>(5) The subfield altitude_u is unsigned integer between 0 and 32767. It directly indicates the altitude in meters.</li> <li>(6) The subfield altitudeSign_b is to indicate Height or Depth. One of: K_GG59_ALTITUDESIGN_HEIGHT K_GG59_ALTITUDESIGN_DEPTH</li> <li>(7) The subfield uncertRadius_b is unsigned integer between 0 and 127. The macro M_GG59_GET_UNCERTRADIUS(uncertRadius_b) could be used to get the radius of the uncertainty circle, circle sector or arc in meters, expressed between 0m and 1,800,000m in float.</li> <li>(8) The subfield uncertAltitude_b is unsigned integer between 0 and 127. The macro M_GG59_GET_UNCERTALTITUDE(uncertAltitude_b) could be used to get the uncertainty altitude in meters, expressed between 0m and 990m in float.</li> <li>(9) The subfield uncertSemimajor_b or uncertSemiminor_b is unsigned integer between 0 and 127. The macro M_GG59_GET_UNCERTRADIUS(uncertSemimajor_b or uncertSemiminor_b) could be used to get the uncertainty semi-major or semi-minor in meters, expressed between 0m and 1,800,000m in float.</li> <li>(10) The subfield orientOfMajorAxis_b is unsigned integer between 0 and 179. It directly indicates the orientation of the major axis of the ellipsoid in degrees (0 being North, 90 being East). Notes: RANAP Orientation of major axis is different from other protocols. Breakouts will calculate the field orientOfMajorAxis_b and fill the actual degrees.</li> <li>(11) The subfield confidence_b is unsigned integer between 0 and 100. It directly indicates the confidence by which the location is known to be within the shape description, expressed as a percentage. 0 is used to indicate "no information".</li> <li>(12) The subfield innerRadius_u is unsigned integer between 0 and 65535. The macro M_GG59_GET_INNERRADIUS(innerRadius_u) could be used to get the inner radius in meters, expressed between 0m and 327675m in unsigned integer.</li> <li>(13) The subfield offsetAngle_b or includedAngle_b is unsigned integer between 0 and 179. The macro M_GG59_GET_ANGLE(offsetAngle_b or includedAngle_b) could be used to get the orientation of the offset or included angle of the circle sector or src, expressed in degrees (0 being North, 90 being East).</li> </ul>		
<b>8.25.1.30</b>	<b>Field</b>	<b>ageOfSAI_m</b>	<b>Spec Ref</b>	<b>3GPP TS 25.413, Section 9.2.3.22</b>
	<b>Definition</b>	This is the Age of SAI field. It is used to identify the elapsed time in minutes since the UE was known to be in this Service Area.		
	<b>Details</b>	<p>Implementation Info:</p> <p>n/a</p>		

<b>8.25.1.31(1)</b>	Field	<b>RABParameters.RABId_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.2 &amp; 9.2.1.3</b>	
	Definition	This is the RANAP RAB Id of RAB Parameters.			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) The field RABParameters is implemented as a multi-value structure field. All the instances of the RAB Parameters should be extracted.</li> <li>(2) The subfield RABId_m should <b>only</b> be extracted when where RABParameters is present.</li> <li>(3) See 8.25.4 for Context Assistance requirement for this field.</li> </ol>			
<b>8.25.1.31 (2)</b>	Field	<b>RABParameters.presentInd_m</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.1.3</b>	
	Definition	This is the artificial bit flag field. It indicates the presences of its subfields in RAB Parameters.			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) The field RABParameters is implemented as a multi-value structure field. All the instances of the RAB Parameters should be extracted.</li> <li>(2) The bit flag field presentInd_m should be set to indicate the presences of its subfields. For example, the subfield transferDelay is optional in RAB Parameters. If the subfield transferDelay is present in the current RAB Parameters, protocol Breakouts should set the K_GG59_RABPARAM_TRANSFERDELAY bit of presentInd_m. Applications could use the following code to determine the presence of subfield transferDelay_u:</li> </ol> <pre>if (RABParameters.presentInd_m &amp; K_GG59_RABPARAM_TRANSFERDELAY) {     /* transferDelay_u is present in the current RAB Parameters. */     ... } else {     /* transferDelay_u is not present in the current RAB Parameters. */     ... }</pre>			
<b>8.25.1.33</b>	Field	<b>transportLayerAddr.string_pb</b> <b>TransportLayerAddr.length_u</b>	Spec Ref	<b>3GPP TS 25.413, Section 9.2.2.1</b>	
	Definition	For the PS or CS domain in order to allow transport bearer establishment, without ALCAP, this IE is an IP address to be used for the user plane transport.			
	Details	<p>Implementation Info:</p> <ol style="list-style-type: none"> <li>(1) This field is implemented as a multi-value structure field.</li> <li>(2) All the instances in one message (e.g. RAB assignment request etc) should be extracted.</li> <li>(3) The pointer is set to first octet of TransportLayerAddr.</li> <li>(4) The length should be the octet string length of TransportLayerAddr.</li> </ol>			
<b>8.25.1.34</b>	Field	bindingId_m	Spec Ref	<b>3GPP TS 25.413, Section 9.2.2.2</b>	
	Definition	This element is used to associate the RAB and the corresponding transport bearer. It is a 4 octet field and could be either Binding ID or GTP TEID. Currently we only extract it if Binding ID is present.			
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field and all the instances should be extracted.</p>			

<b>8.25.1.31 (3)</b>	<b>Field</b>	<b>RABParameters.params.list</b>	<b>Spec Ref</b>	<b>3GPP TS 25.413, Section 9.2.1.3</b>
	<b>Definition</b>	This is the RAB Parameters list.		
	<b>Details</b>	<p>Implementation Info:</p> <ul style="list-style-type: none"> <li>(1) The field RABParameters is implemented as a multi-value structure field. All the instances of the RAB Parameters should be extracted. See 8.25.1.31 (1) and (2).</li> <li>(2) The subfield trafficClass_b indicates the type of application for which the Radio Access Bearer service is optimised. One of:            K_GG59_TRAFCLASS_CONVERSATIONAL            K_GG59_TRAFCLASS_STREAMING            K_GG59_TRAFCLASS_INTERACTIVE            K_GG59_TRAFCLASS_BACKGROUND         </li> <li>(3) The subfield guaranteedBitRate_ma is a list of the Guaranteed Bit Rate fields. The unit is bits per sec. It indicates the guaranteed number of bits delivered at a SAP within a period of time, divided by the duration of the period.</li> <li>(4) The subfield maxSDUSize_u is the Maximum SDU Size field in bits. It indicates the maximum allowed SDU size in bits.</li> <li>(5) The subfield transferDelay_u is the Transfer Delay field in milliseconds. It indicates the maximum delay for 95th percentile of the distribution of delay for all delivered SDUs during the lifetime of a RAB.</li> <li>(6) The subfield trafficHandlPriority_b is the Traffic Handling Priority field. It specifies the relative importance for handling of all SDUs belonging to the radio access bearer compared to the SDUs of other bearers.</li> <li>(7) The subfield priorityLevel_b is the Allocation Or Retention Priority -&gt; Priority Level field. It indicates the priority of the request.</li> <li>(8) The subfield preemptCapab_b is the Allocation Or Retention Priority -&gt; Pre-emption Capability field. It indicates the pre-emption capability of the request on other RABs. One of:            K_GG59_PREEMPTCAPAB_NOTTRIGGER            K_GG59_PREEMPTCAPAB_BAYTRIGGER         </li> <li>(9) The subfield preemptVulnerab_b is the Allocation Or Retention Priority -&gt; Pre-emption Vulnerability field. It indicates the vulnerability of the RAB to preemption of other RABs. One of:            K_GG59_PREEMPTVULNERAB_NOT            K_GG59_PREEMPTVULNERAB_PREEMPT         </li> <li>(10) The subfield queuingAllowed_b is the Allocation Or Retention Priority -&gt; Queuing Allowed field. It indicates whether the request can be placed into a resource allocation queue or not. One of:            K_GG59_QUEUING_NOTALLOWED            K_GG59_QUEUING_ALLOWED         </li> </ul>		
<b>8.25.1.32</b>	<b>Field</b>	<b>APN_pb</b> <b>APNLength_u</b>	<b>Spec Ref</b>	<b>3GPP TS 25.413, Section 9.2.3.46</b>
	<b>Definition</b>	The Access Point Name (APN) parameter.		
	<b>Details</b>	<p>Implementation Info:</p> <p>The 2 fields should be extracted from any message that contains APN parameter.</p> <p>The field APN_pb should be set to point to the first octet of the APN after the length. The field APNLength_u should be the length of APN data in octets.</p> <p><b>Limitation:</b> The APN parameters can be a multiple field in RANAP protocols. Protocol Breakout will only extract the one instance.</p>		
<b>8.25.1.33</b>	<b>Field</b>	<b>infoExchangeType_m</b>	<b>Spec Ref</b>	<b>3GPP TS 25.413, Section 9.2.1.72</b>
	<b>Definition</b>	Indicates the nature of the information exchange. I.e. transfer or request of specific information.		
	<b>Details</b>	<p>Implementation Info:</p> <p>This field should be extracted from any message that contains it.</p> <p>One of:</p> <ul style="list-style-type: none"> <li>K_GG59_RANAP_INFOEXCHANGETYPE_TRANSFER</li> <li>K_GG59_RANAP_INFOEXCHANGETYPE_REQUEST</li> </ul>		

<b>8.25.1.34</b>	Field	<b>transportLayerAddr.string_pb</b> <b>transportLayerAddr.length_u</b>	Spec Ref	3GPP TS 25.413, Section 9.2.2.1
	Definition	For the PS or CS domain in order to allow transport bearer establishment without ALCAP, this IE is an IP address to be used for the user plane transport.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value structure field.</p> <p>All the instances in one message (e.g. RAB assignment request etc) should be extracted.</p> <p>The pointer is set to first octet of TransportLayerAddr.</p> <p>The length should be the octet string length of TransportLayerAddr.</p>		
<b>8.25.1.35</b>	Field	<b>bindingId_m</b>	Spec Ref	3GPP TS 25.413, Section 9.2.2.2
	Definition	This element is used to associate the RAB and the corresponding transport bearer. It is a 4 octet field and could be either Binding ID or GTP TEID.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field and all the instances should be extracted.</p>		

## 8.25.2 Capture Buffer Indices

Capture Buffer Indices (numbers)					
		I7526_hashAddCpctTelno	I7524_hashAdd3Val		
<b>8.25.2.1</b>	RANAP messages containing an IMSI	IMSI.telno	n/a		
<b>8.25.2.2</b>	RANAP messages containing a TMSI	TMSI.telno	n/a		
<b>8.25.2.3</b>	RANAP messages containing a PTMSI	PTMSI.telno	n/a		

## 8.25.3 Call Trace Assistance

Call Trace Assistance										
<b>8.25.3.1</b>	All RANAP message types (unless otherwise stated)	Timeouts	CTFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u				
			n/a	n/a	n/a	n/a				
		MATCHRULE	AND							
		Cross Triggers	Local				Global			
<b>8.25.3.2</b>	Any message containing an IMSI	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		IMSI	X		X		X	X	X	
<b>8.25.3.3</b>	Any message containing a TMSI	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		TMSI	X				X			
<b>8.25.3.4</b>	Any message containing an IMEI	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
		IMEI					X			
<b>8.25.3.5</b>	Any message containing a PTMSI	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH
			X				X	X		

Call Trace Assistance														
<b>8.25.3.6</b>	Iu Paging	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			n/a		30		n/a		n/a					
<b>8.25.3.7</b>	Each individual message	State of Call	CTState				CTEnhState							
							"RAB Assignment Request" "RAB Assignment Response" "IU Release Request" "IU Release Command" "IU Release Complete" "Relocation Required" "Relocation Request" "Relocation Request Ack" "Relocation Detect" "Relocation Complete" "Relocation Prep Failure" "Refocation Failure" "Relocation Cancel" "Relocation Cancel Ack" "SRNS Context Request" "SRNS Context Response" "SRNS Data Forward Command" "Forward SRNS Context" "Iu Paging" "Common ID" "CN Invoke Trace" "Security Mode Command" "Security Mode Reject" "Location Reporting Control" "Location Report" "Data Volume Report Request" "Data Volume Report" "Initial UE Message" "Direct Transfer" "Overload" "Reset" "Reset Ack" "Error Indication" "CN Deactivate Trace" "RANAP Relocation Info" "Reset Resource" "Reset Resource Ack" "Relocation Command" "Security Mode Complete" "RAB Release Request" "RANAP Private Message"							
<b>8.25.3.8</b>	Relocation Request  Common ID  CN Invoke Trace  Initial UE Message	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
		DPCDLR (if carried in SCCP DT)		X	X									

## 8.25.4 Context Assistance

If the fields are subfields of RAB lists (including RABId\_m, RABParameters, ranapCauseType\_b, and ranapCause\_u), the context value should be set as the following. Otherwise, no context value should be set.

Context Assistance		
<b>8.25.4.1</b>	RABId_m RABParameters ranapCauseType_b ranapCause_u	The context mask K_GG59_CTXTMASK_PEI (0xff000000) bits will be used to indicate Protocol Entry Index (PEI). See also 3.10.1.
<b>8.25.4.2</b>	RABId_m RABParameters ranapCauseType_b ranapCause_u transportLayerAddr bindingId_m	The context mask K_GG59_CTXTMASK_RANAP_RABLIST (0x00ff0000) bits will be used to indicate RAB List. One of: K_GG59_RANAP_RABLIST_TOBESETUFORMMODIFIED K_GG59_RANAP_RABLIST_TOBERELEASED K_GG59_RANAP_RABLIST_SETUPFORMMODIFIED K_GG59_RANAP_RABLIST_RELEASED K_GG59_RANAP_RABLIST_QUEUED K_GG59_RANAP_RABLIST_FAILEDTOSETUFORMODY K_GG59_RANAP_RABLIST_FAILEDTORELEASE K_GG59_RANAP_RABLIST_GERANIUFAILEDTOSOM K_GG59_RANAP_RABLIST_DATAVOLUMEREPORT K_GG59_RANAP_RABLIST_FAILEDTOREPORT K_GG59_RANAP_RABLIST_TOBESETUP K_GG59_RANAP_RABLIST_SETUPLIST K_GG59_RANAP_RABLIST_FAILEDTOSETUP K_GG59_RANAP_RABLIST SUBJECTTODATAFWD K_GG59_RANAP_RABLIST_CONTEXTS K_GG59_RANAP_RABLIST_CONTEXTSFAILEDTOTX K_GG59_RANAP_RABLIST_TOBEMODIFIED
<b>8.25.4.3</b>	RABId_m RABParameters ranapCauseType_b ranapCause_u	The context mask K_GG59_CTXTMASK_RANAP_RABNUM (0x0000ff00) bits will be used to indicate RAB number within same RAB List. The range of RAB number is 1..255. For any new RAB list, the RAB number should start from 1 and increase by 1 for next RAB Ids.  The rest context mask (0x000000ff) bits should be reserved for future use.

## 8.26 SMS

The following fields should be extracted from all messages which contain them. References are to SMS Protocol: 3GPP TS 25.413 & 3GPP TS 23.040 (see 2.3.122 & 2.3.123).

### 8.26.1 Fields

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.26.1.1</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See ERS 7.2.1.10		
	Details	Implementation Info: This field should be set to K_GG59_BSSAP_INFO.		
<b>8.26.1.2</b>	Field	<b>bssapProt_b</b>	Spec Ref	<b>3GPP TS 24.007, Section 11.2.3.1.1</b>
	Definition	This is the DTAP Protocol discriminator for SMS.		
	Details	Implementation Info: This field should be set to K_GG59_DTAP_SMS.		
<b>8.26.1.3</b>	Field	<b>dtapMsgType_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.1.3</b>
	Definition	This is the SMS CP Message Type.		
	Details	n/a		
<b>8.26.1.4</b>	Field	<b>dtapsmsErrorCause_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.1.4.2</b>
	Definition	This is the SMS CP Error Cause field.		
	Details	n/a		
<b>8.26.1.5</b>	Field	<b>smsRPMsgType_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.2</b>
	Definition	This is the Relay Protocol Message Type Indicator (RP-MTI) field extracted from the Short Message Relay layer (SM-RL)		
	Details	This field shall be extracted from all RP messages. It identifies the type of message and its direction (MO = Mobile Originated, MT = Mobile Terminated). One of: K_GG59_SMS_MO_RPDATA K_GG59_SMS_MT_RPDATA K_GG59_SMS_MO_RPACK K_GG59_SMS_MT_RPACK K_GG59_SMS_MO_RPERROR K_GG59_SMS_MT_RPERROR K_GG59_SMS_MO_RPSMMA		
<b>8.26.1.6</b>	Field	<b>smsRPErrorCause_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.4</b>
	Definition	This is the SMS RP Error Cause field.		

	Details	n/a		
<b>8.26.1.7 (1)</b>	Field	<b>smsRPOrigAddr.telno</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.1</b>
	Definition	The address field of the SMS RP Originator Address		
	Details	n/a		
<b>(2)</b>	Field	<b>smsRPOrigAddr.natOfAddr_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.1</b>
	Definition	The nature of address subfield of the SMS RP Originator Address		
	Details	n/a		
<b>(3)</b>	Field	<b>smsRPOrigAddr.numberingPlan_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.1</b>
	Definition	The numbering plan subfield of the SMS RP Originator Address		
	Details	n/a		
<b>8.26.1.8 (1)</b>	Field	<b>smsRPDestAddr.telno</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.2</b>
	Definition	The address field of the SMS RP Destination Address		
	Details	n/a		
<b>(2)</b>	Field	<b>smsRPDestAddr.natOfAddr_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.2</b>
	Definition	The nature of address subfield of the SMS RP Destination Address		
	Details	n/a		
<b>(3)</b>	Field	<b>smsRPDestAddr.numberingPlan_b</b>	Spec Ref	<b>3GPP TS 24.011, Section 8.2.5.2</b>
	Definition	The numbering plan subfield of the SMS RP Destination Address		
	Details	n/a		

<b>8.26.1.9 (1)</b>	Field	<b>callingParty.telno</b>	Spec Ref	<b>3GPP TS 23.040, Section 9.2.3.7</b>
	Definition	The address field of the SMS TP Originator Address		
	Details	<p>Implementation Info:            This field should be extracted from any message that contains it.            If Type-of-number of TP-OA is alphanumeric and all the Address-Value characters of TP-OA are TBCD characters (0-9, a-f, A-F), then the 7-bit packed characters should be converted into TBCD digits and extracted to callingParty.telno.            Otherwise, if Address-Value of TP-OA contains any non-TBCD characters (for example g-z, G-Z), the characters should NOT be extracted to callingParty.telno. See also 8.26.1.15.</p>		
<b>(2)</b>	Field	<b>callingParty.natOfAddr_b</b>	Spec Ref	<b>3GPP TS 23.040, Section 9.2.3.7</b>
	Definition	The nature of address subfield of the SMS TP Originator Address		
	Details	n/a		
<b>(3)</b>	Field	<b>callingParty.numberingPlan_b</b>	Spec Ref	<b>3GPP TS 23.040, Section 9.2.3.7</b>
	Definition	The numbering plan subfield of the SMS TP Originator Address		
	Details	n/a		
<b>8.26.1.10 (1)</b>	Field	<b>calledParty.telno</b>	Spec Ref	<b>3GPP TS 23.040, Section 9.2.3.8</b>
	Definition	The address field of the SMS TP Destination Address		
	Details	n/a		
<b>(2)</b>	Field	<b>calledParty.natOfAddr_b</b>	Spec Ref	<b>3GPP TS 23.040, Section 9.2.3.8</b>
	Definition	The nature of address subfield of the SMS TP Destination Address		
	Details	n/a		
<b>(3)</b>	Field	<b>calledParty.numberingPlan_b</b>	Spec Ref	<b>3GPP TS 23.040, Section 9.2.3.8</b>
	Definition	The numbering plan subfield of the SMS TP Destination Address		
	Details	n/a		
<b>8.26.1.11 (1)</b>	Field	<b>smsTimestamp</b>		<b>3GPP TS 23.040, Section 9.2.3.11</b>
	Definition	TP Service Centre Timestamp represents the local time and timezone. This field deals with the timestamp portion. The TP-SC time stamp (TP-SCTS) is a subparameter of SM-RP-UI.		
	Details	<p>Implementation Info:            This field should also be extracted from TP Validity Period parameter if TP VPF is the absolute format.            Only the timestamp portion of TP-SCTS must be populated into this field.</p>		

(2)	Field	<b>smsTimezone_i</b>		<b>3GPP TS 23.040, Section 9.2.3.11</b>	
	Definition	TP Service Centre Timestamp represents the local time and timezone. This field deals with the timezone portion. The TP-SC time stamp (TP-SCTS) is a subparameter of SM-RP-UI.			
	Details	Implementation Info: This field should be extracted from any message that contains it. Only the timezone portion of TP-SCTS must be populated into this field. This field is defined in the specification as a signed BCD number and specifies the timezone in increments of 15 minutes. This should be extracted into smsTimezone_i as a signed integer depicting the timezone in increments of 1 minute only. For example, the timezone in the message may depict it as +2, but the information populated in smsTimezone_i should depict +30. The signed portion should reflect which side of GMT the timestamp comes from.			
8.26.1.12	Field	<b>smsTPMsgType_m</b>	Spec Ref	3GPP TS 23.040 Section 9.2.3.1	
	Definition	The Transfer Protocol Message Type Indicator (TP-MTI) field extracted from the Short Message Transfer Layer (SM-TL) plus and its direction. This field is mapped to a unique value.			
	Details	Implementation Info: This field shall be extracted whenever present. The SMS message direction (MO = Mobile Originated, MT = Mobile Terminated) shall be used to map it to one of the following values:  Direction TP-MTI smsTPMsgType_m MT 00 K_GG59_SMS_TPSMSDELIVER (0x00) MO 00 K_GG59_SMS_TPSMSDELIVERREPORT (0x80) MT 01 K_GG59_SMS_TPSMSSUBMITREPORT (0x01) MO 01 K_GG59_SMS_TPSMSSUBMIT (0x81) MT 10 K_GG59_SMS_TPSMSSTATUSREPORT (0x02) MO 10 K_GG59_SMS_TPSMSCOMMAND (0x82)  The bottom two bits (bit2 and bit1) are the original TP-MTI value. The bit8 indicates direction (0=MT, 1=MO).  If field smsRPMsgType_b (see 8.26.1.5) is present, the field should be used to determine the message direction: MO: K_GG59_SMS_MO_xxxx; MT: K_GG59_SMS_MT_xxxx.  Otherwise, if SMS is carried in MAP, the MAP operation code should be used to determine the message direction: MO: MO-ForwardSM Request or MT-ForwardSM Response; MT: MT-ForwardSM Request or MO-ForwardSM Response.  For example, if the TP-TMI was 00 (binary) and the smsRPMsgType_b was K_GG59_SMS_MO_RPACK, then the smsTPMsgType_m would be K_GG59_SMS_TPSMSDELIVERREPORT (0x80). When SMS is carried in MAP, the smsRPMsgType_b field is not present. If the TP-MTI was 10 (binary) and MAP operation was MO-ForwardSM Request "((componentType_ba[0] == K_GG59_INVOKELAST) && (opCode_ba[1][0] == 0x2e /* MO-ForwardSM */)", then the smsTPMsgType_m would be K_GG59_SMS_TPSMSCOMMAND (0x82).			

<b>8.26.1.13</b>	Field	<b>smsTPFailureCause_m</b>	Spec Ref	3GPP TS 23.040 Section 9.2.3.22	
	Definition	The Transfer Protocol Failure Cause (TP-FCS) field extracted from the Short Message Transfer Layer (SM-TL).			
	Details	Implementation Info: This field shall be extracted whenever present.			
<b>8.26.1.14</b>	Field	<b>transIdFlag_m</b> <b>transIdValue_m</b>	Spec Ref	3GPP TS 24.011, Section 8.1.2 & 3GPP TS 24.007, Section 11.2.3.1.3	
	Definition	A L3 protocol may define that bits 5 to 8 of octet 1 of a standard L3 message of the protocol contains the transaction identifier (TI). It is composed of the TI value and the TI flag.			
	Details	Implementation Info: The 2 fields should be extracted from any SMS message that contains the Transaction identifier field. The field transIdFlag_m identifies who allocated the TI value for this transaction. One of: K_GG59_TIFLAG_FROM_ORIGINATOR K_GG59_TIFLAG_TO_ORIGINATOR  If TI value has no extension (0 -- 6), the field transIdValue_m should be binary value of bit7 to bit5 of octet1. If TI value has extension (7 -- 127) , the field transIdValue_m should be binary value of bit7 to bit1 of octet2.			
<b>8.26.1.15</b>	Field	<b>callingName_ba</b>	Spec Ref	3GPP TS 23.040, Section 9.2.3.7	
	Definition	The non-TBCD alphanumeric Address-Value string of the SMS TP Originator Address (TP-OA).			
	Details	Implementation Info: If Type-of-number of TP-OA is alphanumeric and the Address-Value of TP-OA contains any non-TBCD characters (for example g-z, G-Z), then the 7-bit packed characters should be converted into ASCII characters and extracted to callingName_ba field as null-terminated string. If the number of characters is greater than (K_GG26_CALLINGNAME_LEN - 1) then the first (K_GG26_CALLINGNAME_LEN - 1) characters must be extracted and the string then null terminated.			
<b>8.26.1.16</b>	Field	<b>smsTPUserData.string_pb</b> <b>smsTPUserData.length_u</b>	Spec Ref	3GPP TS 23.040, Section 9.2.3.24	
	Definition	This is the SMS TP User Data field (not including optional User Data Header Part).			
	Details	Implementation Info: This is extracted from any MAP and SMS message that contains the SMS TP User Data field (not including optional User Data Header Part). If User Data Header Part is not present, the pointer should be set to the first octet after the length octet. If TP User Data field contains a Header in addition to the short message content, the pointer should be set to the actual short message content start octet (after User Data Header Part). The subfield length_u should be the length of SMS TP User Data field (not including optional User Data Header Part) in octets, which may be different with TP User Data Length field in 3GPP TS 23.040, Section 9.2.3.16.			

<b>8.26.1.17</b>	Field	<b>smsTextLength_b</b>	Spec Ref	3GPP TS 23.040, Section 9.2.3.16
	Definition	TP-UDL contains the raw value for the length of the User Data field. The exact interpretation of this value depends upon the coding scheme of the user data and whether a user data header is present.		
	Details	<p>Implementation Info:</p> <p>The raw value of TP-UDL is to be used to populate this field. It should only be extracted from an SMS-SUBMIT or an SMS-DELIVER message which is being transported in a MAP Phase 2+ message</p>		
<b>8.26.1.18</b>	Field	<b>smsTPUDHIE</b>	Spec Ref	3GPP TS 23.040, Section 9.2.3.24
	Definition	This is the SMS TP User Data Header Part.		
	Details	<p>Implementation Info:</p> <p>This is extracted from any SMS message that contains the SMS TP User Data Header Part using the macro M_GG59_Set_SMSTPUDHIE.</p> <p>Users can get the IEI and its length with the MACRO M_GG59_GET_SMSTPUDHIE_IEI and M_GG59_GET_SMSTPUDHIE_IEL</p>		
<b>8.26.1.19</b>				
Field	SMS CP Message Type		TS 24.011 Section 8.1.3	
TsdBreak out	smsCPMsgType		m (value)	
Details	This field should be extracted from any message that contains it. one of: K_GG59_SMS_CP_DATA K_GG59_SMS_CP_ACK K_GG59_SMS_CP_ERROR			
DrData	DRDATA_SECONDARY_PROTOCOL _TAG	Format	CB_UBIT32	
	This field should be set to IPCORE_PROTOCOL_SMS(2041) for SMS message. It will use the secondary DataModel model if SMS over S1AP or SGsAP. the DataModel hierarchy structure see also 5.1.2.3.			
DrData	DRDATA_SMS_CP_MSG_TYPE_TAG	Format	CB_UBIT32	
Details	This field should be extracted from any message that contains it.			
8.26.1.20				
Field	CP-Cause	Spec Ref	TS 24.011 Section 8.1.4.2	
TsdBreak out	dtapsmsErrorCause	Format	m (value)	
Details	This field should be extracted from any message that contains it. One of: K_GG59_CP_CAUSE_NETWORK_FAILURE K_GG59_CP_CAUSE_CONGESTION .....			
DrData	DRDATA_SMS_CP_CAUSE_CODE_T AG	Format	CB_UBIT32	
Details	This field should be extracted from any message that contains it.			
<b>8.26.1.21</b>	Field	<b>validityPeriodFormat_m</b>	Spec Ref	3GPP TS 23.040 Section 9.2.3.3
	Definition	TP Validity Period Format (TP VPF) indicates which coding format of TP Validity Period will		

	Details	Implementation Info: This field will be extracted from any message that contains it. One of: K_GG59_SMS_TPVPF_ENHANCED K_GG59_SMS_TPVPF_RELATIVE K_GG59_SMS_TPVPF_ABSOLUTE		
<b>8.26.1.22</b>	Field	<b>validityPeriod_ba</b>	Spec Ref	3GPP TS 23.040 Section 9.2.3.12
	Definition	TP Validity Period defines the time counted from when the SMS SUBMIT is received by the SC.		
	Details	Implementation Info: It's dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. The maximal array length will be 7 in SMS.  (1)if TP VPF is enhanced format, the original octets of TP Validity Period will be extracted and the array length will be set 7. (2)if TP VPF is relative format, the TP Validity Period octet will be extracted into validityPeriod_ba[0] and the array length will be set 1.		
<b>8.26.1.23</b>	Field	<b>higherProtocolId_m</b>	Spec Ref	3GPP TS 23.040 Section 9.2.3.9
	Definition	TP Protocol Identifier is the information element by which the SM TL either refers to the higher layer protocol being used, or indicates interworking with a certain type of telematic device.		
	Details	Implementation Info: This field will be extracted from any message that contains it.		
<b>8.26.1.24</b>	Field	<b>codingScheme_m</b>	Spec Ref	3GPP TS 23.040 Section 9.2.3.10, 3GPP TS 23.038 Section 4
	Definition	TP Data Coding Scheme indicates the data coding scheme of the TP UD field, and may indicate a message class.		
	Details	Implementation Info: This field will be extracted from any message that contains it.		

## 8.26.2 Capture Buffer Indices

Capture Buffer Indices (numbers)			
		I7526_hashAddCptTelno	I7524_hashAdd3Val
<b>8.26.2.1</b>	SMS messages containing an TP-OA	callingParty.telno	n/a
<b>8.26.2.2</b>	SMS messages containing an TP-DA	calledParty.telno	n/a

## 8.26.3 Call Trace Assistance

Call Trace Assistance						
<b>8.26.3.1</b>	All message types (unless otherwise stated)	Timeouts	CTFFinalUseTimeout_b	CTPANSTimeout_u	CTMaxCallAge_u	trawlBackTime_u
			n/a	n/a	n/a	n/a
		MATCHRULE	AND			
		Cross Triggers	Local		Global	
					X	

Call Trace Assistance														
<b>8.26.3.2</b>	SMS-SUBMIT	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED				
		CALLED	X				X							
		DPCDLR <sup>[b]</sup>		X	X									
		NODETL- LIVAL <sup>[c]</sup>		X										
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
									5000					
		State of Call	CTState				CTEnhState							
							'SMS Submit'							
<b>8.26.3.3</b>	SMS-DELIVER	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	FIRSTUSE RELATED				
		CALLING	X				X	X						
		DPCDLR (If carried on SCCP)		X	X									
		NODETL- LIVAL (Only if in Gb interface)		X	X									
		IMSI (if present)	X				X	X	X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
									5000					
		State of Call	CTState				CTEnhState							
							'SMS Deliver'							

## 8.27 Radio Resource (RR)

The following fields should be extracted from all messages which contain them. References are to RR Protocol: 3GPP TS 44.018 (see 2.3.124).

### 8.27.1 Fields

MSU Breakout Fields				
	Field	Spec Ref		
<b>8.27.1.1</b>	Field	<b>appLevel_b</b>	Spec Ref	n/a
	Definition	See ERS 7.2.1.10		
	Details	Implementation Info: This field should be set to K_GG59_BSSAP_INFO.		
<b>8.27.1.2</b>	Field	<b>bssapProt_b</b>	Spec Ref	<b>3GPP TS 24.007, Section 11.2.3.1.1</b>
	Definition	This is the Protocol discriminator for RR.		
	Details	Implementation Info: This field should be set to K_GG59_DTAP_RR.		
<b>8.27.1.3</b>	Field	<b>dtapMsgType_b</b>	Spec Ref	<b>3GPP TS 44.018, Section 10.4</b>
	Definition	This is the RR Message Type.		
	Details	n/a		
<b>8.27.1.4</b>	Field	<b>rrMessageType_b</b>	Spec Ref	<b>3GPP TS 44.018, Section 10.4</b>
	Definition	This is the RR Message Type.		
	Details	n/a		
<b>8.27.1.5</b>	Field	<b>rrHandoverRef_b</b>	Spec Ref	<b>3GPP TS 44.018, Section 10.5.2.15</b>
	Definition	This is the RR Handover Reference.		
	Details	Implementation Info: This field should be extracted from the RR Handover Command message when it is transported in the Layer 3 Information IE of the - BSSMAP Handover Request Ack [3GPP TS 48.008, Section 3.2.1.10] (when carried directly by BSSAP or carried within the BSS APDU of a MAP Prepare Handover Response or MAP Prepare Susequent Handover Response) - BSSMAP Handover Command [3GPP TS 48.008, Section 3.2.1.11] - RANAP Relocation Command [3GPP TS 25.413, Section 9.1.12]		
<b>8.27.1.6</b>	Field	<b>rrCellDescription_u</b>	Spec Ref	<b>3GPP TS 44.018, Section 10.5.2.2</b>
	Definition	This is the 2-octet RR Cell Description field.		

	Details	<p>Implementation Info:</p> <p>This field should be extracted from the RR Handover Command message when it is transported in the Layer 3 Information IE of the</p> <ul style="list-style-type: none"> <li>- BSSMAP Handover Request Ack [3GPP TS 48.008, Section 3.2.1.10] (when carried directly by BSSAP or carried within the BSS APDU of a MAP Prepare Handover Response or MAP Prepare Susequent Handover Response)</li> <li>- BSSMAP Handover Command [3GPP TS 48.008, Section 3.2.1.11]</li> <li>- RANAP Relocation Command [3GPP TS 25.413, Section 9.1.12]</li> </ul> <p>Notes: The Bit 8 of the first octet of Cell Description should be MSB and the Bit 1 of the last (second) octet should be LSB.</p>		
<b>8.27.1.7</b>	Field	<b>rrHandoverChanDesc2_m</b>	Spec Ref	<b>3GPP TS 44.018, Section 10.5.2.5a</b>
	Definition	This is the 3-octet RR Channel Description 2 field.		
	Details	<p>Implementation Info:</p> <p>This field should be extracted from the RR Handover Command message when it is transported in the Layer 3 Information IE of the</p> <ul style="list-style-type: none"> <li>- BSSMAP Handover Request Ack [3GPP TS 48.008, Section 3.2.1.10] (when carried directly by BSSAP or carried within the BSS APDU of a MAP Prepare Handover Response or MAP Prepare Susequent Handover Response)</li> <li>- BSSMAP Handover Command [3GPP TS 48.008, Section 3.2.1.11]</li> <li>- RANAP Relocation Command [3GPP TS 25.413, Section 9.1.12]</li> </ul> <p>Notes: The Bit 8 of the first octet of Channel Description 2 should be MSB and the Bit 1 of the last (third) octet should be LSB.</p>		

## 8.27.2 Capture Buffer Indices

Capture Buffer Indices (numbers)		
	I7526_hashAddCpctTelno	I7524_hashAdd3Val

Capture Buffer Indices (numbers)						
<b>8.27.2.1</b>	RR Handover Command message when transported in Layer 3 Info of - BSSMAP Handover Request Ack (when carried directly by BSSAP or carried within the BSS APDU of a MAP Prepare Handover Response or MAP Prepare Susequent Handover Response)  - BSSMAP Handover Command  - RANAP Relocation Command	n/a	(m)rrHandoverRef_b, (m)rrCellDescription_u, (m)rrHandoverChanDesc2_m			

### 8.27.3 Call Trace Assistance

Call Trace Assistance														
<b>8.27.3.1</b>	RR Handover Command (when transported in L3 Info of the BSS-MAP Handover Request Ack)	CTFlags Critter HOTOGSM	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
			X											
		DPCDLR		X	X									
		State of Call	CTState				CTEnhState							
			n/a				"Handover Command "							
<b>8.27.3.2</b>	RR Handover Command (when transported in L3 Info of the BSS-MAP Handover Command)	CTFlags Critter HOTOGSM	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH				
					X	X								
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u					
			[HOTOGSM] = 1		n/a		n/a		n/a					
		State of Call	CTState				CTEnhState							
			n/a				"Handover Command "							

Call Trace Assistance											
<b>8.27.3.3</b>	RR Handover Command (when transported in L3 Info of the RANAP Relocation Command)	CTFlags Critter  HOTOGSM	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
					X	X					
		Time Outs	CTFinalUse Timeout_b		CTPANS TimeOut_u		CTMaxCallAge_u		trawlBackTime_u		
			[HOTOGSM] = 1		n/a		n/a		n/a		
		State of Call	CTState				CTEnhState				
<b>8.27.3.4</b>	RR Handover Command (when transported in the L3 info of a BSS-MAP Handover Request Ack or DTAP, which is being carried within the BSS APDU of a MAP Prepare Handover Response or MAP Prepare Subsequent Handover Response)	CTFlags Critter  HOTOGSM	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
			X								
		DPCRTIDSSN		X	X						
		State of Call	CTState				CTEnhState				
<b>8.27.3.5</b>	Some of RR messages	CTFlags Critter	FIRSTUSE	SUBUSE	FIRSTUSE BACK	FINALUSE	MATCH	MATCH CALLS	MATCH STALLED	REMATCH	
		State of Call	CTState				CTEnhState				
			n/a				"Handover Command " "Partially Releasing Radio Channels " "Channel Released " "Radio Channels Partially Released " "Modifying Channel Mode " "Frequency Redefined " "Channel Mode Modified " "Paging Response " "Assignment Complete " "Assignment Request " "Assignment Failure " "Assigning Additional Radio Channels " "Entering Ciphering Mode " "Entered Ciphering Mode "				

## 8.28 Gateway Control Protocol (GCP)

The following fields should be extracted from all messages which contain them. References are to GCP Protocol: ITU-T H.248.1 (see 2.3.125).

GCP Protocol has 2 kinds of encoding method: ASN.1 BER binary encoding or ABNF text encoding. In this section, both of 2 encoding methods will be covered. GCP Breakouts will try to provide unified data structures and hide the encoding differences for applications. If no special description, (1) the GCP Breakout fields will be based on the binary encoding; and (2) the text encoding will be mapped or converted to binary encoding accordingly.

### 8.28.1 Fields

All the GCP fields in this section should set context value. See 8.28.4 for detail Context Assistance requirements.

MSU Breakout Fields					
8.28.1.1	Field	protocolEncoding_m	Spec Ref	ITU-T H.248.1	
	Definition	This is the GCP Protocol Encoding field.			
	Details	Implementation Info: This field should set for GCP message. One of: K_GG59 ASN1BER_BINARY K_GG59 ABNF_TEXT			
8.28.1.2	Field	protocolVersion_m	Spec Ref	ITU-T H.248.1, Section 8.3	
	Definition	This is the GCP version field, an unsigned integer between 0 and 99.			
	Details	Implementation Info: This field should be extracted from GCP message header.			
8.28.1.3	Field	securityParmIndex_m	Spec Ref	ITU-T H.248.1	
	Definition	This is the GCP authHeader -> SecurityParmIndex field.			
	Details	Implementation Info: This field should be extracted from GCP message header.			
8.28.1.4	Field	sequenceNumber_m	Spec Ref	ITU-T H.248.1	
	Definition	This is the GCP authHeader -> SequenceNum field.			
	Details	Implementation Info: This field should be extracted from GCP message header.			
8.28.1.5	Field	authData_ba	Spec Ref	ITU-T H.248.1	
	Definition	This is the GCP authHeader -> authData field.			

	Details	Implementation Info: (1) This field should be extracted from GCP message header. (2) This field is dynamic variable octet array. The gg59 API dataLen(tag) could be used to get the actual extracted array length in octet. For GCP protocol, the array length will be between K_GG59_GCP_AUTHDATA_MINSIZE and K_GG59_GCP_AUTHDATA_MAXSIZE octets.		
<b>8.28.1.6</b>	Field	<b>messageId</b>	Spec Ref	<b>ITU-T H.248.1, Section 8.3</b>
	Definition	This is the GCP Message Identifier field. It indicates the Name or Address of message originator.		
	Details	Implementation Info: (1) This field should be extracted from GCP message header. (2) The subfield a7PresentInd_m is bit flag field. It should be set to indicate the presences of its rest subfields. It could also be understood as address type indicator. One of: K_GG59_GCP_PORTNUMBER K_GG59_GCP_IPV4ADDR K_GG59_GCP_IPV6ADDR K_GG59_GCP_DOMAINNAME K_GG59_GCP_DEVICENAME K_GG59_GCP_MTPADDR K_GG59_GCP_IPV4ADDR_AND_PORT K_GG59_GCP_IPV6ADDR_AND_PORT K_GG59_GCP_DOMAINNAME_AND_PORT (3) The subfield portNumber_m is to indicate the TCP/UDP port number field. It's INTEGER between 0 and 65535. (4) The subfield addr.ipv4_m is to indicate the IP4Address field. (5) The subfield addr.ipv6_ma is to indicate the IP6Address field. (6) The subfield addr.mtpAddr_m is to indicate the mtpAddress field. It includes the PC and NI bits. (7) The subfields addr.domainName.length_m and addr.domainName.string_ba are to indicate the DomainName field. The beginning and end chars ("<" and ">") in ABNF text encoding should be not included. (8) The subfields addr.deviceName.length_m and addr.deviceName.string_ba are to indicate the deviceName field.		
<b>8.28.1.7</b>	Field	<b>gcpErrorCode_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 7.1.19</b>
	Definition	This is the GCP Error Code field.		
	Details	Implementation Info: This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. It's INTEGER between 0 and 65535.		
<b>8.28.1.8</b>	Field	<b>transactionType_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 8</b>
	Definition	This is the Transaction Type field.		
	Details	Implementation Info: This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. One of: K_GG59_GCP_TRANSACTIONREQUEST K_GG59_GCP_TRANSACTIONPENDING K_GG59_GCP_TRANSACTIONREPLY K_GG59_GCP_TRANSACTIONRESPONSEACK		
<b>8.28.1.9</b>	Field	<b>transactionId_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 8</b>

	Definition	This is the Transaction Id field.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. It is to indicate the Transaction Id of TransactionRequest, TransactionPending, TransactionReply, or firstAck Transaction Id of TransactionResponseAck.</p> <p>If the field length is greater than 4 octets, only the last 4 octets should be extracted.</p>		
<b>8.28.1.10</b>	Field	<b>lastAckTransactionId_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 8</b>
	Definition	This is the Last Ack Transaction Id field of TransactionResponseAck.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it.</p> <p>If the field length is greater than 4 octets, only the last 4 octets should be extracted.</p>		
<b>8.28.1.11</b>	Field	<b>actionType_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 8.1.2</b>
	Definition	This is the Action Type field.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_ACTIONREQUEST</li> <li>K_GG59_GCP_ACTIONREPLY</li> </ul>		
<b>8.28.1.12</b>	Field	<b>contextId_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 8.1.2</b>
	Definition	This is the Context Id field of Action.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. It's INTEGER between 0 and 4294967295. The following values have special meanings:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_CONTEXTID_NULL (0x00, "-")</li> <li>K_GG59_GCP_CONTEXTID_CHOOSE (0xfffffffffe, "\$")</li> <li>K_GG59_GCP_CONTEXTID_ALL (0xffffffff, "*")</li> </ul> <p>If the field length is greater than 4 octets, only the last 4 octets should be extracted.</p>		
<b>8.28.1.13</b>	Field	<b>topologyDirection_m</b>	Spec Ref	<b>ITU-T H.248.1</b>
	Definition	This is the Topology Direction field.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_TOPODIRECTION_BOTHWAY</li> <li>K_GG59_GCP_TOPODIRECTION_ISOLATE</li> <li>K_GG59_GCP_TOPODIRECTION_ONEWAY</li> </ul>		
<b>8.28.1.14</b>	Field	<b>commandType_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 7</b>
	Definition	This is the Command Type field.		

	Details	<p>Implementation Info:</p> <p>(1) This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_ADDREQUEST</li> <li>K_GG59_GCP_MOVEREQUEST</li> <li>K_GG59_GCP MODIFYREQUEST</li> <li>K_GG59_GCP_SUBTRACTREQUEST</li> <li>K_GG59_GCP_AUDITCAPREQUEST</li> <li>K_GG59_GCP_AUDITVALUEREQUEST</li> <li>K_GG59_GCP_NOTIFYREQUEST</li> <li>K_GG59_GCP_SERVICECHANGEREQUEST</li> <li>K_GG59_GCP_ADDREPLY</li> <li>K_GG59_GCP_MOVEREPLY</li> <li>K_GG59_GCP MODIFYREPLY</li> <li>K_GG59_GCP_SUBTRACTREPLY</li> <li>K_GG59_GCP_AUDITCAPREPLY</li> <li>K_GG59_GCP_AUDITVALUEREPY</li> <li>K_GG59_GCP_NOTIFYREPLY</li> <li>K_GG59_GCP_SERVICECHANGEREPLY</li> </ul> <p>(2) This field is formed as the following formula:  <math>\text{commandType\_m} = (((\text{commandGroup} \&amp; 0xff) &lt;&lt; 8)   (\text{commandValue} \&amp; 0xff)).</math></p> <p>The commandGroup is One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_CMDGROUP_REQUEST</li> <li>K_GG59_GCP_CMDGROUP_REPLY</li> </ul> <p>The commandValue is One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_CMD_ADD</li> <li>K_GG59_GCP_CMD_MOVE</li> <li>K_GG59_GCP_CMD MODIFY</li> <li>K_GG59_GCP_CMD_SUBTRACT</li> <li>K_GG59_GCP_CMD_AUDITCAP</li> <li>K_GG59_GCP_CMD_AUDITVALUE</li> <li>K_GG59_GCP_CMD NOTIFY</li> <li>K_GG59_GCP_CMD SERVICECHANGE</li> </ul>		
<b>8.28.1.15</b>	Field	<b>terminationId</b>	Spec Ref	<b>ITU-T H.248.1, Section 8.1.2</b>
	Definition	This is the Termination Id field.		

	Details	<p>Implementation Info:</p> <p>(1) This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it.</p> <p>(2) For ITU ASN.1 binary GCP:</p> <ul style="list-style-type: none"> <li>a. The subfield a7PresentInd_b should be set to K_GG59_TERMINID_BINGCP.</li> <li>b. The subfield pair terminId.binGcp.idValue.length_m and terminId.binGcp.idValue.string_ba is to indicate the TerminationID Id field.</li> <li>c. The subfield pair terminId.binGcp.wildcard.length_m and terminId.binGcp.wildcard.string_ba is to indicate the TerminationID wildcard field.</li> <li>d. The subfield pair terminId.binGcp.a7mask.length_m and terminId.binGcp.a7mask.string_ba is derived field, see also ITU H.248.1 Annex A.1 Coding of wildcards.</li> </ul> <p>(3) For ITU ABNF Text encoding GCP:</p> <ul style="list-style-type: none"> <li>a. The subfield a7PresentInd_b should be set to K_GG59_TERMINID_TEXTGCP.</li> <li>b. The subfields terminId.textGcp.length_m and terminId.textGcp.string_ba are to indicate the TerminationID field.</li> </ul> <p>(4) For Ericsson GCP:</p> <ul style="list-style-type: none"> <li>a. The subfield a7PresentInd_b should be set to K_GG59_TERMINID_ERICGCP.</li> <li>b. The subfields terminId.ericGcp.wildcard.length_m and terminId.ericGcp.wildcard.string_ba are to indicate the TerminationID wildcard field.</li> <li>c. The subfield terminId.ericGcp.idValue_m is to indicate the TerminationID Id field.</li> <li>d. The subfield terminId.ericGcp.a7mask_m is derived field, see also ITU H.248.1 Annex A.1 Coding of wildcards.</li> </ul>		
<b>8.28.1.16</b>	Field	<b>serviceChangeAddress</b>	Spec Ref	<b>ITU-T H.248.1, Section 7.2.8</b>
	Definition	This is the Service Change Address field.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. See also 8.28.1.4 for more details of its subfields.</p>		
<b>8.28.1.17</b>	Field	<b>serviceChangeReasonCode_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 7.2.8</b>
	Definition	This is the Service Change Reason Code field.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it.</p>		
<b>8.28.1.18</b>	Field	<b>serviceChangeVersion_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 7.2.8</b>
	Definition	This is the Service Change Version field, an unsigned integer between 0 and 99.		
	Details	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it.</p>		
<b>8.28.1.19</b>	Field	<b>descriptorType_m</b>	Spec Ref	<b>ITU-T H.248.1, Section 7.1</b>
	Definition	This is the Descriptor Type field.		

	<b>Details</b>	<p>Implementation Info:</p> <p>This field is implemented as a multi-value field. It should be extracted from any GCP message that contains it. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_GCP_MEDIADESCRIPTOR</li> <li>K_GG59_GCP_MODEMDESCRIPTOR</li> <li>K_GG59_GCP_MUXDESCRIPTOR</li> <li>K_GG59_GCP_EVENTSDESCRIPTOR</li> <li>K_GG59_GCP_EVENTBUFFERDESCRIPTOR</li> <li>K_GG59_GCP_SIGNALSDESCRIPTOR</li> <li>K_GG59_GCP_DIGITMAPDESCRIPTOR</li> <li>R K_GG59_GCP_AUDITDESCRIPTOR</li> </ul>
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## 8.28.2 Capture Buffer Indices

All the requirements for GCP Capture Buffer Indices were removed in version 05.30 See IQ00194524 for details.

## 8.28.3 Call Trace Assistance

All the requirements for GCP Capture Buffer Indices were removed in version 05.30 See IQ00194524 for details

## 8.28.4 Context Assistance

The GCP message and field structure is very complicated:

- 1) The GCP Message has a treelike hierarchy: GCP Message -> Transactions -> Actions -> Commands -> Descriptors.

To be convenient, we record them as 5 different levels: Level 0 (L0):

GCP Message (GCP);

Level 1 (L1): Transactions (Trans); Level 2

(L2): Actions (Act);

Level 3 (L3): Commands (Cmd); and

Level 4 (L4): Descriptors (Desc).

- 2) The GCP message has many multiple fields other than the 4 key hierarchies. There are 42 "SEQUENCE OF" in ASN.1 BER syntax specification of GCP message. E.g., terminationId could be have more than 1 instances in Level 2, 3, or 4.

- 3) Some GCP fields could be present in different levels. ErrorCode could be present in Level 0, 1, 2, or 3.

The following table summarizes the GCP field presence status in the 5 levels (per GCP specification):

Field Name	Ref.	Is Mvalttt	L0 GCP	L1 Trans	L2 Act	L3 Cmd	L4 Desc
protocolEncoding_m*	8.28.1.1		M				
protocolVersion_m	8.28.1.2		M				
securityParmIndex_m	8.28.1.3		O				
sequenceNumber_m	8.28.1.4		O				
authData_ba	8.28.1.5		O				
messageId	8.28.1.6		M				
gcpErrorCode_m	8.28.1.7	Yes	O	O	O	O	
transactionType_m*	8.28.1.8	Yes		M			
transactionId_m	8.28.1.9	Yes		M			
lastAckTransactionId_m	8.28.1.10	Yes		O			
actionType_m*	8.28.1.11	Yes			M		
contextId_m	8.28.1.12	Yes			M		
topologyDirection_m	8.28.1.13	Yes			N		
commandType_m*	8.28.1.14	Yes				M	
terminationId	8.28.1.15	Yes			N	N	N
serviceChangeAddress	8.28.1.16	Yes			O		
serviceChangeReasonCode_m	8.28.1.17	Yes			O**		
serviceChangeVersion_m	8.28.1.18	Yes			O		
descriptorType_m*	8.28.1.19	Yes				M	

The definitions of Presence status O/M/N are as the following:

O - Optional: 0 or 1 instance will be present in 1 node of this level.

M - Mandatory: 1 and only 1 instance will be always present in 1 node of this level. N - Multiple: 0, 1 or more

than 1 instances will be present in 1 node of this level. Notes:

\* : These fields could be treated as key index field of the 5 levels.

\*\*: M in ServiceChangeRequest.

The TsdBreakout context will be used to express the complicated GCP message and field structure:

- 1) If thinking GCP message is a tree, we could use context to describe the tree structure.
- 2) Node = (L1, L2, L3, L4). Lx will be re-number with parent node from 1. 0 means "N/A" for this level. E.g., Node(0, 0, 0, 0) is root, it will express the all L0 fields. Node(1, 2, 3, 4) means the node which is the 4th Descriptor of the 3rd Command of the 2nd Action of the 1st Transaction.
- 3) Every node could include a set of fields. The fields could be single or multiple. All of them have same context value (not including the reserved last 8 bits).
- 4) The Node and Context have one-to-one mapping by functions or macros. The Context Assistance

requirements are as the following:

<b>Context Assistance</b>		
<b>8.28.4.1</b>	All the GCP fields (in Level 0, 1, 2, 3, 4)	The context mask K_GG59_CTXTMASK_PEI (0xff000000) bits will be used to indicate Protocol Entry Index (PEI). See also 3.10.1.
<b>8.28.4.2</b>	All the GCP fields in Level 1, 2, 3, 4	<ul style="list-style-type: none"> <li>(1) The context mask K_GG59_CTXTMASK_GCP_L1 (0x00f00000) bits will be used to indicate Transaction number within same GCP message. It should start from 1 and increase by 1 for next Transactions.</li> <li>(2) Its valid range is 1..15. 0 means N/A for this level (Level 1, Transaction level).</li> <li>(3) If there are &gt;= 16 Transactions associated with a single GCP message, the additional ones should be ignored.</li> </ul>
<b>8.28.4.3</b>	All the GCP fields in Level 2, 3, 4	<ul style="list-style-type: none"> <li>(1) The context mask K_GG59_CTXTMASK_GCP_L2 (0x000f0000) bits will be used to indicate Action number within same Transaction. It should start from 1 for new Transaction and increase by 1 for next Actions.</li> <li>(2) Its valid range is 1..15. 0 means N/A for this level (Level 2, Action level).</li> <li>(3) If there are &gt;= 16 Actions associated with a single Transaction, the additional ones should be ignored.</li> </ul>
<b>8.28.4.4</b>	All the GCP fields in Level 3, 4	<ul style="list-style-type: none"> <li>(1) The context mask K_GG59_CTXTMASK_GCP_L3 (0x0000f000) bits will be used to indicate Command number within same Action. It should start from 1 for new Action and increase by 1 for next Commands.</li> <li>(2) Its valid range is 1..15. 0 means N/A for this level (Level 3, Command level).</li> <li>(3) If there are &gt;= 16 Commands associated with a single Action, the additional ones should be ignored.</li> </ul>

Context Assistance		
<b>8.28.4.5</b>	All the GCP fields in Level 4	<p>(1) The context mask K_GG59_CTXTMASK_GCP_L4 (0x00000f00) bits will be used to indicate Descriptor number within same Command. It should start from 1 for new Command and increase by 1 for next Descriptors.</p> <p>(2) Its range is 1..15. 0 means N/A for this level (Level 4, Descriptor level).</p> <p>(3) If there are &gt;= 16 Descriptors associated with a single Command, the additional ones should be ignored.</p>
<b>8.28.4.6</b>	All the GCP fields	<p>(1) The rest context mask (0x000000ff) bits will be reserved for future use.</p> <p>(2) The macro M_GG59_SET_GCP_CTXT(L1, L2, L3, L4) could be used to set context for GCP fields.</p> <p>(3) The following macros could be used to get number for the 4 levels from context values:</p> <ul style="list-style-type: none"> <li>M_GG59_GET_GCP_L1(context_m)</li> <li>M_GG59_GET_GCP_L2(context_m)</li> <li>M_GG59_GET_GCP_L3(context_m)</li> <li>M_GG59_GET_GCP_L4(context_m)</li> </ul>

## 8.28.5 Special fields for IPCore only

Note:

In C0560i2, pclNgN GCP ABNF/ASN.1 Breakout is ported to Protocols Breakout. To avoid the impact on PA, library built from pclNgN GCP ABNF/ASN.1 Breakout (located at handcoded, only build sles10 version) will only be used for IPCore. Breakout libraries built from PAL (located at pf) will be used for PA as usual. These two kinds of libraries will both exist at LINUX site, but can be distinguished by the suffix name. E.g "ix86-linux-sles10-*mt*.so" is for ipcore, other suffix name is for PA.

8.28.5.1			
Field	N/A	Spec Ref	ITU-T H.248.1
TsdBreakout	gcpEntry	Format	m (value)
Details	<p>This field is a pointer which will point to the space for storing structure s_gg59_gcp_entry. The memory space will be allocated when GCP breakout is initialized (in method protocol_breakout_initialise).</p> <p>The memory space will be released when GCP breakout is terminated (in method protocol_breakout_terminate).</p> <p>This memory space will be reset at the every entry of GCP breakout.</p>		

## 8.29 Domain Name System (DNS)

The following fields should be extracted from all messages which contain them. Reference is RFC1035 (see 2.3.130).

### 8.29.1 Fields

MSU Breakout Fields					
8.29.1.1	Field	identifier_m	Spec Ref	RFC1035, Section 4.1.1	
	Definition	The ID field in message Header section. It is the identifier assinged by program that generates any kind of query.			
	Details	Implementation Info: This field is extracted from any DNS message.			
8.29.1.2	Field	dnsHeader_m	Spec Ref	RFC1035, Section 4.1.1	
	Definition	The set of QR, Opcode, AA, TC, RD, RA, Z and RCODE fields in message Header section. They are used to specify which of the remaining sections are present, and also specify whether the message is a query or a response, a standard query or some other opcode, etc.			
	Details	Implementation Info: This field is extracted from the 3 and 4 octets in Header of any DNS messgae.			
8.29.1.3	Field	domainName.string_p <del>b</del> <del>domainName.length_n</del>	Spec Ref	RFC1035, Section 4.1.2	
	Definition	The QNAME field in message Question section. It contains the domain name as a sequence of labels.			
	Details	This field is implemented as a multi-value structure field. All the instances in DNS message should be extracted. The pointer is set to first octet of the QNAME. The length is calculated and should be the total length of all labels.			
8.29.1.4	Field	framedIPAddr_m	Spec Ref	RFC1035, Section 4.1.3	
	Definition	The RDATA field in message Answer/Authority/Additional section. It is a 4 octet ARPA Internet address.			
	Details	This field is extracted from RDATA of any DNS message when: the TYPE is A and the CLASS is IN in the same resource record section. This field is implemented as a multi-value field and all the instances should be extracted.			
8.29.1.5					
Field	Header->QR and Header->Opcode		Spec Ref	RFC 1035 Section 4.1.1.	
TsdBreakout	messageType		Format	m (value)	
Details	This field should be extracted from QR bit and Opcode in DNS Header. The formula to combine QR and Opcode will be:				

	<p>MessageType = (QR&lt;&lt;7)   Opcode One of :</p> <ul style="list-style-type: none"> <li>K_GG59_DNS_QUERY</li> <li>K_GG59_DNS_RESPONSE</li> <li>K_GG59_DNS_INVERSE_QUERY</li> <li>K_GG59_DNS_INVERSE_RESPONSE</li> <li>K_GG59_DNS_STATUS_QUERY</li> <li>K_GG59_DNS_STATUS_RESPONSE</li> <li>K_GG59_DNS_NOTIFY</li> <li>K_GG59_DNS_NOTIFY_RESPONSE</li> <li>K_GG59_DNS_UPDATE</li> <li>K_GG59_DNS_UPDATE_RESPONSE</li> </ul> <p>The macro M_GG59_DNS_GET_QR(MessageType) can be used to get QR bit. And the macro M_GG59_DNS_GET_OPCODE(MessageType) can be used to get Opcode.</p>		
DrData	DRDATA_PROTOCOL_TYPE_TAG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_DNS (1008) for DNS messages.		
DrData	DRDATA_MESSAGE_TYPE_TAG	Format	CB_UBIT32
Details	<p>Protocol BreakoutEngine should do mapping the MessageType to the following value which are ported from SURGE</p> <p>K_GG59_DNS_QUERY ----&gt; query(0)</p> <p>K_GG59_DNS_RESPONSE ----&gt; response(1)</p> <p>K_GG59_DNS_INVERSE_QUERY----&gt; inversequery(2)</p> <p>K_GG59_DNS_INVERSE_RESPONSE----&gt; inverseresponse(3)</p> <p>K_GG59_DNS_NOTIFY ----&gt; notify (4)</p> <p>K_GG59_DNS_NOTIFY_RESPONSE ----&gt; notifyresponse(5)</p> <p>K_GG59_DNS_UPDATE----&gt; update (6 )</p> <p>K_GG59_DNS_UPDATE_RESPONSE ----&gt; updateresponse (7)</p> <p>.... ----&gt; other(8)</p>		
<b>8.29.1.6</b>			
Field	Header->RCODE	Spec Ref	RFC 1035 Section 4.1.1.
TsdBreakout	responseCode	Format	m (value)
Details	<p>This field should be extracted from any message that contains it. One of:</p> <p>K_GG59_DNS_RCODE_FORMAT_ERROR</p> <p>K_GG59_DNS_RCODE_SERVER_FAILURE</p> <p>K_GG59_DNS_RCODE_NX_DOMAIN</p> <p>K_GG59_DNS_RCODE_NOT_IMPLEMENTED</p> <p>K_GG59_DNS_RCODE_REFUSED</p> <p>Note: this field should not be extracted if the value is 0 which represents "No error condition"</p>		
DrData	DRDATA_CAUSE_CODE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_DNS_ERROR_CODE_TAG (tag is 5203, same as	Format	CB_UBIT32

	SURDATA_DNS_ERRORCODE_TAG		
Details	<p>This field should be extracted from any message that contains it.</p> <p>Note: for backward compatibility for SURGE; new apps should not use it.</p>		
<b>8.29.1.7</b>			
Field	Header ID	Spec Ref	RFC 1035 Section 4.1.1
TsdBreakout	identifier	Format	m (value)
Details	<p>This field should be extracted from any message that contains it.</p>		
DrData	DRDATA_PROTO_TRANS_ID_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p> <p>It will be used with ports/addresses to build ATBs.</p>		
<b>8.29.1.8</b>			
Field	Found IP Address	Spec Ref	RFC 1035
TsdBreakout	foundIPAddress	Format	s_gg59_IPAddress (mval)
Details	<p>This field is implemented as multi-value field.</p> <p><del>Based on SURGE implementation, this field is only extracted from a standard response message that contains a resolvable answer when query returns an address. And the RR type should be A (0x01). The CLASS type should be the Internet IN(0x01).</del></p> <p>This field should be extracted from either Answer section or Additional section if the RR type is A (0x01) from response message.</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01)</p> <p>The IPv4 address should be extracted to the subfield ipAddr.ipv4_m.</p>		
DrData	DRDATA_DNS_IPV4_ADDR_TAG	Format	CB_UBIT32(multi-value)
Details	<p><del>This field should be extracted from any message that contains it. It should be extracted from the first instance based on the SURGE implementation.</del></p> <p>This field is implemented as multi-value field.</p> <p>This field should be extracted from either Answer section or Additional section if the RR type is A (0x01) from response message.</p>		
<b>8.29.1.9</b>			
Field	Lookup Name	Spec Ref	RFC 1035
TsdBreakout	lookupName	Format	s_gg59_pbString (mval)
Details	<p>This field is implemented as multi-value field. Based on SURGE implementation, it should be extracted from a standard query (QUERY) message that has a resolvable name in the Question section if the RR type is one of:</p> <ul style="list-style-type: none"> <li>A (1) a host address</li> <li>NS( 2) an authoritative name server</li> <li>SOA (6) marks the start of a zone of authority</li> <li>SRV (33) Server Selection</li> <li>PTR (12) a domain name pointer</li> <li>AAAA (28) IP6 Address</li> <li>AXFR(252) transfer of an entire zone</li> <li>ALL(255) A request for all records</li> </ul> <p>And the CLASS type should be the Internet IN( 1 )</p>		
DrData	DRDATA_DNS_NAME_TAG	Format	CB_OCTETSTR(OctetString)

	(tag is 5214, same as SURDATA_DNS_NAME_TAG)		
Details	<p>This field should be extracted from any message that contains it. It is a single value in DrData.</p> <p>Only the first instance is extracted to DrData.</p>		
<b>8.29.1.10</b>			
Field	Found IP V6 Address	Spec Ref	RFC 1886 RFC 3596
TsdBreakout	foundIPAddress	Format	s_gg59_IPAddress (mval)
Details	<p>This field is implemented as multi-value field. <del>This field is only extracted from a standard response message that contains a resolvable answer when query returns an address. And the RR type should be AAAA (0x1C). The CLASS type should be the Internet IN (0x01).</del></p> <p>This field should be extracted from either Answer section or Additional section if the RR type is AAAA (0x1c) from response message.</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02)</p> <p>The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.</p>		
DrData	DRDATA_DNS_IPV6_ADDR_TAG	Format	CB_IPV6ADDR(multi-value)
Details	<p><del>This field should be extracted from any message that contains it.</del></p> <p><del>It is a single value in DrData. Only the first instance is extracted to DrData.</del></p> <p>This field is implemented as multi-value field.</p> <p>This field should be extracted from either Answer section or Additional section if the RR type is AAAA (0x1c) from response message.</p>		
<b>8.29.1.11</b>			
Field	Resource Record->TYPE & Resource Record->CLASS	Spec Ref	RFC1035 Section 4.1.2
TsdBreakout	dnsTypeClass	Format	m(mval)
Details	<p>This field should be extracted from Answer Section or Additional Section if the Resource Record type is one of A/AAAA/NAPTR in a response message.</p> <p>TYPE occupies the higher two byte while CLASS occupies the lower two byte.</p>		
DrData	DRDATA_DNS_TYPE_TAG	Format	CB_UBIT32(multi-value)
Details	<p>This field should be extracted from any message that contains it.</p> <p>Only the TYPE value will be populated to this field.</p>		
<b>8.29.1.12</b>			
Field	QNAME	Spec Ref	RFC1035 Section 4.1.2
TsdBreakout	domainName	Format	s_gg59_pbString (mval)
Details	<p>This field should be extracted from question section in query or response message</p>		
DrData	DRDATA_DNS_HOST_NAME_TAG	Format	CB_OCTETSTR (OctetString multi-value)
Details	<p>This field is implemented as multi-value field. This field should be extracted from question section in query or response message, regardless of whether or not the value contain the APN.</p> <p>The coding format is LV which is the same with APN coding format described in section 3.2.3</p>		
DrData	DRDATA_ACCESSPOINTNAME_TAG	Format	CB_OCTETSTR (OctetString)
Details	<p>This field should be extracted from any Question section from query message if it contains an APN. This is true regardless of whether or not the TYPE is NAPTR. Its encoding format</p>		

	see also Section 3.2.3		
<b>8.29.1.13</b>			
Field	RR->TTL	Spec Ref	RFC1035 Section 4.1.2
TsdBreakout	timeToLive	Format	m(mval)
Details	This field should be extracted from Answer/Additional section if the Resource Record type is one of A/AAAA/NAPTR in a response message		
DrData	DRDATA_LIFETIME_TAG	Format	CB_UBIT32(multi-value)
Details	This field should be extracted from Answer/Additional section in a response message		
<b>8.29.1.14</b>			
Field	NAPTR->REPLACEMENT	Spec Ref	RFC 3403 section 4
TsdBreakout	naptrReplacement	Format	s_gg59_pbString (mval)
Details	This field is implemented as multi-value field. This field is only extracted from NAPTR resource record with CLASS type IN (0x01) in Answer section from response message.		
DrData	DRDATA_DNS_REPLACEMENT_NA ME_TAG	Format	CB_OCTETSTR (OctetString multi-value)
Details	This field is implemented as multi-value field. This field is only extracted from NAPTR resource record with CLASS type IN (0x01) in Answer section from response message. The coding format is LV which is the same with APN coding format described in section 3.2.3		
<b>8.29.1.15</b>			
Field	NAPTR->SERVICES	Spec Ref	RFC 3403 section 4
TsdBreakout	naptrServices	Format	s_gg59_pbString (mval)
Details	This field is implemented as multi-value field. This field is only extracted from NAPTR resource record with CLASS type IN (0x01) in Answer section from response message.		
DrData	DRDATA_DNS_SERVICE_TAG	Format	CB_OCTETSTR (TerminatedString multi-value)
Details	This field is only extracted from NAPTR resource record with CLASS type IN (0x01) in Answer section from response message.		

## 8.30 S1 Application Protocol (S1AP)

The detailed information of this protocol refers to [Protocol ERS](#).

### 8.30.1 Fields

<b>8.30.1.1</b>			
Field	Message Type (Procedure Code & Type of Message)	Spec Ref	TS 36.413 Section 9.2.1.1
TsdBreakout	s1apMessageType	Format	m (value)

Details	<p>The S1AP Message Type field should be calculated as the following formula:  <math>s1apMessageType = ((typeOfMessage &lt;&lt; 8)   procedureCode)</math>.</p> <p>One of:</p> <ul style="list-style-type: none"> <li>K_GG59_S1AP_MSG_HANDOVER_REQUIRED</li> <li>K_GG59_S1AP_MSG_HANDOVER_COMMAND</li> <li>K_GG59_S1AP_MSG_HANDOVER_PREPARATION_FAILURE</li> <li>K_GG59_S1AP_MSG_HANDOVER_REQUEST</li> <li>.....</li> </ul>		
DrData	DRDATA_PROTOCOL_TYPE_TAG	Format	CB_UBIT32
Details	<p>This field should be set to IPCORE_PROTOCOL_S1AP(2034) for S1AP message.</p> <p>See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface.</p>		
DrData	DRDATA_MESSAGE_TYPE_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p> <p>See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface.</p>		
<b>8.30.1.2</b>			
Field	MME UE S1AP ID	Spec Ref	TS 36.413 Section 9.2.3.3
	<del>Source MME UE S1AP ID</del>		<del>TS 36.413 Section 9.1.5.8</del>
	UE S1AP ID Pair -> MME UE S1AP ID		TS 36.413 Section 9.2.3.18
TsdBreakout	mmeUeS1apId	Format	m (value)
Details	<p>This field should be extracted from MME UE S1AP ID; Source MME UE S1AP ID; and UE S1AP ID Pair -&gt; MME UE S1AP ID (not including 8.30.1.3).</p>		
DrData	DRDATA_MME_UE_S1AP_ID_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from MME UE S1AP ID or UE S1AP ID Pair -&gt; MME UE S1AP ID (not including Source MME UE S1AP ID in 8.30.1.21 or UE-Associated Logical S1-connection Item -&gt; MME UE S1AP ID in 8.30.1.3).</p>		
<b>8.30.1.3</b>			
Field	UE-Associated Logical S1-connection Item -> MME UE S1AP ID (X 256)	Spec Ref	TS 36.413 Section 9.1.8.1 and 9.1.8.2
TsdBreakout	mmeUeS1apId_reset		Format
Details	<p>This field is implemented as multi-value field. It should be extracted from the 2 S1AP messages that contain UE-Associated Logical S1-connection Item -&gt; MME UE S1AP ID (not including 8.30.1.2).</p>		
DrData	DRDATA_MME_UE_S1AP_ID_RST_TAG	Format	CB_UBIT32 (Multi-Value)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p>		
<b>8.30.1.4</b>			
Field	eNB UE S1AP ID	Spec Ref	TS 36.413 Section 9.2.3.4
	UE S1AP ID Pair -> eNB UE S1AP ID		TS 36.413 Section 9.2.3.18
TsdBreakout	enbUeS1apId	Format	m (value)
Details	<p>This field is implemented as single-value field. It should be extracted from eNB UE S1AP ID; and UE S1AP ID Pair -&gt; eNB UE S1AP ID (not including 8.30.1.5).</p>		
DrData	DRDATA_ENB_UE_S1AP_ID_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p>		

<b>8.30.1.5</b>						
Field	UE-Associated Logical S1-connection Item -> eNB UE S1AP ID (X 256)	Spec Ref	TS 36.413 Section 9.1.8.1 and 9.1.8.2			
TsdBreakout	enbUeS1apId_reset	Format	m (mval)			
Details	This field is implemented as multi-value field. It should be extracted from UE-Associated Logical S1-connection Item -> eNB UE S1AP ID (not including 8.30.1.4).					
DrData	DRDATA_ENB_UE_S1AP_ID_RST_TAG	Format	CB_UBIT32 (Multi-Value)			
Details	This field is implemented as multi-value field. It should be extracted from any message that contains it.					
<b>8.30.1.6</b>						
Field	IMSI	Spec Ref	TS 36.413 Section 9.2.3.11			
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)			
Details	This field should be extracted from any message that contains it. The subfield telnoType_b should be set to K_GG59_TELNOTYPE_IMSI_S1AP.					
DrData	DRDATA_IMSI_TAG	Format	CB_TELNO			
Details	This field should be extracted from S1AP message that contains it.					
<b>8.30.1.7</b>						
Field	S-TMSI	Spec Ref	TS 36.413 Section 9.2.3.6 & TS 23.003 Section 2.9			
TsdBreakout	tempUeId	Format	s_gg61_addr (mval)			
Details	This field should be extracted from any message that contains it. The subfield telnoType_b should be K_GG59_TELNOTYPE_STMSI. The subfield telno.length_b should be K_GG59_NUMOFDIGITS_STMSI.					
DrData	DRDATA_STMSI_TAG	Format	CB_TELNO			
Details	This field should be extracted from any message that contains it.					
<b>8.30.1.8</b>						
Field	RRC Establishment Cause	Spec Ref	TS 36.413 Section 9.2.1.3a			
TsdBreakout	rrcEstabCause	Format	m (value)			
Details	This field should be extracted from any message that contains it. One of: K_GG59_RRCESTCAUSE_EMERGENCY K_GG59_RRCESTCAUSE_HIGHPRIORITYACCESS K_GG59_RRCESTCAUSE_MT_ACCESS K_GG59_RRCESTCAUSE_MO_SIGNALLING K_GG59_RRCESTCAUSE_MO_DATA					
DrData	DRDATA_RRC_ESTAB_CAUSE_TAG	Format	CB_UBIT32			
Details	This field should be extracted from any message that contains it.					
<b>8.30.1.9</b>						
Field	MME Name	Spec Ref	TS 36.413 Section 9.1.8.5 and 9.1.8.10			
TsdBreakout	mmeName	Format	s_gg59_pbString (dynamic)			
Details	This field should be extracted from any message that contains it. The s_gg59_pbString pointer is set to the first octet in packet buffer after the length octet.					
DrData	DRDATA_MME_NAME_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					

<b>8.30.1.10</b>						
Field	eNB Name	Spec Ref	TS 36.413 Section 9.1.8.4 and 9.1.8.7			
TsdBreakout	enbName	Format	s_gg59_pbString (dynamic)			
Details	<p>This field should be extracted from any message that contains it.</p> <p>The s_gg59_pbString pointer is set to the first octet in packet buffer after the length octet.</p>					
DrData	DRDATA_ENB_NAME_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					
<b>8.30.1.11</b>						
Field	Target ID	Spec Ref	TS 36.413 Section 9.2.1.6			
TsdBreakout	targetId	Format	s_gg59_cellId (dynamic)			
Details	<p>Target ID -&gt; CGI:</p> <p>The subfield Target ID -&gt; CGI -&gt; RAC is OPTIONAL (which is not present in A/Gb/Iu interfaces).</p> <p>(1) If RAC is not present, the subfield discriminator_b should be set to K_GG59_CIDISC_CGI (0). See also section 3.4.3 (1) for the coding format of subfield value.</p> <p>(2) If RAC is present, the subfield discriminator_b should be set to K_GG59_CIDISC_CGI_RAC (16). See also section 3.4.3 (5) for the coding format of subfield value.</p> <p>Target ID -&gt; Target RNC-ID:</p> <p>The subfield Target ID -&gt; Target RNC-ID -&gt; RAC is OPTIONAL (which is similar as in Iu interface).</p> <p>(3) If RAC is not present, the subfield discriminator_b should be set to K_GG59_CIDISC_TARGETRNCID (17). See also section 3.4.3 (6) for the coding format of subfield value.</p> <p>(4) If RAC is present, the subfield discriminator_b should be set to K_GG59_CIDISC_TARGETRNCID_RAC (18). See also section 3.4.3 (7) for the coding format of subfield value.</p> <p>Target ID -&gt; Target eNB-ID:</p> <p>The subfield Target ID -&gt; Target eNB-ID -&gt; Global ENB-ID -&gt; ENB-ID coding format is: 1) a choice; 2) not fixed length; and 3) not octet aligned. See also section 3.4.2 for the fixed 4-octet coding format for ENB-ID in TsdBreakout.</p> <p>(5) The subfield discriminator_b should be set to K_GG59_CIDISC_TARGETENBID (19). See also section 3.4.3 (8) for the coding format of subfield value.</p>					
DrData	DRDATA_CELLGLOBID_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from Target ID -> CGI when RAC is not present.					
DrData	DRDATA_CELLGLOBID_RAC_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from Target ID -> CGI when RAC is present.					
DrData	DRDATA_TARGRNCID_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from Target ID -> Target RNC-ID (when RAC is present or not present).					
DrData	DRDATA_TARGENBID_TAG	Format	CB_OCTETSTR (OctetString)			
Details	<p>This field should be extracted from Target ID -&gt; Target eNB-ID.</p> <p>See also section 3.4.2 for the fixed 4-octet coding format for ENB-ID.</p>					
<b>8.30.1.12</b>						
Field	E-UTRAN CGI	Spec Ref	TS 36.413 Section 9.2.1.38			

TsdBreakout	eUtranCgi	Format	s_gg59_cellId (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_EUTRANCGI (20). See also section 3.4.3 (9) for the coding format of subfield value.</p> <p>The subfield a7CellIdType_b should not be set (reserved for future).</p> <p>See also section 3.4.2 for the fixed 4-octet coding format for ENB-ID in TsdBreakout.</p>		
DrData	DRDATA_EUTRAN_CGI_TAG	Format	CB_OCTETSTR (OctetString)
Details	<p>This field should be extracted from any message that contains it.</p> <p>See also section 3.4.2 for the fixed 4-octet coding format for ENB-ID.</p>		
<b>8.30.1.13</b>			
Field	TAI	Spec Ref	TS 36.413 Section 9.2.3.16
	TAI List Item -> TAI (X-256)		TS 36.413 Seetion 9.1.6
	Warning Area List -> TAI (X-256)		TS 36.413 Seetion 9.2.1.46
TsdBreakout	trackingAreaId	Format	s_gg59_cellId (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_TAI (21). See also section 3.4.3 (10) for the coding format of subfield value.</p> <p>The subfield a7CellIdType_b should be set to K_GG59_A7_CITYPE_TAI_S1AP for TAI (not for TAI List Item -&gt; TAI or Warning Area List -&gt; TAI).</p> <p>TAI List Item or Warning Area List will <b>not</b> be extracted yet and reserved when necessary.</p>		
DrData	DRDATA_TRACKAREAID_TAG	Format	CB_OCTETSTR (OctetString; Multi-Value)
Details	<p>This field should be extracted from S1AP message that contains it.</p> <p>Note: This field is implemented as Single-Value yet and reserved when necessary.</p>		
DrData	DRDATA_TRACK_AREA_CODE_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p> <p>Note: This field is implemented as Single-Value yet and reserved when necessary.</p>		
<b>8.30.1.14</b>			
Field	Cause	Spec Ref	TS 36.413 Section 9.2.1.3
TsdBreakout	s1apCause	Format	m (value)
Details	<p>(1) This field is implemented as single-value field. It should be extracted from Cause parameter (not including 8.30.1.15).</p> <p>(2) The S1AP Cause field should be calculated as the following formula:  <math>s1apCause = ((CauseGroup &lt;&lt; 8)   CauseValue)</math>.</p> <p>CauseGroup and CauseValue start from 0x00 and extended value start from 0x80.</p> <p>One of:</p> <ul style="list-style-type: none"> <li>K_GG59_S1AP_CAUSE_MISC_CONTROL_PROCESSING_OVERLOAD</li> <li>K_GG59_S1AP_CAUSE_MISC_NOT_ENOUGH_USER_PLANE_PROCESSING_RES</li> <li>K_GG59_S1AP_CAUSE_MISC_HARDWARE_FAILURE</li> <li>.....</li> </ul>		
DrData	DRDATA_CAUSE_CODE_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from Cause parameter.</p>		
DrData	DRDATA_CAUSE_CATEGORY_TAG	Format	CB_UBIT32
Details	<p>This field should be set according to S1AP Cause for IPCore/KPI-E requirements.</p> <p>Note: Confirmed with KPI-E (Suman Rana) and QoS (Rajat Mishra):</p>		

	S1AP/EMM/ESM CAUSE_CATEGORY is not required for KPI-E or QoSA. If any error categorization is required, it will be done at QoS Application layer in database.		
<b>8.30.1.15</b>			
Field	E-RAB List Item -> E-RAB ID (X 256)	Spec Ref	TS 36.413 Section 9.2.1.36
	E-RAB List Item -> Cause (X 256)		TS 36.413 Section 9.2.1.36
TsdBreakout	eRabListItem	Format	m (mval)
Details	<p>(1) This field is implemented as multi-value and combined field (see also 5.3.1.1). It should be extracted from any message that contains E-RAB List Item.</p> <p>(2) The S1AP E-RAB List Item field should be calculated as the following formula:  <math>eRabListItem = ((eRabId &lt;&lt; 16)   s1apCause);</math>  <math>s1apCause = ((CauseGroup &lt;&lt; 8)   CauseValue)</math> (see also 8.30.1.14)</p>		
DrData	DRDATA_ERAB_LIST_ITEM_TAG	Format	CB_UBIT32 (Multi-Value)
Details	This field is implemented as multi-value field. It should be extracted from any message that contains it.		
<b>8.30.1.16</b>			
Field	E-RAB ID (X 256)	Spec Ref	TS 36.413 Section 9.2.1.2
TsdBreakout	eRabId	Format	m (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>See also 8.30.3.2 for multiple E-RAB IDs and their contexts.</p> <p>See also 8.30.3.3 for field-tie between multiple E-RAB IDs and their Property Parameters.</p> <p>See also 8.30.3.1 and 8.30.1.14 for failed E-RAB IDs and their Causes.</p>		
DrData	DRDATA_ERAB_ID_TAG	Format	CB_UBIT32 (Multi-Value)
Details	This field should be extracted from any message that contains it.		
<b>8.30.1.17</b>			
Field	GTP TEID (X 256)	Spec Ref	TS 36.413 Section 9.2.2.2
TsdBreakout	gtpTEID	Format	m (mval)
Details	This field is implemented as multi-value field. It should be extracted from any message that contains (not including 8.30.1.18 or 8.30.1.19).		
DrData	DRDATA_GTP_TEID_TAG	Format	CB_UBIT32 (Multi-Value)
Details	This field is implemented as multi-value field. It should be extracted from any message that contains it.		
<b>8.30.1.18</b>			
Field	DL GTP TEID (X 256)	Spec Ref	TS 36.413 Section 9.2.2.2
TsdBreakout	gtpTEID_DL	Format	m (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains (not including 8.30.1.17 or 8.30.1.19).</p> <p>In 3GPP TS 36.413 Section 9.1.5.2 Handover Command and 9.1.5.5 Handover Request Acknowledge: this parameter can be OPTIONAL. If it's not present, a NULL instance (zero value) should be inserted for "field-tie" (see also 8.30.3.3) <b>in future phase</b>.</p>		
DrData	DRDATA_GTP_TEID_DL_TAG	Format	CB_UBIT32 (Multi-Value)
Details	This field is implemented as multi-value field. It should be extracted from any message that contains it.		
<b>8.30.1.19</b>			
Field	UL GTP TEID (X 256)	Spec Ref	TS 36.413 Section 9.2.2.2

TsdBreakout	gtpTEID_UL	Format	m (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it (not including 8.30.1.17 or 8.30.1.18).</p> <p>In 3GPP TS 36.413 Section 9.1.5.2 Handover Command and 9.1.5.5 Handover Request Acknowledge: this parameter can be OPTIONAL. If it's not present, a NULL instance (zero value) should be inserted for "field-tie" (see also 8.30.3.3) <b>in future phase</b>.</p>		
DrData	DRDATA_GTP_TEID_UL_TAG	Format	CB_UBIT32 (Multi-Value)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p>		
<b>8.30.1.20</b>			
Field	NAS-PDU	Spec Ref	TS 36.413 Section 9.2.3.5
TsdBreakout	None	Format	N/A
Details	See also 5.2.1.2 emmMessageType and 5.3.1.2 esmMessageType.		
DrData	None	Format	N/A
Details	<p><b>Special Notes:</b></p> <ol style="list-style-type: none"> <li>1. IPCore DataModel APIs will be updated so that the DrData tag DRDATA_SECONDARY_PROTOCOL_TAG in the Secondary DataModels are accessible from S1AP DataModel.</li> <li>2. If the tag DRDATA_SECONDARY_PROTOCOL_TAG is queried from S1AP DataModel, it will return back the Multi-Value returns of querying the tag from all the Secondary DataModels.</li> <li>3. The order of the multiple returns should be same as the order of secondary objects.</li> <li>4. See also 5.2.1.2 and 5.3.1.2 for DRDATA_SECONDARY_PROTOCOL_TAG implementation details in Secondary EMM/ESM DataModels.</li> <li>5. See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface.</li> </ol>		
<b>8.30.1.21</b>			
Field	Source MME UE S1AP ID	Spec Ref	TS 36.413 Section 9.1.5.8
TsdBreakout	mmeUeS1apId	Format	m (value)
Details	This field should be extracted from MME UE S1AP ID; Source MME UE S1AP ID; and UE S1AP ID Pair -> MME UE S1AP ID (not including 8.30.1.3).		
DrData	DRDATA_SRC_MME_UER_S1AP_ID_TA G	Format	CB_UBIT32
Details	This field should be extracted from Source MME UE S1AP ID (not including MME UE S1AP ID in 8.30.1.3) in Path Switch Request message.		
<b>8.30.1.22</b>			
Field	NAS PDU	Spec Ref	TS 24.301 Section 9.1.2
TsdBreakout	nasPdu	Format	s_gg59_pbString (mval)
Details	<p>This field should be extracted from NAS message (both plain and protected) defined in 9.7, not including 9.9.3.22 NAS message container.</p> <p>The pointer subfield string_pb should be set to the first octet which has Protocol discriminator parameter.</p> <p>The subfield length_u should be actual length in octets of the whole NAS message (including Security header type</p> <p>Message authentication code</p> <p>Sequence number</p> <p>Message type etc).</p>		
DrData	DRDATA_NAS_PDU_TAG	Format	CB_UBIT64 (Multi-Value)

Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The lower 32 bits will be the length of the whole NAS message while the offset against start of message will be set in bits 64-33.</p> <p>2 masks are defined:</p> <ul style="list-style-type: none"> <li>K_GG59_NAS_PDU_LENGTH_MASK</li> <li>K_GG59_NAS_PDU_OFFSET_MASK</li> </ul> <p>To get the length and offset we can use the following macros:</p> <ul style="list-style-type: none"> <li>M_GG59_GET_NAS_PDU_LENGTH</li> <li>M_GG59_GET_NAS_PDU_OFFSET</li> </ul>		
8.30.1.23			
Field	Security header type	Spec Ref	TS 24.301 Section 9.1.2
TsdBreakout	nasPdu	Format	s_gg59_pbString (mval)
Details	<p>This field should be extracted from Security header type ( bits 8-5 of the first octet) in NAS message (both plain and protected) defined in 9.7, not including 9.9.3.22 NAS message container.</p>		
DrData	DRDATA_SECURITY_HEADER_TYPE_TAG	Format	CB_UBIT32
Details	<p>This field is implemented as single-value field.</p> <p>If several NAS message parameter contained in one message, this field should be extracted from the first NAS message parameter.</p> <p>This field is for S1Mme Breakout module Transformation Filter purpose. It's not intended for application purpose.</p>		
<b>8.30.1.24</b>			
Field	None	Spec Ref	N/A
TsdBreakout	None	Format	N/A
Details	None		
DrData	DRDATA_DECIPHER_RESULT_TAG	Format	CB_UBIT32
Details	<p>This field is a special field. It's used to indicate the status S1AP NAS PDU(s).</p> <p>If S1AP doesn't include NAS PDU(s), this field should be set to K_GG59_NAS_NO_NAS_PDU (0x01).</p> <p>If S1AP includes NAS PDU(s) and NAS PDU(s) are not ciphered, this field should be set to K_GG59_NAS_NOT_CIPHERED (0x02).</p> <p>If S1AP includes ciphered NAS PDU(s), this field should indicate the NAS Deciphering status, one of:</p> <ul style="list-style-type: none"> <li>K_GG59_NAS_DECIPHER_SUCCESS (0x03)</li> <li>K_GG59_NAS_DECIPHER_SUCCESS_PARTIAL_NAS (0x04)</li> <li>K_GG59_NAS_DECIPHER_ERROR (0x10)</li> <li>K_GG59_NAS_DECIPHER_ERROR_NO_KEY (0x11)</li> </ul>		
8.30.1.25			
Field	E-RABs To Be Setup List -> E-RABs To Be Setup Item -> Transport Layer Address	Spec Ref	TS 36.413 section 9.2.2.1
TsdBreakout	transportLayerAddr	Format	s_gg59_pbString (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted as the following:</p> <p>If the address type is IPv4.</p> <p>The subfield length_u should be set 0x04</p> <p>The pointer subfield string_pb should be set to the first octet of IPv4 address</p> <p>Or if the address type is IPv6,</p>		

	The subfield length_u should be set 0x10 The pointer subfield string_pb should be set to the first octet of IPv6 address Otherwise this field should not be extracted.		
DrData	DRDATA_IPV4_TRANS_LAYER_ADDR_TA_G	Format	CB_UBIT32 (Multi-Value)
Details	This field is implemented as multi-value field and should be extracted from ipAddr.ipv4_m.		
DrData	DRDATA_IPV6_TRANS_LAYER_ADDR_TA_G	Format	CB_IPV6ADDR (Multi-Value)
Details	This field is implemented as multi-value field and should be extracted from ipAddr.ipv6_ba.		
<b>8.30.1.26</b>			
Field	Source To Target Transparent Container	Spec Ref	TS 36.413 section 9.2.1.56
TsdBreakout	sourceToTargetTransContainer	Format	s_gg59_pbString
Details	This field should be extracted if the container is one of: Source eNB to Target eNB Transparent Container parameter Source RNC to Target RNC Transparent Container Source BSS to Target BSS Transparent Container The pointer subfield string_pb should be set to the first octet of Source to Target Transparent Container The subfield length_u should be actual length in octets of the Source to Target Transparent Container		
DrData	DRDATA_S_TO_T_TRANS_CONTAINER_TA_G	Format	CB_UBIT64
Details	The lower 32 bits will be set with the subfield length_u while the offset against start of message will be copied in bits 64-33.		
8.30.1.27			
Field	NAS security parameters to E-UTRAN-> Noncemme	Spec Ref	TS 36.413 section 9.2.3.31 TS 24.301 Section 9.9.2.7
TsdBreakout	nonceMme	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_NONCE_MME_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
8.30.1.28			
Field	NAS security parameters to E-UTRAN-> TCA	Spec Ref	TS 36.413 section 9.2.3.31 TS 24.301 Section 9.9.2.7
TsdBreakout	cipheringAlgorithm	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_CIPHERING_ALGORITHM_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
8.30.1.29			
Field	NAS security parameters to E-UTRAN-> TSC	Spec Ref	TS 36.413 section 9.2.3.31 TS 24.301 Section 9.9.2.7
TsdBreakout	securityContextFlag	Format	m (value)
Details	This field should be extracted from any message that contains it.		

DrData	DRDATA_SECURITY_CONTEXT_FLAG_TA_G	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
8.30.1.30			
Field	NAS security parameters to E-UTRAN-> KSI	Spec Ref	TS 36.413 section 9.2.3.31 TS 24.301 Section 9.9.2.7
TsdBreakout	nasKeySetId	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_NAS_KEY_SET_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
8.30.1.31			
Field	Security Context-> Next-Hop NH	Spec Ref	TS 36.413 section 9.2.1.26 and 9.2.1.41
TsdBreakout	securityKey	Format	s_gg59_pbString(dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_SECURITY_KEY_TAG	Format	CB_OCTETSTR(OctetString)
Details	This field should be extracted from any message that contains it.		
8.30.1.32			
Field	E-RAB ID E-RAB Level QoS Parameters ->QCI	Spec Ref	3GPP TS 36.413 section 9.1.3.1 3GPP TS 36.413 section 9.1.3.3 3GPP TS 36.413 section 9.1.4.1 3GPP TS 36.413 section 9.1.5.4
TsdBreakout	erabQci	Format	m(mval)
Details	<p>This field should be extracted from one of:</p> <ul style="list-style-type: none"> <li>9.1.3.1 E-RAB Setup Request (E-RAB to be Setup)</li> <li>9.1.3.3 E-RAB Modify Request (E-RAB To Be Modified)</li> <li>9.1.4.1 Initial Context Setup Request (E-RAB to Be Setup)</li> <li>9.1.5.4 Handover Request (E-RABs To Be Setup)</li> </ul> <p>This field is combined value. It should be calculated as the following formula:  <math>erab\_qci = ((QCI) \ll 8)   E-RABID )</math>  note: 16 bits are reserved for future</p>		
DrData	DRDATA_ERAB_QCI_TAG	Format	CB_UBIT32(multi-value)
Details	See also TsdBreakout details		
8.30.1.33			
Field	Handover Type	Spec Ref	3GPP TS 36.413 section 9.2.1.13
TsdBreakout	handoverType	Format	m(value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_HANDOVER_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		

## 8.30.2 Field Structure for S1-MME

### 8.30.2.1 Protocol Message Structure in S1-MME

In 3GPP protocol specifications, the protocol message encapsulation status for S1-MME interface is summarized as the following for reference.

(1) 1 S1-MME packet will include one and only one S1AP message.

(Note: The SCTP packet without user data can be ignored. If more than one S1AP messages are included in 1 SCTP message with multiple Chunks, we can assume MEB Destreamer will split them.)

(2) 1 S1AP message can include zero; one; or more than one NAS (EMM/ESM) message(s).

TS 36.413 9.2.3.5 NAS-PDU

(2a)

TS 36.413 9.1.3.5 E-RAB RELEASE COMMAND (X 1)

TS 36.413 9.1.7.1 INITIAL UE MESSAGE (X 1)

TS 36.413 9.1.7.2 DOWNLINK NAS TRANSPORT (X 1)

TS 36.413 9.1.7.3 UPLINK NAS TRANSPORT (X 1)

TS 36.413 9.1.7.4 NAS NON DELIVERY INDICATION (X 1)

(2b)

TS 36.413 9.1.3.1 E-RAB SETUP REQUEST (X 256)

TS 36.413 9.1.3.3 E-RAB MODIFY REQUEST (X 256)

TS 36.413 9.1.4.1 INITIAL CONTEXT SETUP REQUEST (X 256)

Notes: The one or up to 256 NAS-PDU(s) in (2b) can include one EMM message and up to 256 ESM messages.

(3) 1 S1AP message can include other messages (such as RANAP, BSSGP, E-RRC, etc). (This is not in scope for C.05.50 .)

(4) 1 EMM message can include zero; or one ESM message.

TS 24.301 9.9.3.15 ESM message container

(4a)

TS 24.301 8.2.1 Attach accept (X 1)

TS 24.301 8.2.2 Attach complete (X 1)

TS 24.301 8.2.3 Attach reject (X 1)

TS 24.301 8.2.4 Attach request (X 1)

(5) 1 EMM message can include zero or one SMS message. (This is descoped for C.05.50 )

TS 24.301 9.9.3.22 NAS message container (Only for SMS so far)

(5a)

TS 24.301 8.2.12 Downlink NAS Transport (X 1)

TS 24.301 8.2.30 Uplink NAS Transport (X 1)

(6) 1 ESM message will not include encapsulated message so far.

### 8.30.2.2 TsdBreakout Field Structure

**Note:** This section is only for protocol team internal use. Application teams should ignore this section.

(1) The current TsdBreakout flat fields with multi-value instances will be used to support up to 1 S1AP, 1 EMM and 1 ESM messages.

(2) If more than 1 ESM messages are included in 1 S1-MME packet (see also section 8.30.2.1 (2b)), every fields of ESM message will be implemented as Multi-Value.

(3) TsdBreakout context will be used for support field-tie among the Multi-Value instances in multiple ESM messages. The context bits K\_GG59\_CTXTMASK\_ESM\_MSG should be used to indicate the sequence number of ESM messages. It should start from 1 and increase by 1 for next ESM message. Its valid range is 1..255. 0 means "not set".

### 8.30.2.3 DataModel Field Structure in IPCore S1-MME Breakout

#### Engine

IPCore Breakout Engine for S1-MME should provide hierarchy DataModel to IPCore Transaction Builder as the following:

(1) In IPCore Breakout engine for S1-MME interface, one DataModel should be outputted for one TsdBuffer.

(2) The Breakout fields in S1AP protocol layer and below layers should be extracted to normal DataModel.

(3) If S1AP message includes the encapsulated EMM or ESM messages, the secondary DataModels should be created for the encapsulated EMM or ESM messages. One secondary DataModel node should be created for each message. The Breakout fields in EMM or ESM protocol layer should be extracted to secondary node. All the secondary DataModel nodes should be in same level. If EMM message is present, it should be the first secondary DataModel node.

(4) If the encapsulated EMM message includes the encapsulated one ESM message (see also 8.30.2.1 4a), the secondary DataModels should be created for both EMM and ESM messages.

**Note:** The information about encapsulation relationship (which ESM message is carried in EMM attach message) is not provided so far. If required, the EMM/ESM encapsulation relationship can be added in later phase.

(5) One S1AP message can include multiple E-RAB IDs. The Multi-Value fields should be used for multiple E-RAB IDs and their Property Parameter. See also 8.30.3 for details.

(6) The following is a hierarchy DataModel example for single one S1-MME packet which includes 1 S1AP message, 1 EMM message and 2 ESM messages:

```
<!-- this export is only for the purpose of hierarchy DataModel demo -->
<drdata_export version="2" release="A.03.00_S1MME">
  <drdata>
    <tags>
      <timestramp>1261387959:305465000</timestramp>
      <from_ip_address>10.148.3060.3</from_ip_address>
      <to_ip_address>10.145.220.97</to_ip_address>
      <from_port>3002</from_port>
      <to_port>3001</to_port>
      <packet_data>0x00113FC481ED.....</packet_data>
      <packet_breakout_status>1</packet_breakout_status>
      <protocol_type>2034</protocol_type>
      <message_type>12</message_type>
      <enb_ue_slap_id>4050</enb_ue_slap_id>
      <stmsi>02c0000490</stmsi>
      <eutran_cgi>0x13002100000200</eutran_cgi>
      <trackareaid>0x1300210001</trackareaid>
      <!-- special secondary_protocol>2035</secondary_protocol -->
      <!-- special secondary_protocol>2036</secondary_protocol -->
    </tags>
    <secondary>
      <drdata>
        <tags>
          <secondary_protocol>2035</secondary_protocol>
          <emm_msg_type>65</emm_msg_type>
          <attach_type>1</attach_type>
        </tags>
      </drdata>
      <drdata>
        <tags>
          <secondary_protocol>2036</secondary_protocol>
          <esm_msg_type>208</esm_msg_type>
          <proto_trans_id>39</proto_trans_id>
        </tags>
      </drdata>
    </secondary>
  </drdata>
</drdata_export>
```

```

        <bearer_id>0</bearer_id>
    </tags>
</drdata>
</secondary>
</drdata>
</drdata_export>

```

### 8.30.2.4 SimpleDrData Field Structure for Upper Applications

Note: This section is not as a part of IPCore Protocol Breakout ERS. It was listed here just for clarification.

SimpleDrData Field Structure should be similar as the hierarchy DataModel. See also 8.30.2.3 DataModel Field Structure.

C.05.50 phase, IPCore may convert hierarchy DataModel into flat SimpleDrData fields for Session Trace as an interim workaround method.

## 8.30.3 Field-Tie for S1AP

### 8.30.3.1 Field-Tie between E-RAB ID and Cause

(1) The multiple S1AP Cause parameters will only be present in E-RAB List Item and always be paired with E-RAB ID. See also 3GPP TS 36.413 Section 9.2.1.36.

(2) We will use single one combined field to contain the 2 subfields. And the combined field can be implemented as Multi-Value field. See also 8.30.1.15. So applications can easily get field-tie between E-RAB ID and S1AP Cause parameter. (Note: CDR Builder and Session Trace also used same method to support field-tie between RAB ID and RANAP Cause in Iu interface.)

### 8.30.3.2 E-RAB ID Contexts

E-RAB ID can repeat up to 256 <maxnoofERABs> times in S1AP messages. It may have different context and meanings (for example, to be setup, modified, released, etc) in different messages. Some applications want to know the exact context and meaning of each E-RAB ID.

(1) The following lists S1AP message types and the corresponding meanings of their E-RAB IDs according to 3GPP TS 36.413:

- 9.1.3.1 E-RAB Setup Request (E-RAB to be Setup)
- 9.1.3.2 E-RAB Setup Response (E-RAB Setup)

- 9.1.3.3 E-RAB Modify Request (E-RAB To Be Modified)
- 9.1.3.4 E-RAB Modify Response (E-RAB Modify)
- 9.1.3.6 E-RAB Release Response (E-RAB Release)
- 9.1.4.1 Initial Context Setup Request (E-RAB to Be Setup)
- 9.1.4.2 Initial Context Setup Response (E-RAB Setup)
- 9.1.5.2 Handover Command (E-RABs Subject to Forwarding)
- 9.1.5.4 Handover Request (E-RABs To Be Setup)
- 9.1.5.5 Handover Request Acknowledge (E-RABs Admitted)
- 9.1.5.8 Path Switch Request (E-RABs Switched in Downlink)
- 9.1.5.9 Path Switch Request Acknowledge (E-RAB To Be Switched in Uplink)
- 9.1.9.1 Downlink S1 CDMA2000 Tunneling (E-RABs Subject to Forwarding)

(2) The S1AP message type and the context of E-RAB have 1-to-1 mapping relation. So, the applications can use S1AP message types to easily determine the contexts and meanings of each E-RAB ID.

### **8.30.3.3 Field-Tie between E-RAB ID and Property Parameters**

See also 8.30.3.1 for failed E-RAB IDs and their Causes. See also 8.30.3.2 for multiple E-RAB IDs and their contexts.

Some applications may also want to know the exact field-tie (or mapping) between E-RAB IDs and their property parameters.

(1) Each E-RAB ID may include some of the following property parameters according to 3GPP TS 36.413:

- 9.2.1.2 E-RAB ID
- 9.2.2.1 Transport Layer Address
- 9.2.2.1 DL Transport Layer Address
- 9.2.2.1 UL Transport Layer Address
- 9.2.2.2 GTP TEID
- 9.2.2.2 DL GTP TEID
- 9.2.2.2 UL GTP TEID
- 9.2.1.15 E-RAB Level QoS Parameters

(2) The presence of each property parameter will be dependent on S1AP message type (or the context of E-RAB).

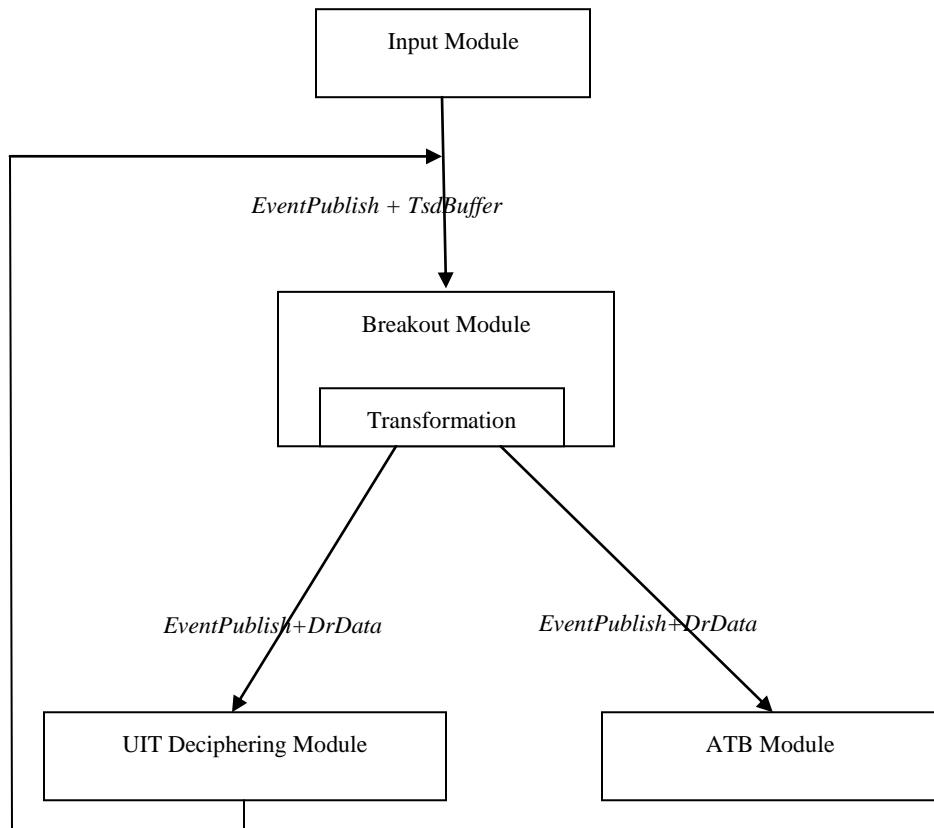
(3) The field-tie between E-RAB IDs and their property parameters can be resolved by synchronized Multi-Value instance method. Applications can access E-RAB ID and paired their property parameters one by one.

(4) The **Optional** property parameters could be present in the syntax of some S1AP message types. In this case, a NULL instance (zero value or zero length) could be inserted for field-tie synchronization purpose **in future phase**.

## 8.30.4 NAS Deciphering

### 8.30.4.1 Data flow

The following diagram show the simplistic data flow between Breakout module, Input module, ATB module and UIT deciphering module



The description is as below:

1. Breakout may receive TsdBuffer from Input Module or UIT Deciphering module
2. The value of "reserved" in BacqBufferHdr wrapped in TsdBuffer will be broken out to DRDATA\_DECIPHER\_RESULT\_TAG if it isn't zero.
3. Breakout may send a DrData object to one of UIT Deciphering and ATB module, or both of them.
4. The instance of Transformation in Breakout module will filter the DrData object. The filter is described as section 8.30.4.2
5. Decipher module will decipher the ciphered NAS message, and re-build a TsdBuffer.  
The details is described as section 8.30.4.3
6. If the NAS message is not ciphered, Decipher module will not feed it back to Breakout.
7. If the message has been deciphered, no matter the result is successful or failed, Breakout should only send the DrData object to ATB.

### 8.30.4.2 Transformation Filter

Tag DRDATA\_MESSAGE\_TYPE\_TAG, DRDATA\_SECURITY\_HEADER\_TYPE\_TAG and DRDATA\_DECIPHER\_RESULT\_TAG will be used for the filter.

The filter rule is described as following. The priority is scheduled from High to Low.

- 1) If the S1AP message type is one of the following types, the relevant DrData object should be sent to both ATB and Deciphering module. The specific message types are:
  - UE CONTEXT RELEASE COMMAND
  - UE CONTEXT RELEASE COMPLETE
- 2) If the DRDATA\_DECIPHER\_RESULT\_TAG is set (it means it's the second round breakout), the relevant DrData object should only be sent to ATB module.
- 3) The Security header type filter rule for the first round breakout is described at below table.

Security header	Meaning	DrData to ATB	DrData to Deciphering
0	Plain NAS message, not security protected	YES	NO
1	Integrity protected	YES	YES
2	Integrity protected and ciphered	NO	YES
3	Integrity protected with new EPS security context	YES	YES
4	Integrity protected and ciphered with new EPS security context	NO	YES
Others	Non-standard L3 message	YES	NO

### 8.30.4.3 UIT deciphering module changes

When the ciphered NAS PDU(s) are processed, UIT Deciphering module should re-build TsdBuffer and send the TsdBuffer back to Breakout module.

If the ciphered NAS PDU(s) are deciphered successfully, UIT Deciphering module should:

- 1) Re-build TsdBuffer and keep the original low layer octets (Ethernet, IP, SCTP, S1AP) and total length unchanged.
- 2) Replace NAS PDU(s) with deciphered octets.
- 3) Modify the parameter “Security header type” in each NAS PDU to disable “ciphered” flag and keep “Integrity protected” flag. (See also 3GPP TS 24.301 Section 9.3.1 Security header type. The value 4 is changed to 3, or 2 to 1.)
- 4) Provide the successful deciphering result via TsdBuffer header ("TsdBuffer.ptFirstBacqBufferHdr->reserved"), one of:
 

K_GG59_NAS_DECIPHER_SUCCESS	0x03
K_GG59_NAS_DECIPHER_SUCCESS_PARTIAL_NAS	0x04
- 5) Send the TsdBuffer back to Breakout module.

If the ciphered NAS PDU(s) are deciphered unsuccessfully, UIT Deciphering module should:

- 1) Re-build TsdBuffer based on the DrData object from Breakout module.
- 2) Provide the unsuccessful deciphering result via TsdBuffer header ("TsdBuffer.ptFirstBacqBufferHdr->reserved"), one of:
 

K_GG59_NAS_DECIPHER_ERROR	0x10
K_GG59_NAS_DECIPHER_ERROR_NO_KEY	0x11
- 3) Send the TsdBuffer back to Breakout module.

Note:

1. The initial value of TsdBuffer.ptFirstBacqBufferHdr->reserved should be 0 -- set by Input module.  
Any non-zero value means that the TsdBuffer has been parsed by UIT module.
2. If UIT Deciphering module knows the specific reason (such as ERROR\_NO\_KEY 0x11), it should report the specific reason. If not, the generic status (SUCCESS 0x03, ERROR 0x10) will be reported. More specific reasons can be added when necessary.
3. In future, S1mme Breakout interfaces can be upgraded to get both TsdBuffer and DataModel from UIT NAS Deciphering so that we can avoid duplicate parsing of S1AP etc and re-using the first DataModel object.  
This may improve some performances.

## 8.31 EPS Mobility Management (EMM)

The detailed information of this protocol refers to [Protocol ERS](#).

### 8.31.1 Fields

<b>8.31.1.1</b>			
Field	Protocol Discriminator	Spec Ref	TS 24.301 Section 9.2 and TS 24.007 Section 11.2.3.1.1
TsdBreakout	bssapProt	Format	m (value)
Details	This field is not implemented yet and reserved when necessary.		

DrData	None	Format	N/A
Details	N/A		
<b>8.31.1.2</b>			
Field	Message Type	Spec Ref	TS 24.301 Section 9.8
TsdBreakout	emmMessageType	Format	m (value)
Details	This field should be extracted from EMM message type value. One of: K_GG59_EMM_MSG_ATTACH_REQUEST K_GG59_EMM_MSG_ATTACH_ACCEPT ..... K_GG59_EMM_MSG_SERVICE_REQUEST (for Non-standard Layer 3 message: Service Request)		
DrData	DRDATA_SECONDARY_PROTOCOL_TAG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_EMM(2035) for EMM message. See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface. See also 8.30.1.20 the special APIs for DRDATA_SECONDARY_PROTOCOL_TAG in S1AP DataModel.		
DrData	DRDATA_EMM_MSG_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface.		
<b>8.31.1.3</b>			
Field	EPS Mobile Identity->IMSI	Spec Ref	TS 24.301 Section 9.9.3.12
	Mobile Identity-> IMSI		TS 24.301 Section 8.2.19 , 9.9.2.3 TS 24.008 Section 10.8.30.4
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it. The subfield telnoType_b should be set to K_GG59_TELNOTYPE_IMSI_EMM.		
DrData	DRDATA_IMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from EMM message that contains it.		
<b>8.31.1.4</b>			
Field	Mobile Identity-> TMSI	Spec Ref	TS 24.301 Section 8.2.1, 9.9.2.3 and TS 24.008 Section 10.8.30.4
TsdBreakout	TMSIaddress	Format	s_gg61_addr (static)
Details	In 3GPP TS 24.008 Section 10.8.30.4 Mobile Identity, TMSI, P-TMSI and M-TMSI share identical "Type of identity" value 4. If there is no explicit Information Element name or other Information to indicate that it's P-TMSI or M-TMSI parameter, the digits for "Type of identity" value 4 should be extracted to TMSI by default.		
DrData	DRDATA_TMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.5</b>			
Field	Mobile Identity->P-TMSI	Spec Ref	TS 24.301 Section 8.2.19, 9.9.2.3 and TS 24.008 Section 10.8.30.4
TsdBreakout	PTMSI	Format	s_gg61_addr (static)
Details	In 3GPP TS 24.008 Section 10.8.30.4 Mobile Identity, TMSI, P-TMSI and M-TMSI share identical "Type of identity" value 4.		

	If there is explicit Information Element name to indicate that it's P-TMSI parameter, the digits for "Type of identity" value 4 should be extracted to PTMSI. (Note: There is no explicit Information Element name "P-TMSI" in EMM messages so far.) Otherwise, it should be extracted to TMSI by default (see also 8.31.1.4).		
DrData	DRDATA_PTMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.6</b>			
Field	Mobile Identity->M-TMSI	Spec Ref	TS 24.301 Section 8.2.15, 9.9.2.3 and TS 24.008 Section 10.8.30.4
TsdBreakout	MTMSI	Format	s_gg61_addr (dynamic)
Details	In 3GPP TS 24.008 Section 10.8.30.4 Mobile Identity, TMSI, P-TMSI and M-TMSI share identical "Type of identity" value 4. If there is explicit Information Element name to indicate that it's M-TMSI parameter, the digits for "Type of identity" value 4 should be extracted to MTMSI. (Note: 3GPP TS 24.301 Section 8.2.15 Extended Service Request has explicit Information Element name "M-TMSI".) Otherwise, it should be extracted to TMSI by default (see also 8.31.1.4).		
DrData	DRDATA_MTMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.7</b>			
Field	EPS Mobile Identity -> GUTI	Spec Ref	TS 24.301 Section 9.9.3.12
	Old GUTI		TS 24.301 Section 8.2.4, 8.2.29, and 9.9.3.12
	Additional GUTI		TS 24.301 Section 8.2.4, 8.2.29, and 9.9.3.12
TsdBreakout	tempUeId	Format	s_gg61_addr (mval)
Details	The field is multiple-value s_gg61_addr address. All the instances of this field should be extracted. The subfield telnoType_b is used to indicate the raw parameter type. One of: K_GG59_TELNOTYPE_GUTI (GUTI) K_GG59_TELNOTYPE_OLDGUTI (Old GUTI) K_GG59_TELNOTYPE_ADDITIONALGUTI (Additional GUTI) The subfield telno.length_b should be K_GG59_NUMOFDIGITS_GUTI. See also section 3.4.5 for GUTI digit order in TsdBreakout.		
DrData	DRDATA_GUTI_TAG	Format	CB_TELNO
Details	This field should be extracted from GUTI. See also section 3.4.5 for GUTI char order in DataModel.		
DrData	DRDATA_OLD_GUTI_TAG	Format	CB_TELNO
Details	This field should be extracted from Old GUTI. See also section 3.4.5 for GUTI char order in DataModel.		
DrData	DRDATA_ADDITIONAL_GUTI_TAG	Format	CB_TELNO
Details	This field should be extracted from Additional GUTI. See also section 3.4.5 for GUTI char order in DataModel.		
<b>8.31.1.8</b>			
Field	Mobile Identity-> IMEI	Spec Ref	TS 24.301 Section 9.9.2.3 and TS 24.008 Section 10.8.30.4
	Mobile Identity-> IMEISV	Spec Ref	TS 24.301 Section 8.2.21.1, 9.9.2.3 and TS 24.008 Section 10.8.30.4

TsdBreakout	IMEIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_IMEI_TAG	Format	CB_TELNO
Details	This field should be extracted from IMEI; and IMEISV.		
<b>8.31.1.9</b>			
Field	Detach Type	Spec Ref	TS 24.301 Section 9.9.3.7
TsdBreakout	detachType	Format	m (value)
Details	<p>This field should be extracted from any message that contains it. IEI bits must not be extracted i.e. only the “Type of detach” and “Switch off” field bits.</p> <p>If Detach Request message direction is from UE to network (or if GUTI or IMSI - EPS mobile identity - is present as mandatory parameter in Detach Request message), the bit K_GG59_DETREQ_MSGDIR_MASK should be set.</p> <p>The mask K_GG59_DETACH_WITH_MSGDIR_MASK can be used to get the mapped and unique “Type of detach” with Detach Request message direction. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_UE2NT_EPS_DETACH (0x11 in UE to network)</li> <li>K_GG59_UE2NT_IMSI_DETACH (0x12 in UE to network)</li> <li>K_GG59_UE2NT_COMBINED_EPS_IMSI_DETACH (0x13 in UE to network)</li> <li>K_GG59_NT2UE_REATTACH_REQUIRED (0x01 in network to UE)</li> <li>K_GG59_NT2UE_REATTACH_NOT_REQUIRED (0x02 in network to UE)</li> <li>K_GG59_NT2UE_IMSI_DETACH (0x03 in network to UE)</li> </ul> <p>The mask K_GG59_POWEROFF_MASK can be used to get “Switch off” bit.</p>		
DrData	DRDATA_DETACHTYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from TsdBreakout that contains it.		
<b>8.31.1.10</b>			
Field	EPS Update Type	Spec Ref	TS 24.301 Section 9.9.3.14
TsdBreakout	updateType	Format	m (value)
Details	<p>This field should be extracted from any message that contains it. IEI bits must not be extracted i.e. only the “EPS Update Type” and “Active Flag” field bits.</p> <p>The mask K_GG59_UPDATETYPE_MASK can be used to get “EPS Update Type”. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_TA_UPDATING</li> <li>K_GG59_COMBINED_TA_LA_UPDATING</li> <li>K_GG59_COMBINED_TA_LA_UPDATING_WITH_IMSI_ATTACH</li> <li>K_GG59_PERIODIC_UPDATING</li> </ul> <p>The mask K_GG59_ACTIVEFLAG_MASK can be used to get “Active Flag” bit. One of:</p> <ul style="list-style-type: none"> <li>K_GG59_NO_BEARER_ESTABLISHMENT_REQUESTED</li> <li>K_GG59_BEARER_ESTABLISHMENT_REQUESTED</li> </ul>		
DrData	DRDATA_UPDATE_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.11</b>			
Field	Tracking Area Identity (TAI)	Spec Ref	TS 24.301 Section 9.9.3.32
	Tracking Area Identity List > TAI (X-N)		TS 24.301 Section 9.9.3.33
TsdBreakout	trackingAreaId	Format	s_gg59_cellId (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>Tracking Area Identity List will <b>not</b> be extracted yet, since its flexible and complicated coding format.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_TAI (21). See also section</p>		

	3.4.3 (10) for the coding format of subfield value. The subfield a7CellIdType_b should be set to K_GG59_A7_CITYPE_TAI_EMM for Tracking Area Identity (not for Tracking Area Identity List -> TAI).		
DrData	DRDATA_TRACKAREAID_TAG	Format	CB_OCTETSTR (OctetString; Multi-Value)
Details	This field should be extracted from any message that contains it. Note: This field is implemented as Single-Value yet and reserved when necessary.		
DrData	DRDATA_TRACK_AREA_CODE_TAG		CB_UBIT32
Details	This field should be extracted from any message that contains it. Note: This field is implemented as Single-Value yet and reserved when necessary.		
<b>8.31.1.12</b>			
Field	EMM Cause	Spec Ref	TS 24.301 Section 9.9.3.9
TsdBreakout	emmCause	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_EMM_CAUSE_IMSI_UNKNOWN_IN_HSS K_GG59_EMM_CAUSE_ILLEGAL_UE .....		
DrData	DRDATA_EMM_CAUSE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_CAUSE_CATEGORY_TAG	Format	CB_UBIT32
Details	<del>This field should be set according to EMM Cause for IPCore/KPI E requirements.</del>		
<b>8.31.1.13</b>			
Field	Location Area Identification (LAI)	Spec Ref	TS 24.301 Section 8.2.26, and 9.9.2.2
	Old Location Area Identification (LAI)		TS 24.301 Section 8.2.4, 8.2.29, and 9.9.2.2
TsdBreakout	locationAreaId	Format	s_gg59_cellId (dynamic)
Details	This field should be extracted from any message that contains it. The subfield discriminator_b should be set to K_GG59_CIDISC_LAI (4). See also section 3.4.3 (2) for the coding format of subfield value. The subfield a7CellIdType_b should not be set (reserved for future to distinguish LAI or Old LAI).		
DrData	DRDATA_LOCAREAID_TAG	Format	CB_OCTETSTR (OctetString)
DrData	DRDATA_OLDLOCAREAID_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.14</b>			
Field	EPS Attach Type	Spec Ref	TS 24.301 Section 9.9.3.11
TsdBreakout	attachType	Format	m (value)
Details	This field should be extracted from any message that contains it. IEI bits must not be extracted i.e. only the “EPS attach type” field bits. One of: K_GG59_EPS_ATTACH K_GG59_COMBINED_EPS_IMSI_ATTACH		
DrData	DRDATA_ATTACH_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.15</b>			
Field	NAS security algorithms	Spec Ref	TS 24.301 Section 9.9.3.23

TsdBreakout	nasSecurityAlgorithms	Format	m (value)
Details	<p>This field should be extracted from any message that contains it.</p> <p>It's composed of 2 sub fields:</p> <p>Type of ciphering algorithm and Type of integrity protection algorithm.</p> <p>Type of integrity protection algorithm will be one of:            K_GG59_EPS_128E1A1            K_GG59_EPS_128E1A2            K_GG59_EPS_E1A3            K_GG59_EPS_E1A4            K_GG59_EPS_E1A5            K_GG59_EPS_E1A6            K_GG59_EPS_E1A7</p> <p>The macro M_GG59_GET_NAS_SECURITY_ALGORITHMS_INTEGRITY_TYPE can be used to get "Type of integrity protection algorithm" bits.</p> <p>Type of ciphering algorithm will be one of:            K_GG59_EPS_EEA0            K_GG59_EPS_EEA1            K_GG59_EPS_EEA2            K_GG59_EPS_EEA3            K_GG59_EPS_EEA4            K_GG59_EPS_EEA5            K_GG59_EPS_EEA6            K_GG59_EPS_EEA7</p> <p>The macro M_GG59_GET_NAS_SECURITY_ALGORITHMS_CIPHER_TYPE can be used to get "Type of ciphering protection algorithm" bits.</p>		
DrData	DRDATA_NAS_SECURITY_ALGORITHM_MS_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.16</b>			
Field	Authentication parameter AUTN	Spec Ref	TS 24.301 Section 9.9.3.2
TsdBreakout	AUTN	Format	s_gg59_pbString (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The pointer subfield string_pb should be set to the first octet of AUTN value part. The subfield length_u should be actual length in octets of AUTN value part (not including tag and length).</p>		
DrData	DRDATA_AUTN_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.17</b>			
Field	Authentication parameter RAND	Spec Ref	TS 24.301 Section 9.9.3.3
TsdBreakout	gprsmmRANDauthParam_ba	Format	b (static Array)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_RAND_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.31.1.18</b>			
Field	Authentication response parameter	Spec Ref	TS 24.301 Section 9.9.3.4

TsdBreakout	XRES	Format	s_gg59_pbString (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The pointer subfield string_pb should be set to the first octet of XRES value part. The subfield length_u should be actual length in octets of XRES value part (not including tag and length).</p>		
DrData	DRDATA_XRES_TAG	Format	CB_OCTETSTR
Details	<p>This field should be extracted from any message that contains it.</p>		
<b>8.31.1.19</b>			
Field	NAS key set identifier	Spec Ref	TS 24.301 Section 9.9.3.21
TsdBreakout	nasKeySetId	Format	m (value)
Details	<p>This field should be extracted from any message that contains it.</p> <p>It's composed of 2 sub fields:</p> <p>Type of security context and NAS key set identifier.</p> <p>Type of security context flag will be one of: K_GG59_NASKEY_TSC_NATIVE K_GG59_NASKEY_TSC_MAPPED The macro M_GG59_GET_NASKEY_TSC can be used to get "TSC" bit.</p> <p>NAS key set identifier will be K_GG59_NASKEY_NOKEYAVAILABLE or other values. The macro M_GG59_GET_NASKEY_SETID can be used to get "NAS key set identifier" bits.</p>		
DrData	DRDATA_NAS_KEY_SET_ID_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p>		
<b>8.31.1.20</b>			
Field	Replayed Nonceue / Nonceue	Spec Ref	TS 24.301 Section 9.9.3.25
TsdBreakout	nonceUe	Format	m (value)
Details	<p>This field should be extracted from any message that contains it.</p>		
DrData	DRDATA_NONCE_UE_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p>		
<b>8.31.1.21</b>			
Field	Noncemme	Spec Ref	TS 24.301 Section 9.9.3.25
TsdBreakout	nonceMme	Format	m (value)
Details	<p>This field should be extracted from any message that contains it.</p>		
DrData	DRDATA_NONCE_MME_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p>		
<b>8.31.1.22</b>			
Field	Location Area Identification (LAI)	Spec Ref	TS 24.301 Section 8.2.26, and 9.9.2.2
	Old Location Area Identification (LAI)		TS 24.301 Section 8.2.4, 8.2.29, and 9.9.2.2
TsdBreakout	locationAreaId	Format	s_gg59_cellId (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_LAI (4). See also section 3.14.3 (2) for the coding format of subfield value.</p> <p>The subfield a7CellIdType_b should be set to K_GG59_A7_CITYTYPE_LAI for LAI; while set to K_GG59_A7_CITYTYPE_LAI_OLD for Old LAI</p>		

	The subfield a7CellIdType_b should not be set (reserved for future to distinguish LAI or Old LAI).		
DrData	DRDATA_LOCAREAID_TAG	Format	CB_OCTETSTR (OctetString)
Details	Location Area Identification should be extracted to this field		
DrData	DRDATA_OLDLOCAREAID_TAG	Format	CB_OCTETSTR (OctetString)
Details	Old Location Area Identification should be extracted to this field		

## 8.32 EPS Session Management (ESM)

The detailed information of this protocol refers to [Protocol ERS](#).

### 8.32.1 Fields

8.32.1.1			
Field	Protocol Discriminator	Spec Ref	TS 24.301.413 Section 9.2 and TS 24.007 Section 11.2.3.1.1
TsdBreakout	bssapProt	Format	m (value)
Details	This field is not implemented yet and reserved when necessary.		
DrData	None	Format	N/A
Details	N/A		
8.32.1.2			
Field	Message Type	Spec Ref	TS 24.301.413 Section 9.8
TsdBreakout	esmMessageType	Format	m (mval)
Details	This field is implemented as multi-value field. It should be extracted from any message that contains it. The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-tie for multiple ESM messages. One of: K_GG59_ESM_MSG_ACTIVATE_DEFAULT_EPS_BEARER_CONTEXT_REQUEST K_GG59_ESM_MSG_ACTIVATE_DEFAULT_EPS_BEARER_CONTEXT_ACCEPT .....		
DrData	DRDATA_SECONDARY_PROTOCOL_TAG	Format	CB_UBIT32
Details	This field should be to IPCORE_PROTOCOL_ESM(2036) for ESM message. See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface. See also 8.30.1.20 the special APIs for DRDATA_SECONDARY_PROTOCOL_TAG in S1AP DataModel.		
DrData	DRDATA_ESM_MSG_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. See also 8.30.2.3 DataModel hierarchy structure for S1-MME interface.		
8.32.1.3			
Field	Procedure Transaction Identity	Spec Ref	TS 24.301 Section 9.4 and TS 24.007 Section 11.2.3.1a

TsdBreakout	transactionId	Format	m (mval)
Details	<p>Procedure Transaction Identity should be always present in ESM message header.</p> <p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-tie for multiple ESM messages.</p> <p>0 means "No procedure transaction identity assigned" and 255 is Reserved.</p>		
DrData	DRDATA_PROTO_TRANS_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.32.1.4</b>			
Field	Transaction Identifier	Spec Ref	TS 24.301 Section 9.9.4.17, TS 24.008 Section 10.5.6.7, and 24.007 Section 11.2.3.1.3
TsdBreakout	transIdFlag	Format	m (mval)
TsdBreakout	transIdValue	Format	m (mval)
Details	<p>The 2 fields transIdFlag and transIdValue are used as multi-value. They should be extracted from any ESM message that contains the Transaction Identifier field.</p> <p>The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-tie for multiple ESM messages.</p> <p>The field transIdFlag identifies who allocated the TI value for this transaction. One of:  <b>K_GG59_TIFLAG_FROM_ORIGINATOR</b>  <b>K_GG59_TIFLAG_TO_ORIGINATOR</b></p> <p>If TI value has no extension (0 -- 6), the field transIdValue should be binary value of bit7 to bit5 of octet1. If TI value has extension (7 -- 127), the field transIdValue should be binary value of bit7 to bit1 of octet2.</p>		
DrData	DRDATA_SMTRANSID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_TRANSIDDIR_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.32.1.5</b>			
Field	EPS Bearer Identity	Spec Ref	TS 24.301 Section 9.3.2 and TS 24.007 Section 11.2.3.1.5
TsdBreakout	bearerId	Format	m (mval)
Details	<p>EPS Bearer Identity is always present in ESM message header.</p> <p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-tie for multiple ESM messages.</p>		
DrData	DRDATA_BEARER_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.32.1.6</b>			
Field	Linked EPS Bearer Identity	Spec Ref	TS 24.301 Section 9.9.4.6
TsdBreakout	linkedBearerId	Format	m (mval)
Details	<p>Linked EPS Bearer Identity is a Mandatory parameter in the specific ESM messages.</p> <p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-</p>		

	tie for multiple ESM messages.		
DrData	DRDATA_LINKED_BEARER_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.32.1.7</b>			
Field	Access Point Name	Spec Ref	TS 24.301 Section 9.9.4.1
TsdBreakout	accessPointName	Format	s_gg59_pbString (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-tie for multiple ESM messages.</p> <p>The s_gg59_pbString pointer is set to the first octet in packet buffer after the length octet.</p>		
DrData	DRDATA_ACCESSPOINTNAME_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.32.1.8</b>			
Field	ESM Cause	Spec Ref	TS 24.301 Section 9.9.4.4
TsdBreakout	esmCause	Format	m (mval)
Details	<p>This field is implemented as multi-value field. It should be extracted from any message that contains it.</p> <p>The context bits K_GG59_CTXTMASK_ESM_MSG should be implemented to support field-tie for multiple ESM messages.</p> <p>One of:</p> <p>K_GG59_ESM_CAUSE_OPERATOR_DETERMINED_BARRING</p> <p>K_GG59_ESM_CAUSE_INSUFFICIENT_RESOURCES</p> <p>.....</p>		
DrData	DRDATA_ESM_CAUSE_TAG	Format	CB_UBIT32
Details	This field should be extracted any message that contains it.		
DrData	DRDATA_CAUSE_CATEGORY_TAG	Format	CB_UBIT32
Details	This field should be set according to ESM Cause for IPCore/KPI E requirements.		
8.32.1.9			
Field	PDN Address	Spec Ref	TS 24.301 Section 9.9.4.9
TsdBreakout	pdnAddress	Format	s_gg59_IPAddress (mval)
Details	<p>This field should be extracted as the following:</p> <p>If PDN type value is IPv4 (1):</p> <p>pdnAddress.a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01).</p> <p>pdnAddress.ipAddr.ipv4_m should be extract from each PDN address information (IPv4 Address) in the message.</p> <p>Else if PDN type value is IPv6 (2):</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02)</p> <p>The IPv6 interface identifier which occupy the low 8 bytes should be extracted to the low 8 bytes of subfield ipAddr.ipv6_ba and the other bytes should be set to 0.</p> <p>Else if PDN type value is IPv4v6 (3):</p> <p>As the field is a multi-value field, both ipv4 and ipv6 subfields should be extracted.</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02)</p> <p>The IPv6 interface identifier which occupy the low 8 bytes should be extracted to the low 8 bytes of subfield ipAddr.ipv6_ba and the other bytes should be set to 0.</p> <p>The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01).</p> <p>The IPv4 address should be extracted to the subfield ipAddr.ipv4_m.</p>		

	Else this field should not be extracted.		
DrData	DRDATA_PDN_ADDRESS_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains ipv4 subfield.		
DrData	DRDATA_IPV6_PDN_ADDRESS_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains ipv6 subfield.		
8.32.1.10			
Field	Request Type	Spec Ref	3GPP TS 24.301
TsdBreakout	RequestType	Format	m (value)
Details	Request Type will be extracted in ESM PDN connectivity request message		
DrData	DRDATA_REQUEST_TYPE_TAG	Format	UBIT32
Details	This field should be extracted from any message that contains it		

## 8.33 Diameter

The detailed information of this protocol refers to [Protocol ERS](#).

### 8.33.1 Fields

8.33.1.1			
Field	Command Flags and Command-Code	Spec Ref	RFC 3588 Section 3
TsdBreakout	diamCommand	Format	m (value)
Details	<p>This field should extract from Command Flags and Command-Code in Diameter Header. Protocol Breakout will do the mapping for some Ericsson and Siemens specific command codes to standard 3GPP/IETF codes. The mapping is ported from pclNgN Diameter Breakouts, as the following:</p> <ul style="list-style-type: none"> <li>(1) If Application-ID (see also 8.33.1.2) is 10415 (IMS_Cx_Siemens): Siemens specific command codes 1001 - 1006 should be mapped 300 - 305 respectively.</li> <li>(2) If Application-ID (see also 8.33.1.2) is 16777216 (IMS_Cx_3GPP): Ericsson specific command codes 500, 502, 503, and 506 should be mapped 258, 306, 302 and 303 respectively.</li> <li>(3) For other command codes (unsupported customer variant codes, or no mapped one in IETF/3GPP, for example K_GG59_DIAMETER_ERICSSON_LOCATION_UPDATE (501)), no mapping will be done and raw codes will be provided.</li> </ul>		
DrData	DRDATA_PROTOCOL_TYPE_TAG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_DIAMETER(2026) for Diameter message.		
DrData	DRDATA_MESSAGE_TYPE_TAG	Format	CB_UBIT32
Details	<p>This field is a combination of Command-Code and the value of the Request Flag in Diameter header. The Diameter Message Type field can be get from the mask bits K_GG59_DIAMETER_MESSAGE_TYPE_MASK (0x80fffff) of field diamCommand. It can also be calculated as the following formula:</p> <p>MessageType = (RequestFlag &lt;&lt; 31)   CommandCode. One of:  K_GG59_DIAMETER_MT_CER  K_GG59_DIAMETER_MT_CEA  .....</p> <p>The macro M_GG59_GET_DIAMETER_RAFLAG(MessageType) can be used to get Request Flag. And the macro M_GG59_GET_DIAMETER_CMDCODE(MessageType) can</p>		

	be used to get Command-Code.		
DrData	DRDATA_RESPONSE_CODE_TAG	Format	CB_UBIT32
Details	<p>If it's a Diameter Answer message, this field should be set to Command-Code in Diameter Header. Otherwise, this field should not be set.</p> <p><b>Note:</b> Applications should avoid using this field if possible, since it will be obsolete as it provides redundant info as DRDATA_MESSAGE_TYPE_TAG.</p> <p>This field should be provided for existing interfaces (including Gi, Cx, Dx, Sh, and IMS in IPCore A.02.20) for backward compatible purpose.</p> <p>This field will <b>not</b> be provided in S6a and new interfaces in A.03.00 or later versions.</p>		
DrData	DRDATA_REQUEST_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	<p>If it's a Diameter Request message, this field should be set to the abbreviated name for the Diameter Command. Otherwise, this field should not be set.</p> <p>This is a derived field and the derivation is done at the Diameter Breakout Engine.</p> <p><b>Note:</b> Applications should avoid using this field if possible, since it will be obsolete as it provides redundant info as DRDATA_MESSAGE_TYPE_TAG.</p> <p>This field should be provided for existing interfaces (including Gi, Cx, Dx, Sh, and IMS in IPCore A.02.20) for backward compatible purpose.</p> <p>This field will <b>not</b> be provided in S6a and new interfaces in A.03.00 or later versions.</p>		
DrData	DRDATA_COMMAND_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	<p>This field should be set to the full name for the Diameter Command.</p> <p>If Accounting-Record-Type (AVP Code 480; See 5.4.1.30) is present, the following strings should be appended to the full command name accordingly:</p> <ul style="list-style-type: none"> <li>"[Event]" (for EVENT_RECORD)</li> <li>"[Start]" (for START_RECORD)</li> <li>"[Interim]" (for INTERIM_RECORD)</li> <li>"[Stop]" (STOP_RECORD)</li> </ul> <p><b>Note:</b> Applications should avoid using this field if possible, since it will be obsolete as it provides redundant info as DRDATA_MESSAGE_TYPE_TAG.</p> <p>This field should be provided for existing interfaces (including Gi, Cx, Dx, Sh, and IMS in IPCore A.02.20) for backward compatible purpose.</p> <p>This field will <b>not</b> be provided in S6a and new interfaces in A.03.00 or later versions.</p>		
DrData	DRDATA_CALL_TYPE_TAG	Format	CB_UBIT32
Details	<p>If the Diameter DRDATA_MESSAGE_TYPE_TAG is one of:</p> <ul style="list-style-type: none"> <li>K_GG59_DIAMETER_MT_UAR</li> <li>K_GG59_DIAMETER_MT_UAA (300)</li> <li>K_GG59_DIAMETER_MT_SAR</li> <li>K_GG59_DIAMETER_MT_SAA (301)</li> <li>K_GG59_DIAMETER_MT_MAR</li> <li>K_GG59_DIAMETER_MT_MAA (303)</li> <li>K_GG59_DIAMETER_MT_RTR</li> <li>K_GG59_DIAMETER_MT_RTA (304)</li> </ul> <p>this field should be set to ExtendedInfoEnum::CfrType_Registration (4) .</p> <p>Otherwise, this field should be set to ExtendedInfoEnum::CfrType_Standard (512).</p>		
<b>8.33.1.2</b>			
Field	Application-ID	Spec Ref	RFC 3588 Section 3
TsdBreakout	applicationId	Format	m (value)

Details	This field should be extracted from Diameter Header. One of: K_GG59_DIAM_APPID_COMMON_MSG K_GG59_DIAM_APPID_NASREQ K_GG59_DIAM_APPID_BASE_ACCT K_GG59_DIAM_APPID_CC K_GG59_DIAM_APPID_3GPP_CX_DX K_GG59_DIAM_APPID_3GPP_SH K_GG59_DIAM_APPID_3GPP_S6A_S6D K_GG59_DIAM_APPID_3GPP_S13_S13B .....		
DrData	DRDATA_APPLICATION_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from Diameter Header.		
<b>8.33.1.3</b>			
Field	Hop-by-Hop Identifier	Spec Ref	RFC 3588 Section 3
TsdBreakout	hopByHopId	Format	m (value)
Details	This field should be extracted from Diameter Header.		
DrData	DRDATA_HOP_TO_HOP_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from Diameter Header.		
<b>8.33.1.4</b>			
Field	End-to-End Identifier	Spec Ref	RFC 3588 Section 3
TsdBreakout	endToEndId	Format	m (value)
Details	This field should be extracted from Diameter Header.		
DrData	DRDATA_END_TO_END_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from Diameter Header.		
<b>8.33.1.5</b>			
Field	User-Name (AVP Code 1; UTF8String)	Spec Ref	RFC 3588 Section 8.14
TsdBreakout	userName	Format	s_gg59_pbString (dynamic)
Field	User-Name->IMSI	Spec Ref	RFC 3588 Section 8.14
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	In S6a/S6d interfaces, User-Name will contain IMSI digits. So it only extracts the IMSI digits to IMSIaddress. See also 8.33.1.17. For other interfaces, not only the IMSI should be extracted if it present, but also the user-name should be extracted to userName.		
DrData	DRDATA_USER_NAME_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from userName.		
DrData	DRDATA_NAI_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from userName.		
DrData	DRDATA_KEYIMSI_TAG	Format	CB_TELNO
Details	The IMSI should be extracted to this tag.		
<b>8.33.1.6</b>			
Field	Result-Code (AVP Code 268; Unsigned32)	Spec Ref	RFC 3588 Section 7.1

Field	Experimental-Result-Code (AVP Code 298; Unsigned32)	Spec Ref	RFC 3588 Section 7.7
Field	Experimental-Result -> Vendor-Id (AVP Code 297 Group -> AVP Code 266; Unsigned32)	Spec Ref	RFC 3588 Section 7.6 and 8.32.3
TsdBreakout	diamResultCode	Format	m (mval)
Details	<p>This field should be extracted from Result-Code (AVP Code 268) or Experimental-Result-Code (AVP Code 298).</p> <p>The context bits K_GG59_CTXTMASK_DIAM_RESCODE (0x0000ffff) of this field should be extracted from Vendor-Id (AVP Code 266) when Vendor-Id (AVP Code 266) is present as sub-AVP in Experimental-Result (AVP Code 297 Grouped Type).</p> <p>These constants should be added based on TS 29.272 section 7.4</p> <p>K_GG59_DIAMETER_ERROR_UNKNOWN_EPS_SUBSCRIPTION (5420)</p> <p>K_GG59_DIAMETER_ERROR_RAT_NOT_ALLOWED (5421)</p> <p>K_GG59_DIAMETER_ERROR_EQUIPMENT_UNKNOWN (5422)</p>		
DrData	DRDATA_CAUSE_CODE_TAG	Format	CB_UBIT32
Details	This field should be extracted from the field value of diamResultCode.		
DrData	DRDATA_CAUSE_CODE_VENDORID_T AG	Format	CB_UBIT32
Details	<p>If the context bits K_GG59_CTXTMASK_DIAM_RESCODE (0x0000ffff) of diamResultCode it's not zero, the context bits should be extracted to this field.</p> <p>Otherwise, this field should not be set.</p>		
DrData	DRDATA_CAUSE_CATEGORY_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. <b>TBD</b>		
<b>8.33.1.7</b>			
Field	Session-Id (AVP Code 263; UTF8String)	Spec Ref	RFC 3588 Section 8.8
TsdBreakout	sessionId	Format	s_gg59_pbString (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The pointer subfield string_pb should be set to the first octet of AVP Data part (not including optional Vendor-ID) in packet buffer. The subfield length_u should be actual length in octets of AVP Data part (not including optional Vendor-ID).</p>		
DrData	DRDATA_CALL_ID_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.8</b>			
Field	Framed-IP-Address (AVP Code 8)	Spec Ref	RFC 2865 Section 5.8
TsdBreakout	framedIPAddr	Format	m (mval)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MSIP_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.9</b>			
Field	Calling-Station-Id (AVP Code 31; UTF8String?)	Spec Ref	RFC 2865 Section 5.31
TsdBreakout	callingStationId	Format	s_gg59_pbString (dynamic)

Details	This field should be extracted from any message that contains it. The pointer subfield string_pb should be set to the first octet of AVP Data part (not including optional Vendor-ID) in packet buffer. The subfield length_u should be actual length in octets of AVP Data part (not including optional Vendor-ID).		
DrData	DRDATA_CALLINGSTRING_TAG	Format	CB_TELNO
Details	This field should be extracted from either the Calling-Station-Id (AVP Code 31) or the Calling-Party-Address (AVP Code 831) (See also 8.33.1.10).		
DrData	DRDATA_MSID_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from Calling-Station-Id (not from other AVPs).		
<b>8.33.1.10</b>			
Field	Calling-Party-Address (AVP Code 831; UTF8String))	Spec Ref	3GPP TS 32.225 Section 7.2.8
TsdBreakout	callingName	Format	b (static Array)
Details	This field should be extracted from any message that contains it. The array must be null terminated so that applications can get the actual length of the string. If the number of characters is greater than 51 (K_GG26_CALLINGNAME_LEN - 1) then the first 51 characters must be extracted and the string then null terminated.		
DrData	DRDATA_CALLINGSTRING_TAG	Format	CB_TELNO
Details	This field should be extracted from either the Calling-Station-Id (AVP Code 31; See also 8.33.1.9) or the Calling-Party-Address (AVP Code 831; See also 8.33.1.10).		
<b>8.33.1.11</b>			
Field	Accounting-Input-Octets (AVP Code 363; Unsigned64)	Spec Ref	RFC 4005 Section 8.1
TsdBreakout	acctInputOctets	Format	e (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ACCT_INPUT_OCTETS_TAG	Format	CB_UBIT64
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.12</b>			
Field	Accounting-Output-Octets (AVP Code 364; Unsigned64)	Spec Ref	RFC 4005 Section 8.2
TsdBreakout	acctOutputOctets	Format	e (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ACCT_OUTPUT_OCTETS_TA G	Format	CB_UBIT64
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.13</b>			
Field	Accounting-Input-Packets (AVP Code 365; Unsigned64)	Spec Ref	RFC 4005 Section 8.3
TsdBreakout	acctInputPackets	Format	e (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ACCT_INPUT_PACKETS_TA G	Format	CB_UBIT64
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.14</b>			

Field	Accounting-Output-Packets (AVP Code 366; Unsigned64)	Spec Ref	RFC 4005 Section 8.4
TsdBreakout	acctOutputPackets	Format	e (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ACCT_OUTPUT_PACKETS_T AG	Format	CB_UBIT64
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.15</b>			
Field	CC-Input-Octets (AVP Code 412; Unsigned64)	Spec Ref	RFC 4006 Section 8.24
TsdBreakout	ccInputOctets	Format	e (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_CREDIT_INPUT_OCTETS_TA G	Format	CB_UBIT64
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.16</b>			
Field	CC-Output-Octets (AVP Code 414; Unsigned64)	Spec Ref	RFC 4006 Section 8.25
TsdBreakout	ccOutputOctets	Format	e (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_CREDIT_OUTPUT_OCTETS_T AG	Format	CB_UBIT64
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.17</b>			
Field	3GPP-IMSI (3GPP Sub-Attribute 1)	Spec Ref	3GPP TS 29.061 Section 16.4.7
Field	IMSI (as User-Name in S6a/S6d) (AVP Code 1; UTF8String)	Spec Ref	RFC 3588 Section 8.14 3GPP TS 29.272 Section 5
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains IMSI field. See also 3.4.4 (4) the conversion from UTF8String to standard compact TBCD digit format.		
DrData	DRDATA_KEYIMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.18</b>			
Field	3GPP-NSAPI (3GPP Sub-Attribute 10)	Spec Ref	3GPP TS 29.061 Section 16.4.7
TsdBreakout	r3GPPnsapi	Format	m (value)
Details	This field should be extracted from any message that contains it. 3GPP-NASPU is encoded as its hexadecimal representation, using one UTF-8 encoded character. It should be converted to hexadecimal number. For example, “0” – “9” to 0x00 - 0x09; “a” – “f” to 0x0a - 0x0f; “A” – “F” to 0x0a - 0x0f. The rest character should be treated as 0x00.		
DrData	DRDATA_NSAPI_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.19</b>			

Field	3GPP-IMEISV (3GPP Sub-Attribute 20)	Spec Ref	3GPP TS 29.061 Section 16.4.7
Field	IMEI (AVP Code 1402; UTF8String)	Spec Ref	3GPP TS 29.272 Section 7.3.4
TsdBreakout	IMEIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it. See also 3.4.4 (4) the conversion from UTF8String to standard compact TBCD digit format.		
DrData	DRDATA_IMEI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.20</b>			
Field	3GPP-RAT-Type (3GPP Sub-Attribute 21)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.50
Field	RAT-Type (AVP Code 1032; Enumerated)	Spec Ref	3GPP TS 29.272 Section 7.3.13 & 3GPP TS 29.212 Section 5.3.31
TsdBreakout	ratType	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_RAT_TYPE_TAG	Format	CB_UBIT32
Details	<p>This field should be extracted from any message that contains it.</p> <p><b>Note:</b> The enumerate values for RAT-TYPE definition is not compatible between Gi and S6a/etc interfaces (8.33.1.20). Protocol Breakout will extract the raw field values without any mapping.</p> <p>For Diameter for Gi, from GTP 3GPP TS 29.212 Section 7.7.50: One of:</p> <ul style="list-style-type: none"> <li>K_GG59_RAT_GTP_UTRAN (1)</li> <li>K_GG59_RAT_GTP_GERAN (2)</li> <li>K_GG59_RAT_GTP_WLAN (3)</li> <li>K_GG59_RAT_GTP_GAN (4)</li> <li>K_GG59_RAT_GTP_HSPA_EVOLUTION (5)</li> </ul> <p>For Diameter for SGi, One of:</p> <ul style="list-style-type: none"> <li>K_GG59_RAT_GTP_EUTRAN (6)-----TS 29.274 817</li> <li>K_GG59_RAT_IEEE_80216E (101)-----below from TS 29.061 16.4.7</li> <li>K_GG59_RAT_3GPP2_EHRPD (102)</li> <li>K_GG59_RAT_3GPP2_HRPD (103)</li> <li>K_GG59_RAT_3GPP2_1XRTT (104)</li> </ul> <p>For Diameter for S6a/etc, from 3GPP TS 29.212 Section 5.3.31: One of:</p> <ul style="list-style-type: none"> <li>K_GG59_RAT_WLAN (0)</li> <li>K_GG59_RAT_UTRAN (1000)</li> <li>K_GG59_RAT_GERAN (1001)</li> <li>K_GG59_RAT_GAN (1002)</li> <li>K_GG59_RAT_HSPA_EVOLUTION (1003)</li> <li>K_GG59_RAT_EUTRAN (1004)</li> <li>K_GG59_RAT_CDMA2000_1X (2000)</li> <li>K_GG59_RAT_HRPD (2001)</li> <li>K_GG59_RAT_UMB (2002)</li> </ul>		
<b>8.33.1.21</b>			

Field	3GPP-User-Location-Info -> CGI (3GPP Sub-Attribute 22)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.51
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (mval)
Details	<p>This field should be extracted from CGI digits when 3GPP-User-Location-Info -&gt; Geographic Location Type is 0 Cell Global Identification (CGI).</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_CGI (0). See also section 3.4.3 (1) for the coding format of subfield value.</p>		
DrData	DRDATA_ULI_CGI_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.22</b>			
Field	3GPP-User-Location-Info -> SAI (3GPP Sub-Attribute 22)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.51
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (mval)
Details	<p>This field should be extracted from SAI digits when 3GPP-User-Location-Info -&gt; Geographic Location Type is 1 Service Area Identity (SAI).</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_SAI (11). See also section 3.4.3 for the coding format of subfield value.</p>		
DrData	DRDATA_ULI_SAI_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.23</b>			
Field	3GPP-User-Location-Info -> RAI (3GPP Sub-Attribute 22)	Spec Ref	3GPP TS 29.061 Section 16.4.7 & 3GPP TS 29.060 Section 7.7.51
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (mval)
Details	<p>This field should be extracted from RAI digits when 3GPP-User-Location-Info -&gt; Geographic Location Type is 2 Routing Area Identification (RAI).</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_RAI (22). See also section 3.4.3 (1) for the coding format of subfield value.</p>		
DrData	DRDATA_ULI_RAI_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ULI_LAI_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from LAI digits if one of DRDATA_ULI_CGI_TAG, DRDATA_ULI_SAI_TAG, or DRDATA_RAI_CGI_TAG is present.		
<b>8.33.1.24</b>			
Field	SDP-Media-Name (AVP Code 844; UTF8String)	Spec Ref	3GPP TS 32.225 Section 7.2.29, IETF RFC 4566 Section 8.304
TsdBreakout	sdpMediaName	Format	s_gg59_pbString (mval)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_LOCAL_SDPMETHOD_TAG G/DRDATA_REMOTE_SDPMETHOD_TAG	Format	
Details	See also 8.33.1.25.		
<b>8.33.1.25</b>			
Field	SDP-Session-Description (AVP Code 842; UTF8String)	Spec Ref	3GPP TS 32.225 Section 7.2.30, IETF RFC 4566 Section 5
TsdBreakout	sdpSessionDesc	Format	s_gg59_pbString (mval)
Details	This field should be extracted from any message that contains it.		

DrData	DRDATA_LOCAL_SDPM_ENDPOINT_TA G	Format	CB_OCTETSTR (TerminatedString)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The first RTP and port pair in the Diameter message, the format is “IP Address/Port”, such as 130.1.1.2/102</p> <p>The IP Address is extracted from SDP-Session-Description (AVP Code 842; See 8.33.1.25). The Port number is extracted from SDP-Media-Name (AVP Code 844; See 8.33.1.24)</p> <p>Both IP Address and Port number can be extracted from Flow-Description (AVP Code 507; See 8.33.1.35)</p>		
DrData	DRDATA_REMOTE_SDPM_ENDPOINT_TA G	Format	CB_OCTETSTR (TerminatedString)
Details	<p>The second RTP and port pair in the Diameter message, the format is “IP Address/Port”, such as 130.1.1.2/102</p> <p>The IP Address is extracted from SDP-Session-Description (AVP Code 842; See 8.33.1.25). The Port number is extracted from SDP-Media-Name (AVP Code 844; See 8.33.1.24)</p> <p>Both IP Address and Port number can be extracted from Flow-Description (AVP Code 507; See 8.33.1.35)</p>		
<b>8.33.1.26</b>			
Field	MSISDN (AVP Code 701; OctetString)	Spec Ref	3GPP TS 29.272 Section 7.3.2, 3GPP TS 29.329 Section 6.3.2
TsdBreakout	MSISDN	Format	s_gg61_addr (dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MSISDN_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.27</b>			
Field	3GPP2-MEID (AVP Code 1471; OctetString)	Spec Ref	3GPP TS 29.272 Section 7.3.6 3GPP2 A.S0022 Annex A
TsdBreakout	MEID	Format	s_gg61_addr (dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MEID_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.28</b>			
Field	Cancellation-Type (AVP Code 1420; Enumerated)	Spec Ref	3GPP TS 29.272 Section 7.3.24
TsdBreakout	locationCancelType	Format	m (value)
Details	<p>This field should be extracted from any message that contains it. One of:</p> <p>K_GG59_DIAMETER_MME_UPDATE_PROCEDURE</p> <p>K_GG59_DIAMETER_SGSN_UPDATE_PROCEDURE</p> <p>K_GG59_DIAMETER_SUBSCRIPTION_WITHDRAWAL</p> <p>K_GG59_DIAMETER_UPDATE_PROCEDURE_IWF</p> <p>K_GG59_DIAMETER_INITIAL_ATTACH_PROCEDURE</p>		
DrData	DRDATA_CANCELTYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.29</b>			
Field	Service-Selection (AVP Code 493; UTF8String)	Spec Ref	3GPP TS 29.272 Section 7.3.36

TsdBreakout	<code>accessPointName</code> serviceSelection	Format	s_gg59_pbString(dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_SERVICE_SELECTION_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from any message that contains it. The contents of this field shall be formatted as a character string composed of one or more labels separated by dots ("."),		
Field	Destination-Realm (AVP is 283; DiameterIdentity)	Spec Ref	RFC3588 Section 6.6
TsdBreakout	destinationRealm	Format	s_gg59_pbString(dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_DESTINATION_REALM_TAG	Format	CB_OCTETSTR(TerminatedString)
Details	This field should be extracted from any message that contains it. The contents of this field shall be formatted as a character string composed of one or more labels separated by dots ("."),		
DrData	DRDATA_ACCESSPOINTNAME_TAG	Format	CB_OCTETSTR (OctetString)
Details	The field is a combination of Service-Selection and Destination-Realm, Service-Selection shall contain either the APN Network Identifier or wild card value "*". Destination-Realm shall contains the realm portion. Breakout will combine the APN NI from Service-Selection and realm part from Destination-Realm to a complete APN. e.g. if the value of Service-Selection is "epclite2" while the value of Destination-Realm is "apn.epc.mnc980.mcc310.3gpp.org ", then the APN will be combined as "epclite2.apn.epc.mnc980.mcc310.3gpp.org". If a wild card value "*" is contained in Service-Selection, only the wild card value will be populated to this field. An APN consists of one or more labels. Each label is coded as a one octet length field followed by that number of octets coded as 8 bit ASCII characters. The detailed encoding format see also section 3.2.3		
<b>8.33.1.30</b>			
Field	Accounting-Record-Type (AVP Code 480; Enumerated)	Spec Ref	RFC 3588 Section 9.8.1
TsdBreakout	acctRecordType	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_DIAMETER_ACCT_EVENT_RECORD (1) K_GG59_DIAMETER_ACCT_START_RECORD (2) K_GG59_DIAMETER_ACCT_INTERIM_RECORD (3) K_GG59_DIAMETER_ACCT_STOP_RECORD (4)		
DrData	DRDATA_ACTION_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from acctRecordType if Diameter DRDATA_MESSAGE_TYPE_TAG is K_GG59_DIAMETER_MT_ACR or K_GG59_DIAMETER_MT ACA (271). See also 8.33.1.31 for this field from CC-Request-Type.		
<b>8.33.1.31</b>			
Field	CC-Request-Type (AVP Code 416; Enumerated)	Spec Ref	RFC 4006 Section 8.3

TsdBreakout	ccRequestType	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_DIAMETER_CC_INITIAL_REQUEST (1) K_GG59_DIAMETER_CC_UPDATE_REQUEST (2) K_GG59_DIAMETER_CC_TERMINATION_REQUEST (3) K_GG59_DIAMETER_CC_EVENT_REQUEST (4)		
DrData	DRDATA_ACTION_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from ccRequestType if Diameter DRDATA_MESSAGE_TYPE_TAG is K_GG59_DIAMETER_MT_CCR or K_GG59_DIAMETER_MT_CCA (272). See also 8.33.1.30 for this field from Accounting-Record-Type.		
<b>8.33.1.32</b>			
Field	Called-Station-Id (AVP Code 30; UTF8String?)	Spec Ref	RFC 2865 Section 5.30
TsdBreakout	calledStationId	Format	s_gg59_pbString (dynamic)
Details	This field should be extracted from any message that contains it. The pointer subfield string_pb should be set to the first octet of AVP Data part (not including optional Vendor-ID) in packet buffer. The subfield length_u should be actual length in octets of AVP Data part (not including optional Vendor-ID).		
DrData	DRDATA_CALLEDSTRING_TAG	Format	CB_TELNO
Details	This field should be extracted from either the Called-Party-Address (AVP Code 832; See also 8.33.1.33) or the Called-Station-Id (AVP Code 30; See also 8.33.1.32). If neither of these is present then it will be extracted from the Public-Identity (AVP Code 601; See also 8.33.1.34).		
<b>8.33.1.33</b>			
Field	Called-Party-Address AVP (AVP code 832; UTF8String)	Spec Ref	3GPP TS 32.225 Section 7.2.7
TsdBreakout	calledName	Format	s_gg59_pbString (dynamic)
Details	This field should be extracted from any message that contains it. The pointer subfield string_pb should be set to the first octet of AVP Data part (not including optional Vendor-ID) in packet buffer. The subfield length_u should be actual length in octets of AVP Data part (not including optional Vendor-ID).		
DrData	DRDATA_CALLEDSTRING_TAG	Format	CB_TELNO
Details	This field should be extracted from either the Called-Party-Address (AVP Code 832; See also 8.33.1.33) or the Called-Station-Id (AVP Code 30; See also 8.33.1.32). If neither of these is present then it will be extracted from the Public-Identity (AVP Code 601; See also 8.33.1.34).		
<b>8.33.1.34</b>			
Field	Public-Identity (AVP Code 601; UTF8String)	Spec Ref	3GPP TS 29.229 Section 6.3.2, IETF RFC 3261 Section 19.1.6, & IETF RFC 3966 Section 3
TsdBreakout	publicId	Format	s_gg61_addr (dynamic)
Details	This field should be extracted from any message that contains it. The pointer subfield string_pb should be set to the first octet of AVP Data part (not including optional Vendor-ID) in packet buffer. The subfield length_u should be actual length in octets of AVP Data part (not including optional Vendor-ID).		
DrData	DRDATA_CALLEDSTRING_TAG	Format	CB_TELNO
Details	This field should be extracted from either the Called-Party-Address (AVP Code 832; See also 8.33.1.33) or the Called-Station-Id (AVP Code 30; See also 8.33.1.32). If neither of these is		

	present then it will be extracted from the Public-Identity (AVP Code 601; See also 8.33.1.34).		
DrData	DRDATA_SUBSCRIBER_ID_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from Public-Identity (not from other AVPs).		
<b>8.33.1.35</b>			
Field	Flow-Description (AVP Code 507; IPFilterRule - derived from OctetString)	Spec Ref	3GPP TS 29.214 Section 5.3.8
TsdBreakout	flowDescription	Format	s_gg59_pbString (mval)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_LOCAL_SDPM_ENDPOINT_TAG G/DRDATA_REMOTE_SDPM_ENDPOINT_TAG	Format	
Details	See also 8.33.1.25.		
<b>8.33.1.36</b>			
Field	E-UTRAN-Vector (AVP code 1414; Grouped)	Spec Ref	TS 29.272 Section 7.3.18
TsdBreakout	authVectorSet	Format	s_gg59_AuthVector (mval)
Details	This field should be extracted from the E-UTRAN-Vector of Authentication info AVP. The subfield vectorType will be K_GG59_AUTH_VECTOR_TYPE_QUADRUPLET. Each sub AVP of E-UTRAN-Vector should be extracted to subfields of structure s_gg59_AuthQuadruplet quadruplet accordingly.		
DrData	DRDATA_EUTRAN_AUTH_VECTOR_TAGS	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it. Refer to 3.2.1 for details.		
<b>8.33.1.37</b>			
Field	UTRAN-Vector (AVP code 1415; Grouped)	Spec Ref	TS 29.272 Section 7.3.19
TsdBreakout	authVectorSet	Format	s_gg59_AuthVector (mval)
Details	This field should be extracted from the UTRAN-Vector of Authentication info AVP. The subfield vectorType will be K_GG59_AUTH_VECTOR_TYPE_QUINTET. Each sub AVP of UTRAN-Vector should be extracted to subfields of structure s_gg59_AuthQuintuplet quadruplet accordingly.		
DrData	DRDATA_UTRAN_AUTH_VECTOR_TAGS	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it. Refer to 3.2.1 for details.		
<b>8.33.1.38</b>			
Field	GERAN-Vector (AVP code 1416; Grouped)	Spec Ref	TS 29.272 Section 7.3.20
TsdBreakout	authVectorSet	Format	s_gg59_AuthVector (mval)
Details	This field should be extracted from the GERAN-Vector of Authentication info AVP. The subfield vectorType will be K_GG59_AUTH_VECTOR_TYPE_TRIPLET. Each sub AVP of GERAN-Vector should be extracted to subfields of structure s_gg59_AuthTercet accordingly.		
DrData	DRDATA_GERAN_AUTH_VECTOR_TAGS	Format	CB_OCTETSTR (OctetString)

Details	This field should be extracted from any message that contains it. Refer to 3.2.1 for details.		
8.33.1.39			
Field	Callback-Number (AVP code 19; UTF8String)	Spec Ref	RFC 4005 Section 6.2 RFC 2865 Section 8.309
TsdBreakout	callbackNumber	Format	s_gg61_addr (dynamic)
Details	The Callback-Number AVP (AVP Code 19) is of type UTF8String and contains a dialing string to be used for callback. It MAY be used in an authentication and/or authorization request as a hint to the server that a Callback service is desired, but the server is not required to honor the hint in the corresponding response.		
DrData	DRDATA_CALLBACK_NUMBER_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.40</b>			
Field	Service-Type (AVP code 6; Enumerated)	Spec Ref	RFC 4005 Section 6.2 RFC 2865 Section 5.6
TsdBreakout	serviceType	Format	m (value)
Details	The Service-Type AVP (AVP Code 6) is of type Enumerated and contains the type of service the user has requested or the type of service to be provided. One such AVP MAY be present in an authentication and/or authorization request or response.  One of:  K_GG59_ST_LOGIN (1) K_GG59_ST_FRAMED (2) K_GG59_ST_CALLBACK_LOGIN (3) K_GG59_ST_CALLBACK_FRAMED (4) K_GG59_ST_OUTBOUND (5) K_GG59_ST_ADMINISTRATIVE (6) K_GG59_ST_NAS_PROMPT (7) K_GG59_ST_AUTHENTICATE_ONLY (8) K_GG59_ST_CALLBACK_NAS_PROMPT (9) K_GG59_ST_CALL_CHECK (10) K_GG59_ST_CALLBACK_ADMINISTRATIVE (11) K_GG59_ST_VOICE (12) K_GG59_ST_FAX (13) K_GG59_ST_MODEM_RELAY (14) K_GG59_ST_IAPP_REGISTER (15) K_GG59_ST_IAPP_AP_CHECK (16) K_GG59_ST_AUTHORIZE_ONLY (17)		
DrData	DRDATA_SERVICE_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.33.1.41</b>			
Field	Framed-IPv6-Prefix (AVP Code 97)	Spec Ref	TS 29.061 section 16a.4 RFC3162 section 2.3
TsdBreakout	userIpAddr	Format	s_gg59_IPAddress (mval)
Details	This field should be implemented as multi-value.  This field should be extracted from Framed-IPv6-Prefix attribute when prefix-length is 128. If prefix-length isn't 128, this field shouldn't be extracted.  The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02) The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.		

DrData	DRDATA_IPV6_MSIP_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains it.		
8.33.1.42			
Field	Subscription-Id-Type (AVP Code 450; Enumerated )	Spec Ref	RFC 4006 Section 8.47
TsdBreakout	subscriptionIdType	Format	m (value)
Details	This field should be extracted only when contained within Subscription-Id AVP (AVP code 443; Grouped). Its value should be one of:  K_GG59_DIAM_SUBIDTYPE_END_USER_E164 0 K_GG59_DIAM_SUBIDTYPE_END_USER_IMSI 1 K_GG59_DIAM_SUBIDTYPE_END_USER_SIP_URI 2 K_GG59_DIAM_SUBIDTYPE_END_USER_NAI 3 K_GG59_DIAM_SUBIDTYPE_END_USER_PRIVATE 4		
DrData	DRDATA_SUBSCRIPTION_ID_TYPE_TAGS	Format	CB_UBIT32
Details	This field should be extracted from Subscription-Id AVP (AVP code 443; Grouped).		
8.33.1.43			
Field	Subscription-Id-Data (AVP Code 444; UTF8String)	Spec Ref	RFC 4006 Section 8.46
TsdBreakout	subscriptionId	Format	s_gg59_pbString (dynamic)
Details	This field should be extracted only when contained within Subscription-Id AVP (AVP code 443; Grouped).		
DrData	DRDATA_SUBSCRIPTION_ID_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted only when contained within Subscription-Id AVP (AVP code 443; Grouped).		
DrData	DRDATA_MSISDN_TAG	Format	CB_TELNO
Details	This field should be extracted <b>only</b> when subscriptionType is: K_GG59_DIAM_SUBIDTYPE_END_USER_E164		
DrData	DRDATA_KEYIMSI_TAG	Format	CB_TELNO
Details	This field should be extracted when subscriptionType is: K_GG59_DIAM_SUBIDTYPE_END_USER_IMSI  Or, when subscriptionType is: K_GG59_DIAM_SUBIDTYPE_END_USER_NAI And NAI contains IMSI field. Details please refer to 3GPP TS 23.003 Section 14.		
DrData	DRDATA_NAI_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted <b>only</b> when subscriptionType is: K_GG59_DIAM_SUBIDTYPE_END_USER_NAI		
8.33.1.44			
Field	Destination-Host (AVP is 293; DiameterIdentity)	Spec Ref	RFC3588 Section 6.5
TsdBreakout	destinationHost	Format	s_gg59_pbString(dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_DESTINATION_HOST_TAG	Format	CB_OCTETSTR

			(TerminatedString)
Details	This field should be extracted from any message that contains it. The contents of this field shall be formatted as a character string composed of one or more labels separated by dots ("."),		
8.33.1.45			
Field	QoS-Class-Identifier AVP (AVP code 1028)	Spec Ref	3GPP TS 29.212 Section 5.3.17
TsdBreakout	bearerQci	Format	m (multi-value)
Details	This field should be extracted from any message that contains it.		

## 8.34 GTP-Cv2

The detailed information of this protocol refers to [Protocol ERS](#).

### 8.34.1 Fields

<b>8.34.1.1</b>			
Field	Version	Spec Ref	TS 29.274 Section 5
TsdBreakout	gtpProtocolType	Format	m (value)
Details	This field should be set to K_GG59_PROTOCOL_GTP_V2C for GTPv2-C message.		
DrData	DRDATA_PROTOCOL_TYPE_TAG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_GTP_V2C (2037) for GTPv2-C messages. <b>Note:</b> It's possible to add more GTP protocol type or versions into IPCore GTP Breakout in future. So this field may be set to other values (for example IPCORE_PROTOCOL_GTP_V1C, IPCORE_PROTOCOL_GTP_YYY) for other GTP messages in future.		
<b>8.34.1.2</b>			
Field	Message Type	Spec Ref	TS 29.274 Section 6.1
TsdBreakout	messageType	Format	m (value)
Details	This field should be extracted from any message that contains it. GTPv2-C message type is one of: K_GG59_GTPV2_ECHO_REQUEST K_GG59_GTPV2_CREATE_SESSION_REQUEST K_GG59_GTPV2_MODIFY_BEARER_COMMAND .....		
DrData	DRDATA_MESSAGE_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.3</b>			
Field	Tunnel Endpoint Identifier	Spec Ref	TS 29.274 Section 5
TsdBreakout	gtpTunnelEptIdHdr (Not gtpHeaderFlowLabel for GTPv0) (Not gtpTEID in S1AP)	Format	m (value)

Details	This field should be extracted from GTPv2-C Header if present.		
DrData	DRDATA_GTP_TEID_HDR_TAG (Notes: 1. DRDATA_GTPHEADERFLOWLABEL_T AG is for GTPv0. 2. Checked with Richard Pei: No DrData tag for TEID in GTPv1 header. 3. DRDATA_GTP_TEID_TAG is in S1AP.)	Format	CB_UBIT32
Details	This field should be extracted from GTPv2-C Header if present.		
<b>8.34.1.4</b>			
Field	Sequence Number	Spec Ref	TS 29.274 Section 5
TsdBreakout	gtpSequenceNumber	Format	m (value)
Details	This field should be extracted from GTPv2-C Header.		
DrData	DRDATA_GTPSEQNUM_TAG	Format	CB_UBIT32
Details	This field should be extracted from GTPv2-C Header.		
<b>8.34.1.5</b>			
Field	International Mobile Subscriber Identity (IMSI)	Spec Ref	TS 29.274 Section 8.3
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_IMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.6</b>			
Field	Cause value	Spec Ref	TS 29.274 Section 8.4
TsdBreakout	gtpCauseValue	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_GTPV2_CAUSE_LOCAL_DETACH K_GG59_GTPV2_CAUSE_REQUEST_ACCEPTED K_GG59_GTPV2_CAUSE_CONTEXT_NOT_FOUND .....		
DrData	DRDATA_CAUSE_CODE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.7</b>			
Field	Access Point Name (APN)	Spec Ref	TS 29.274 Section 8.6
TsdBreakout	accessPointName	Format	s_gg59_pbString (mval)
Details	This field should be extracted from any message that contains it. The pointer subfield string_pb should be set to the first octet of APN part. The subfield length_u should be actual length in octets of APN part.		
DrData	DRDATA_ACCESSPOINTNAME_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.8</b>			
Field	Mobile Equipment Identity (MEI); IMEI or IMEISV	Spec Ref	TS 29.274 Section 8.10
TsdBreakout	IMEIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it.		

DrData	DRDATA_IMEI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.9</b>			
Field	MSISDN	Spec Ref	TS 29.274 Section 8.11
TsdBreakout	MSISDN	Format	s_gg61_addr (dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MSISDN_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.10</b>			
Field	EPS Bearer ID (EBI) (Type: EPS Bearer ID (EBI))	Spec Ref	TS 29.274 Section 8.8
TsdBreakout	bearerId	Format	m (mval)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_BEARER_ID_TAG	Format	CB_UBIT32(multi-value)
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.11</b>			
Field	Linked EPS Bearer ID (LBI) (Type: EPS Bearer ID (EBI))	Spec Ref	TS 29.274 Section 8.8
Field	Linked Bearer Identity (LBI) (Type: EPS Bearer ID (EBI))	Spec Ref	TS 29.274 Section 8.8
TsdBreakout	linkedBearerId	Format	m (mval)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_LINKED_BEARER_ID_TAG	Format	CB_UBIT32(multi-value)
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.12</b>			
Field	RAT Type	Spec Ref	TS 29.274 Section 8.17
TsdBreakout	ratType	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_RAT_GTP_UTRAN (1) K_GG59_RAT_GTP_GERAN (2) K_GG59_RAT_GTP_WLAN (3) K_GG59_RAT_GTP_GAN (4) K_GG59_RAT_GTP_HSPA_EVOLUTION (5) K_GG59_RAT_GTP_EUTRAN (6)		
DrData	DRDATA_RAT_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.13</b>			
Field	GUTI	Spec Ref	TS 29.274 Section 8.47
TsdBreakout	tempUeId	Format	s_gg61_addr (mval)
Details	This field should be extracted from any message that contains it. The subfield telnoType_b is set to K_GG59_TELNOTYPE_GUTI. The subfield telno.length_b should be K_GG59_NUMOFDIGITS_GUTI. See also section 3.4.5 for GUTI digit order in TsdBreakout.		
DrData	DRDATA_GUTI_TAG	Format	CB_TELNO

Details	This field should be extracted from any message that contains it. See also section 3.4.5 for GUTI char order in DataModel.		
<b>8.34.1.14</b>			
Field	TMSI	Spec Ref	TS 29.274 Section 8.23
TsdBreakout	TMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_TMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.15</b>			
Field	Packet TMSI (P-TMSI)	Spec Ref	TS 29.274 Section 8.41
TsdBreakout	PTMSI	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_PTMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.16</b>			
Field	(IPv4) Address for Control Plane (Type: IP Address)	Spec Ref	TS 29.274 Section 8.9 & 7.3.8
TsdBreakout	gtpAddrForCp	Format	m (value)
Details	This field should be extracted from any message that contains it. Note: Only IPv4 address is extracted.		
DrData	DRDATA_GTP_CP_ADDR_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. Note: Only IPv4 address is extracted.		
<b>8.34.1.17</b>			
Field	UDP Source Port Number	Spec Ref	TS 29.274 Section 8.56
TsdBreakout	gtpUdpSrcPort	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_GTP_UDP_SRC_PORT_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.18</b>			
Field	Sender F-TEID for Control Plane (Type: F-TEID)	Spec Ref	TS 29.274 Section 8.22
TsdBreakout	gtpFteid	Format	s_gg59_pbString (mval)
Details	This field should be extracted from any message that contains it. The context bits (K_GG59_CTXTMASK_GTP_FTEID) should be set to K_GG59_GTP_FTEID_SENDER_CP.		
DrData	DRDATA_GTP_FTEID_SENDER_CP_TA G	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it. See also section 3.2.2 for more details for F-TEID Octet format.		
<b>8.34.1.19</b>			
Field	PGW S5/S8 Address for Control Plane or PMIP (Type: F-TEID)	Spec Ref	TS 29.274 Section 8.22

Field	PGW S5/S8 IP Address for Control Plane or PMIP (Type: F-TEID)	Spec Ref	TS 29.274 Section 8.22
Field	PGW S5/S8 F-TEID for PMIP based interface or for GTP based Control Plane interface (Type: F-TEID)	Spec Ref	TS 29.274 Section 8.22
TsdBreakout	gtpFteid	Format	s_gg59_pbString (mval)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The context bits (K_GG59_CTXTMASK_GTP_FTEID) should be set to K_GG59_GTP_FTEID_PGW_S5_S8_CP_PMIP.</p> <p>Note: The raw parameter name will be one of: "PGW S5/S8 Address for Control Plane or PMIP" "PGW S5/S8 IP Address for Control Plane or PMIP" "PGW S5/S8 F-TEID for PMIP based interface or for GTP based Control Plane interface"</p>		
DrData	DRDATA_GTP_FTEID_PGW_S5_S8_CP_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it. See also section 3.2.2 for more details for F-TEID Octet format.		
<b>8.34.1.20</b>			
Field	S3/S16/S10 Address and TEID for Control Plane (Type: F-TEID)	Spec Ref	TS 29.274 Section 8.22
TsdBreakout	gtpFteid	Format	s_gg59_pbString (mval)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The context bits (K_GG59_CTXTMASK_GTP_FTEID) should be set to K_GG59_GTP_FTEID_S3_S16_S10_CP.</p>		
DrData	DRDATA_GTP_FTEID_S3_S16_S10_CP_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it. See also section 3.2.2 for more details for F-TEID octet format.		
<b>8.34.1.21</b>			
Field	Address for Control Plane (Type: IP Address)	Spec Ref	3GPP TS 29.274 section 8.9 & 7.3.8
TsdBreakout	gtpIpAddrForCp	Format	s_gg59_IPAddress (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02)</p> <p>The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.</p>		
DrData	DRDATA_IPV6_GTP_CP_ADDR_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.22</b>			
Field	Bearer Quality QCI	Spec Ref	3GPP TS 29.274 section 8.15
TsdBreakout	bearerQci	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_BEARER_QCI_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		

<b>8.34.1.23</b>						
Field	Flow Quality QCI	Spec Ref	3GPP TS 29.274 section 8.16			
TsdBreakout	flowQci	Format	m (value)			
Details	This field should be extracted from any message that contains it.					
DrData	DRDATA_FLOW_QCI_TAG	Format	CB_UBIT32			
Details	This field should be extracted from any message that contains it.					
<b>8.34.1.24</b>						
Field	User Location Information->CGI	Spec Ref	3GPP TS 29.274 section 8.21.1			
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (mval)			
Details	This field should be extracted from any message that contains it. The subfield discriminator_b should be set to K_GG59_CIDISC_CGI (0). See also section 3.4.3 (1) for the coding format of subfield value.					
DrData	DRDATA_ULI_CGI_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					
<b>8.34.1.25</b>						
Field	User Location Information->SAI	Spec Ref	3GPP TS 29.274 section 8.21.2			
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (mval)			
Details	This field should be extracted from any message that contains it. The subfield discriminator_b should be set to K_GG59_CIDISC_SAI (11). See also section 3.4.3 for the coding format of subfield value.					
DrData	DRDATA_ULI_SAI_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					
<b>8.34.1.26</b>						
Field	User Location Information->RAI	Spec Ref	3GPP TS 29.274 section 8.21.3			
TsdBreakout	userLocationInfo	Format	s_gg59_cellId (mval)			
Details	This field should be extracted from any message that contains it. The subfield discriminator_b should be set to K_GG59_CIDISC_RAI (22).					
DrData	DRDATA_ULI_RAI_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from any message that contains it.					
DrData	DRDATA_ULI_LAIS_TAG	Format	CB_OCTETSTR (OctetString)			
Details	This field should be extracted from LAI digits if one of DRDATA_ULI_CGI_TAG, DRDATA_ULI_SAI_TAG, or DRDATA_ULI_RAI_TAG is present.					
<b>8.34.1.27</b>						
Field	MM Context ->Security Mode	Spec Ref	3GPP TS 29.274 section 8.38			
TsdBreakout	securityMode	Format	m (value)			
Details	This field should be extracted from any message that contains it, and should be one of: K_GG59_GTP_SECURITY_MODE_GSM_KEY_TRIPLETS K_GG59_GTP_SECURITY_MODE_UMTS_KEY_USEDCIPHER_QUNINT K_GG59_GTP_SECURITY_MODE_GSM_KEY_USEDCIPHER_QUNINT K_GG59_GTP_SECURITY_MODE_UMTS_KEY_QUINT K_GG59_GTP_SECURITY_MODE_EPS_SECURITYCONTEXT_QUADR_QUNINT K_GG59_GTP_SECURITY_MODE_UMTS_KEY_QUADR_QUNINT					
DrData	DRDATA_SECURITY_MODE_TAG	Format	CB_UBIT32			
Details	This field should be extracted from any message that contains it.					

<b>8.34.1.28</b>				
Field	MM Context ->KSI <sub>ASME</sub>	Spec Ref	3GPP TS 29.274 section 8.38	
TsdBreakout	nasKeySetId	Format	m (value)	
Details	This field should be extracted from any message that contains it. Note: This field is only extracted when MM Context ->SecurityMode is: UMTS Key and Quintuplets 3 EPS Security Context and Quadruplets 4 UMTS Key, Quadruplets and Quintuplets 5			
	DrData	DRDATA_NAS_KEY_SET_ID_TAG	Format	CB_UBIT32
	This field should be extracted from any message that contains it.			
	<b>8.34.1.29</b>			
Field	MM Context ->Used NAS Cipher	Spec Ref	3GPP TS 29.274 section 8.38	
TsdBreakout	gtpCipheringAlg	Format	m (value)	
Details	This field should be extracted from any message that contains it, and should be one of: K_GG59_EPS_EEA0 K_GG59_EPS_128EEA1 K_GG59_EPS_128EEA2 Note: This field is only extracted when MM Context ->SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".			
	DrData	DRDATA_NAS_SECURITY_ALGORITHM_MS_TAG	Format	CB_UBIT32
	This field should be extracted from any message that contains it.			
	<b>8.34.1.30</b>			
Field	MM Context ->NAS Downlink Count	Spec Ref	3GPP TS 29.274 section 8.38	
TsdBreakout	nasDownlinkCount	Format	m (value)	
Details	This field should be extracted from any message that contains it. Note: This field is only extracted when MM Context ->SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".			
	DrData	DRDATA_NAS_DOWNLINK_COUNT_TAG	Format	CB_UBIT32
	This field should be extracted from any message that contains it.			
	<b>8.34.1.31</b>			
Field	MM Context ->NAS Uplink Count	Spec Ref	3GPP TS 29.274 section 8.38	
TsdBreakout	nasUplinkCount	Format	m (value)	
Details	This field should be extracted from any message that contains it. Note: This field is only extracted when MM Context ->SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".			
	DrData	DRDATA_NAS_UPLINK_COUNT_TAG	Format	CB_UBIT32
	This field should be extracted from any message that contains it.			
	<b>8.34.1.32</b>			
Field	MM Context ->KEY <sub>ASME</sub>	Spec Ref	3GPP TS 29.274 section 8.38	
TsdBreakout	keyAsme	Format	s_gg59_pbString(dynamic)	
Details	This field should be extracted from any message that contains it. Note: This field is only extracted when MM Context ->SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".			

DrData	DRDATA_KEY_ASME_TAG	Format	CB_OCTETSTR(OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.33</b>			
Field	MM Context ->Authentication Quadruplet	Spec Ref	3GPP TS 29.274 section 8.38
TsdBreakout	authVectorSet	Format	s_gg59_AuthVector (mval)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield vectorType will be K_GG59_AUTH_VECTOR_TYPE_QUADRUPLET.</p> <p>Each subfield of Authentication Quadruplet should be extracted to subfields of structure s_gg59_AuthQuadruplet accordingly.</p> <p>Note: This field is only extracted when MM Context -&gt;SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".</p> <p><b>Note: This field will be also extracted when MM Context -&gt;SecurityMode is 5, indicating "UMTS Key, Quadruplets and Quintuplets". This is used by ITF currently via gg59 tag.</b></p>		
DrData	DRDATA_EUTRAN_AUTH_VECTOR_TAG	Format	CB_OCTETSTR(OctetString)
Details	<p>This field should be extracted from any message that contains it. Refer to 3.2.1 for details.</p> <p><b>Note: This field is only extracted when MM Context -&gt;SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".</b></p>		
<b>8.34.1.34</b>			
Field	MM Context ->Old KSI <sub>ASME</sub>	Spec Ref	3GPP TS 29.274 section 8.38
TsdBreakout	oldNasKeySetId	Format	m (value)
Details	<p>This field should be extracted from any message that contains it.</p> <p>Note: This field is only extracted when MM Context -&gt;SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".</p>		
DrData	DRDATA_OLD_NAS_KEY_SET_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.35</b>			
Field	MM Context ->Old KEY <sub>ASME</sub>	Spec Ref	3GPP TS 29.274 section 8.38
TsdBreakout	oldKeyAsme	Format	s_gg59_pbString(dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>Note: This field is only extracted when MM Context -&gt;SecurityMode is 4, indicating "EPS Security Context, Quadruplets and Quintuplets".</p>		
DrData	DRDATA_OLD_KEY_ASME_TAG	Format	CB_OCTETSTR(OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.34.1.36</b>			
Field	PDN Address Allocation	Spec Ref	TS 29.274 Section 8.14
TsdBreakout	pdnAddress	Format	s_gg59_IPAddress (mval)
Details	<p>This field should be extracted as the following:</p> <p>If PDN type value is IPv4 (1):</p> <p>pdnAddress.a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01).</p> <p>pdnAddress.ipAddr.ipv4_m should be extract from each PDN address information (IPv4 Address) in the message.</p> <p>Else if PDN type value is IPv6 (2):</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02)</p> <p>The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.</p> <p>Else if PDN type value is IPv4v6 (3):</p> <p>As the field is a multi-value field, both ipv4 and ipv6 subfields should be extracted.</p>		

	<p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02)</p> <p>The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.</p> <p>The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01).</p> <p>The IPv4 address should be extracted to the subfield ipAddr.ipv4_m.</p> <p>Else this field should not be extracted.</p>		
DrData	DRDATA_PDN_ADDRESS_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains ipv4 subfield.		
DrData	DRDATA_IPV6_PDN_ADDRESS_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains ipv6 subfield.		
<b>8.34.1.37</b>			
Field	S1-U SGW F-TEID	Spec Ref	TS 29.274 Section 8.22
TsdBreakout	gtpFteid	Format	s_gg59_pbString (mval)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The context bits (K_GG59_CTXTMASK_GTP_FTEID) should be set to K_GG59_GTP_FTEID_S1_UP.</p>		
DrData	DRDATA_GTP_FTEID_S1_UP_TAG	Format	CB_OCTETSTR (OctetString)
Details	<p>This field should be extracted from any message that contains it.</p> <p>See also section 3.2.2 for more details for F-TEID octet format.</p>		
8.34.1.38			
Field	F-Container Field	Spec Ref	TS 36.413 section 9.2.1.7/ TS29.274 section 8.48
TsdBreakout	sourceToTargetTransContainer	Format	s_gg59_pbString
Details	<p>This field should be extracted if the F-Container is one of :</p> <ul style="list-style-type: none"> <li>E-UTRAN Transparent Container</li> <li>UTRAN Transparent Container</li> <li>BSS Container</li> </ul> <p>Note: if both(or all) of above Container present at the same message, only the last Container will be extracted.</p> <p>The pointer subfield string_pb should be set to the first octet of F- Container parameter</p> <p>The subfield length_u should be actual length in octets of F-Container parameter</p>		
DrData	DRDATA_S_TO_T_TRANS_CONTAINER_TAG	Format	CB_UBIT64
Details	<p>The lower 32 bits will be set with the subfield length_u while the offset against start of message will be copied in bits 64-33.</p> <p>This field should be populated at GTP datamodel</p>		
8.34.1.39			
Field	MM Context -> CK	Spec Ref	3GPP TS 29.274 section 8.38
TsdBreakout	cipheringKey	Format	s_gg59_pbString(dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>CK in Authentication Quintuplet will not be extracted</p>		
DrData	DRDATA_CIPHERING_KEY_TAG	Format	CB_OCTETSTR(OctetString)
Details	This field should be extracted from any message that contains it.		
8.34.1.40			
Field	MM Context ->IK	Spec Ref	3GPP TS 29.274 section 8.38
TsdBreakout	integrityKey	Format	s_gg59_pbString(dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>IK in Authentication Quintuplet will not be extracted</p>		
DrData	DRDATA_INTEGRITY_KEY_TAG	Format	CB_OCTETSTR(OctetString)

Details	This field should be extracted from any message that contains it.		
8.34.1.41			
Field	P-TMSI Signature	Spec Ref	3GPP TS 29.274 section 8.42 3GPP TS 29.060 section 7.7.9 3GPP TS 24.008 section 10.5.5.8
TsdBreakout	ptmsiSignature	Format	m (value)
Details	This field should be extracted from message Identification Request and Context Request (GTPv1 and GTPv2-C included)		
DrData	DRDATA_PTMSI_SIGNATURE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
8.34.1.42			
Field	MM Context ->Authentication Quintuplet	Spec Ref	3GPP TS 29.274 section 8.38
TsdBreakout	authVectorSet	Format	s_gg59_AuthVector (mval)
Details	<p>The subfield vectorType should be set to K_GG59_AUTH_VECTOR_TYPE_QUINTET. Each subfield of Authentication Quintuplet should be extracted to subfields of structure s_gg59_AuthQuintuplet accordingly.</p> <p>Note: This field is only extracted when MM Context -&gt; SecurityMode is 5, indicating "UMTS Key, Quadruplets and Quintuplets".</p>		

## 8.35 ERRC

The protocol specifications for eRRC is mainly used in X2 or the S1-interface and consists of Inter-node RRC messages/IEs defined in section 6 and section 10 of 3GPP TS 36.331, Release 8 v8.8.0 (2009-12).

Session Trace confirms that the supplemental/secondary DataModel model will be used as did in FOA, like EMM and ESM done over S1MME.

### 8.35.1 Fields

8.35.1.1											
Field	S1AP container IE type	Spec Ref	TS 36.413 section 9.2.1.7/8/27								
TsdBreakout	errcMessageType	Format	m (value)								
Details	<p>This field is a special field. It's used to indicate eRRC message types.</p> <p>The type of eRRC messages can be obtained by under layers' corresponding S1AP container type as defined in 36.413 section 9.2.1.7, 9.2.1.8 and 9.2.1.27.</p> <p>The mapping will be:</p> <table> <tr> <td>S1AP container type</td> <td>eRRC message type</td> </tr> <tr> <td>Source eNB to Target eNB Transparent Container</td> <td>Handover Preparation Information</td> </tr> <tr> <td>Target eNB to Source eNB Transparent Container</td> <td>Handover Command</td> </tr> <tr> <td>UE Radio Capability</td> <td>UERadioAccessCapabilityInformation</td> </tr> </table> <p>One of:</p> <p>K_GG59_ERRC_HANDOVER_COMMAND K_GG59_ERRC_HANDOVER_PREPARATION_INFOMATION</p>			S1AP container type	eRRC message type	Source eNB to Target eNB Transparent Container	Handover Preparation Information	Target eNB to Source eNB Transparent Container	Handover Command	UE Radio Capability	UERadioAccessCapabilityInformation
S1AP container type	eRRC message type										
Source eNB to Target eNB Transparent Container	Handover Preparation Information										
Target eNB to Source eNB Transparent Container	Handover Command										
UE Radio Capability	UERadioAccessCapabilityInformation										

	K_GG59_ERRC_UE_RADIO_ACCESS_CAPABILITY_INFOAMTION		
DrData	DRDATA_SECONDARY_PROTOCOL_T AG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_ERRC(2040) for ERRC message.		
DrData	DRDATA_ERRC_MSG_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.2</b>			
Field	RRC-TransactionIdentifier	Spec Ref	TS 36.331 Section 6.3.6
TsdBreakout	transactionId	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_PROTO_TRANS_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.3</b>			
Field	RAT Type	Spec Ref	TS 36.331 Section 6.3.6
TsdBreakout	ratType	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_RAT_ERRC_EUTRA (0) K_GG59_RAT_ERRC_UTRA (1) K_GG59_RAT_ERRC_GERAN_CS (2) K_GG59_RAT_ERRC_GERAN_PS (3) K_GG59_RAT_ERRC_CDMA2000_1XRTT (4)		
DrData	DRDATA_RAT_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.4</b>			
Field	AS-Config -> sourceUE-Identity	Spec Ref	TS 36.331 Section 10.3
TsdBreakout	sourceUeId	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ERRC_SOURCE_UE_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.5</b>			
Field	AS-Config -> trackingAreaCode	Spec Ref	TS 36.331 Section 6.2.2
TsdBreakout	trackingAreaCode	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ERRC_TRACKING_AREA_CODE_TA G	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.6</b>			
Field	AS-Config -> cellIdentity	Spec Ref	TS 36.331 Section 6.2.2
TsdBreakout	aggregateCellId	Format	s_gg59_cellId(mval)
Details	This field should be extracted from any message that contains it. the discriminator for aggregateCellId use K_GG59_CIDISC_CI and the structure refer to 3.4.3 (11)		

DrData	DRDATA_ERRC_CELL_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. As the highest 4 bit was spare, it should be set to 0.		
<b>8.35.1.7</b>			
Field	AS-Config -> plmn-IdentityList	Spec Ref	TS 36.331 Section 6.2.2
TsdBreakout	plmnId	Format	s_gg59_cellId (mval)
Details	This field should be extracted from any message that contains it. the discriminator for aggregateCellId use K_GG59_CIDISC_PLMNID(23) and the structure refer to 3.4.3. the new type K_GG59_CIDISC_PLMNID will be added as a new constant.		
DrData	DRDATA_ERRC_PLMN_ID_TAG	Format	CB_OCTETSTR (OctetString; Multi-value)
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.8</b>			
Field	ReleaseCause	Spec Ref	3GPP TS TS 36.331 section 6.2.2
TsdBreakout	errcReleaseCause	Format	m(value)
Details	The value should be one of: loadBalancingTARequired (0), other (1)		
DrData	DRDATA_ERRC_RELEASE_CAUSE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.35.1.9</b>			
Field	meid	Spec Ref	3GPP TS TS 36.331 section 6.2.2
TsdBreakout	MEID	Format	s_gg61_addr
Details	The 56 bit mobile identification number provided by the CDMA2000 Upper layers.		
DrData	DRDATA_MEID_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		

## 8.36 SGsAP

The detailed information of this protocol refers to [Protocol ERS](#).

### 8.36.1 Fields

8.36.1.1			
Field	Message Type		TS 29.118 Section 9.2
TsdBreakout	sgsapMessageType		m (value)
Details	This field should be extracted from any message that contains it. SGsAP message type is one of: K_GG59_SGSAP_PAGING_REQUEST		

	K_GG59_SGSAP_PAGING_REJECT K_GG59_SGSAP_SRVICE_REQUEST ...		
DrData	DRDATA_PROTOCOL_TYPE_TAG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_SGSAP(2039) for SGsAP messages The DataModel hierarchy structure is the same with S1MME interface if SMS is over SGsAP. See also 5.1.2.3.		
DrData	DRDATA_MESSAGE_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.36.1.2</b>			
Field	IMSI	Spec Ref	TS 29.118 Section 9.4.6
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it. The subfield telnoType_b should be set to K_GG59_TELNOTYPE_IMSI_SGSAP.		
DrData	DRDATA_IMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.36.1.3</b>			
Field	Mobile Identity-> TMSI	Spec Ref	TS 29.118 Section 9.4.14 TS 29.018 Section 18.4.17 TS 24.008 Section 10.5.1.4
TsdBreakout	TMSIaddress	Format	s_gg61_addr (static)
Details	In 3GPP TS 24.008 Section 10.5.1.4 Mobile Identity, TMSI, P-TMSI and M-TMSI share identical "Type of identity" value 4. If there is no explicit Information Element name or other Information to indicate that it's P-TMSI or M-TMSI parameter, the digits for "Type of identity" value 4 should be extracted to TMSI by default.		
DrData	DRDATA_TMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.36.1.4</b>			
Field	IMEISV	Spec Ref	TS 29.118 Section 9.4.5 TS 29.018 Section 18.4.9
TsdBreakout	IMEIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_IMEI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.36.1.5</b>			
Field	cause	Spec Ref	TS 29.118 Section 9.4.18
TsdBreakout	sgsapCause	Format	m (value)
Details	This field should be extracted from any message that contains it. The cause value should be one of: K_GG59_SGSAP_CAUSE_NORMAL K_GG59_SGSAP_CAUSE_IMSI_DETACHED_FOR_EPS K_GG59_SGSAP_CAUSE_IMSI_DETACHED_FOR_EPS_NON_EPS ...		
DrData	DRDATA_CAUSE_CODE_TAG	Format	CB_UBIT32

Details	This field should be extracted from any message that contains it.		
<b>8.36.1.6</b>			
Field	Location Area Identifier(LAI)	Spec Ref	TS 29.118 Section 9.4.11
	Old Location Area Identification (LAI)		TS 29.118 Section 8.11.1
TsdBreakout	locationAreaId	Format	s_gg59_cellId (mval)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_LAI(4) . See also section 3.4.3 (2) for the coding format of subfield value.</p> <p>The subfield a7CellIdType_b should be one of (to distinguish LAI, Old LAI and NEW LAI):            K_GG59_A7_CITYPE_LAI            K_GG59_A7_CITYPE_LAI_OLD            K_GG59_A7_CITYPE_LAI_NEW</p>		
DrData	DRDATA_LOCAREAID_TAG	Format	CB_OCTETSTR (OctetString)
DrData	DRDATA_OLDLOCAREAID_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.36.1.7</b>			
Field	TAI	Spec Ref	TS 29.118 Section 9.4.21a
TsdBreakout	trackingAreaId	Format	s_gg59_cellId
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_TAI (21). See also section 3.4.3 (10) for the coding format of subfield value.</p>		
DrData	DRDATA_TRACKAREAID_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
<b>8.36.1.8</b>			
Field	E-UTRAN CGI	Spec Ref	TS 29.118 Section 9.4.3a TS 29.274 Section 8.21.5
TsdBreakout	eUtranCgi	Format	s_gg59_cellId (dynamic)
Details	<p>This field should be extracted from any message that contains it.</p> <p>The subfield discriminator_b should be set to K_GG59_CIDISC_EUTRANCIGI (20). See also section 3.4.3 (9) for the coding format of subfield value.</p> <p>The subfield a7CellIdType_b should not be set (reserved for future).</p>		
DrData	DRDATA_EUTRAN_CGI_TAG	Format	CB_OCTETSTR (OctetString)
Details	<p>This field should be extracted from any message that contains it.</p> <p>See also section 3.4.3 (9) for the coding format of subfield value.</p>		

## 8.37 MIPv6/PMIPv6/DSMIPv6

The detailed information of this protocol refers to [Protocol ERS](#).

## 8.37.1 Fields

<b>8.37.1.1</b>			
Field	Mobility Header Type	Spec Ref	RFC 3775 section 6.1.1
Field	Binding Revocation Type	Spec Ref	RFC 5846 section 5.2 and 5.3
Field	Response Indicator bit ('R' Flag)	Spec Ref	RFC 5847 section 3.3
TsdBreakout	mipv6MessageType	Format	m (value)
Details	<p>This field is a combination of messageHeaderType and responseInd.</p> <p>When it is a request message, responseInd should be set 0. (Binding Revocation Type = 1 or Response Indicator bit = 0)</p> <p>When it is a response message responseInd should be set 1. (Binding Revocation Type = 2 or Response Indicator bit = 1)</p> <p>Field responseInd should only be set when it is a Binding Revocation Message or Heartbeat Message. For other messages, responseInd will be defaultly treated as 0.</p> <p>The message header type can be calculated using the following formula:  <math>m.ipv6MessageType = (responseInd &lt;&lt; 8)   messageHeaderType</math>.</p> <p>One of:</p> <ul style="list-style-type: none"> <li>K_GG59_MIPV6_MT_BINDING_REFRESH_REQUEST</li> <li>K_GG59_MIPV6_MT_HOME_TEST_INIT</li> <li>K_GG59_MIPV6_MT_CAREOF_TEST_INIT</li> <li>K_GG59_MIPV6_MT_HOME_TEST</li> <li>.....</li> </ul>		
DrData	DRDATA_PROTOCOL_TYPE_TAG	Format	CB_UBIT32
Details	This field should be set to IPCORE_PROTOCOL_MIPV6 (2038).		
DrData	DRDATA_MESSAGE_TYPE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.2</b>			
Field	Sequence number	Spec Ref	RFC 5213 section 5.5
TsdBreakout	sequenceNumber	Format	m (value)
Details	This field should extract from any message contains it.		
DrData	DRDATA_PROTO_TRANS_ID_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.3</b>			
Field	Mobile Node Identifier->IMSI	Spec Ref	TS 29.275 section 5.3 TS 23.003 section 19.3
TsdBreakout	IMSIaddress	Format	s_gg61_addr (static)
Details	This field should be extracted from any message that contains IMSI field. See also 3.4.4 (4) the conversion from UTF8String to standard compact TBCD digit format.		
DrData	DRDATA_KEYIMSI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.4</b>			
Field	Mobile Equipment Identity-> IMEI	Spec Ref	3GPP TS 29.275 Section 12.1.1.10
TsdBreakout	IMEIaddress	Format	s_gg61_addr (static)

Details	This field should be extracted from any message that contains it. See also 3.4.4 (4) the conversion from UTF8String to standard compact TBCD digit format.		
DrData	DRDATA_IMEI_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.5</b>			
Field	MSISDN	Spec Ref	3GPP TS 29.275 Section 12.1.1.11
TsdBreakout	MSISDN	Format	s_gg61_addr (dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MSISDN_TAG	Format	CB_TELNO
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.6</b>			
Field	Status	Spec Ref	RFC 5213 section 8.9
TsdBreakout	mipv6Cause	Format	m(value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_CAUSE_CODE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.7</b>			
Field	3GPP Specific PMIPv6 error code	Spec Ref	3GPP TS 29.275 section 12.1.1.1
TsdBreakout	mipv6ErrorCode	Format	m (value)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_MIPV6_ERROR_CODE_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.8</b>			
Field	Mobile Node Identifier	Spec Ref	TS 23.003 Section 19.3
TsdBreakout	userName	Format	s_gg59_pbString(dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_KEYIMSI_TAG	Format	CB_TELNO
Details	When this field contains the IMSI digits, it will also be extracted to KEYIMSI tag.		
DrData	DRDATA_NAI_TAG	Format	CB_OCTETSTR (TerminatedString)
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.9</b>			
Field	Header Flag	Spec Ref	rfc5845, rfc5846
TsdBreakout	mipv6HeaderFlag	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. Note: The flags field may be different in different messages. We would just copy the whole flag part of each message into this breakout field, and keep the length and value as different message specified. More details please refer to section 3.4.6.		
DrData	DRDATA_MIPV6_HEADER_FLAG_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.10</b>			
Field	IPv6 Home Network Prefix	Spec Ref	RFC 5213 Section 8.3
TsdBreakout	userIpAddr	Format	s_gg59_IPAddress (mval)

Details	This field should be extracted from any message that contains it. The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02) The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.		
DrData	DRDATA_IPV6_HOME_NETWORK_PRE_FIX_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.11</b>			
Field	Link-local Address	Spec Ref	RFC 5213 Section 8.7
TsdBreakout	foundIPAddress	Format	s_gg59_IPAddress (mval)
Details	This field should be extracted from any message that contains it. The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV6 (0x02) The IPv6 address should be extracted to the subfield ipAddr.ipv6_ba.		
DrData	DRDATA_IPV6_LINK_LOCAL_ADDR_TAG	Format	CB_IPV6ADDR
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.12</b>			
Field	Handoff indicator (HI)	Spec Ref	RFC 5213 Section 8.4
TsdBreakout	handoffIndicator	Format	m (value)
Details	This field should be extracted from any message that contains it. One of: K_GG59_HI_RESERVED K_GG59_ATTACHMENT_OVER_NEW_IF K_GG59_HO_BETWEEN_TWO_DIFF_IF K_GG59_HO_BETWEEN_MOBILE_ACCESS_GW K_GG59_HO_STATE_UNKNOW K_GG59_HO_STATE_NOT_CHANGED		
DrData	DRDATA_HANDOFF_INDICATOR_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.13</b>			
Field	IPv4 Home Address option	Spec Ref	draft-ietf-netlmm-pmip6-ipv4-support
TsdBreakout	ipHomeAddr	Format	s_gg59_IPAddress(dynamic)
Details	This field should be extracted from any message that contains it.  The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01) The IPv4 address should be extracted to the subfield ipAddr.ipv4_m.		
DrData	DRDATA_IPV4_HOME_ADDR_REQUEST_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.14</b>			
Field	IPv4 Address Acknowledgment option	Spec Ref	draft-ietf-netlmm-pmip6-ipv4-support
TsdBreakout	ipAddrAck	Format	s_gg59_IPAddress(dynamic)
Details	This field should be extracted from any message that contains it.  The subfield a7PresentInd_m should be set according to K_GG59_IPADDRESS_IPV4 (0x01) The IPv4 address should be extracted to the subfield ipAddr.ipv4_m.		

DrData	DRDATA_IPV4_HOME_ADDR_REPLY_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it.		
<b>8.37.1.15</b>			
Field	Service Selection Mobility Option -> APN	Spec Ref	RFC 5149 Section 3
TsdBreakout	accessPointName	Format	s_gg59_pbString(dynamic)
Details	This field should be extracted from any message that contains it.		
DrData	DRDATA_ACCESSPOINTNAME_TAG	Format	CB_OCTETSTR (OctetString)
Details	This field should be extracted from any message that contains it.		
8.37.1.16			
Field	Lifetime	Spec Ref	IETF RFC 3775
TsdBreakout	lifeTime	Format	m (value)
Details	This field should be extracted from any message that contains it. The unit of the value will be second.		
DrData	DRDATA_LIFE_TIME_TAG	Format	CB_UBIT32
Details	This field should be extracted from any message that contains it. The unit of the value will be second.		

## 8.38 SIP

### 8.38.1 Fields

Notes:

SIP is text protocol in ABNF encoding format. Some text string field will be extract to dynamic array (TsdBreakout format: b(dynamic)). The null-terminated char '\0' will be present at the end the dynamic array.

The "\n" and "\r" will be deleted when the text string extracted to dynamic array. Only if "\t" is at the end of text string, it will be deleted also.

The read API for dynamic array are:

```
m dataLen(m tTag) const;
const b * Get_array(m tTag) const;
z Get_array(m tTag, b *& rptStruct) const;
```

<b>8.38.1.1</b>			
Field	Method if request Status-Code if response	Spec Ref	RFC3261 Section 7.1 &7.2
TsdBreakout	sipMsgCode	Format	m(value)
Details	if request, the Method string will be mapped to an unique integer value in the range 0 to 99. It is one of K_GG59_SIP_INVITE 0 K_GG59_SIP_ACK 1 K_GG59_SIP_OPTIONS 2 K_GG59_SIP_BYE 3		

	<p>K_GG59_SIP_CANCEL 4      K_GG59_SIP_REGISTER 5      K_GG59_SIP_PRACK 6      K_GG59_SIP_INFO 7      K_GG59_SIP_REFER 8      K_GG59_SIP_SUBSCRIBE 9      K_GG59_SIP_NOTIFY 10      K_GG59_SIP_UPDATE 11      K_GG59_SIP_PING 12      K_GG59_SIP_MESSAGE 13      K_GG59_SIP_OTHER 14      K_GG59_SIP_PUBLISH 15</p> <p>if response, the numeric value of status code will be extracted. E.g. if the status code is "100", integer value 100 will be stored at this field. It is one of:</p> <table> <tbody> <tr><td>K_GG59_SIP_100_TRYING</td><td>100</td></tr> <tr><td>K_GG59_SIP_180_RINGING</td><td>180</td></tr> <tr><td>K_GG59_SIP_181_CALL_IS_BEING_FORWARDED</td><td>181</td></tr> <tr><td>K_GG59_SIP_182_QUEUED</td><td>182</td></tr> <tr><td>K_GG59_SIP_183_SESSION_PROGRESS</td><td>183</td></tr> <tr><td>K_GG59_SIP_200_OK</td><td>200</td></tr> <tr><td>K_GG59_SIP_300_MULTIPLE_CHOICES</td><td>300</td></tr> <tr><td>..</td><td></td></tr> </tbody> </table>	K_GG59_SIP_100_TRYING	100	K_GG59_SIP_180_RINGING	180	K_GG59_SIP_181_CALL_IS_BEING_FORWARDED	181	K_GG59_SIP_182_QUEUED	182	K_GG59_SIP_183_SESSION_PROGRESS	183	K_GG59_SIP_200_OK	200	K_GG59_SIP_300_MULTIPLE_CHOICES	300	..	
K_GG59_SIP_100_TRYING	100																
K_GG59_SIP_180_RINGING	180																
K_GG59_SIP_181_CALL_IS_BEING_FORWARDED	181																
K_GG59_SIP_182_QUEUED	182																
K_GG59_SIP_183_SESSION_PROGRESS	183																
K_GG59_SIP_200_OK	200																
K_GG59_SIP_300_MULTIPLE_CHOICES	300																
..																	
8.38.1.2																	
Field	From	Spec Ref	RFC3621 section 20.20														
TsdBreakout	sipFrom[variable]	Format	b(dynamic)														
Details	<p>This field should be extracted from any message that contains it. The whole content in From line will be extracted.</p> <p>For example, if the From header field is:</p> <p>From: sipp &lt;sip:sipp@10.224.81.5:5060&gt;;tag=887s</p> <p>The extracted value will be " sipp &lt;sip:sipp@10.224.81.5:5060&gt;;tag=887s "</p> <p>If the From header field is:</p> <p>From: &lt;sip:009665045931;cpc=ordinary@84.235.58.1;user=phone&gt;;tag=4de</p> <p>The extracted value should be " From:</p> <p>&lt;sip:009665045931;cpc=ordinary@84.235.58.1;user=phone&gt;;tag=4de</p> <p>"</p>																
8.38.1.3																	
Field	To	Spec Ref	RFC3621 section 20.39														
TsdBreakout	sipTo [variable]	Format	b(dynamic)														
Details	<p>This field should be extracted from any message that contains it. The whole content in To line will be extracted.</p> <p>E.g. if the To line is "To: Bob &lt;sip:bob@biloxi.com&gt;;tag=a6c85cf", the extracted value should be " To: Bob &lt;sip:bob@biloxi.com&gt;;tag=a6c85cf ". If To line is "To: sip:+919946344679@195.219.240.23:5060;user=phone", the extracted value should be " To: sip:+919946344679@195.219.240.23:5060;user=phone ".</p>																
8.38.1.4																	
Field	Request-URI	Spec Ref	RFC3621 Section 8.1.1.1														
TsdBreakout	sipRequestUri [variable]	Format	b(dynamic)														
Details	This field should be only extracted from request message.																

	For example, the populated value may be one of: "sip:+13143903000@172.16.102.20:5070" "sip:+13143903000@icsf-stdn.imsgroup0-000.sillsm1.cvoip.ims.sbc.com:5060" "sip:+18162161554@TWC4KANSASCITY524C"		
8.38.1.5			
Field	X-QChat-data in body header    qchat in message body	Spec Ref	TBD
TsdBreakout	sipQchatData[variable]	Format	b(dynamic)
Details	<p>This field is only applicable for special message from Sprint PTT(QSP) network's extension in SIP.</p> <p>The value of X-QChat-data should be extracted if it presents at Register message. Otherwise, the value of "qchat" in body of Notify message will be extracted.</p>		
8.38.1.6			
Field	Contact	Spec Ref	RFC3621Section 20.10
TsdBreakout	sipContact [variable]	Format	b(dynamic)
Details	This field should be extracted from any message that contains it.		
8.38.1.7			
Field	Call-ID	Spec Ref	RFC3621Section 20.8
TsdBreakout	sipCallId[variable]	Format	b(dynamic)
Details	<p>It is should be extracted from Call-ID header field.</p> <p>E.g. if Call-ID is "Call-ID: f81d4fae-7dec-11d0-a765-00a0c91e6bf6@biloxi.com", the extracted value should be "f81d4fae-7dec-11d0-a765-00a0c91e6bf6@biloxi.com". If the Call-ID is "i:f81d4fae-7dec-11d0-a765-00a0c91e6bf6@192.0.2.4", the extracted value should be "f81d4fae-7dec-11d0-a765-00a0c91e6bf6@192.0.2.4".</p>		
8.38.1.9			
Field	Via->branch	Spec Ref	RFC3621Section 20.42
TsdBreakout	sipBranch[variable]	Format	b(dynamic)
Details	<p>This field should be extracted from "Via". If multi-"Via" present, the branch field should be extracted from top-level "Via"</p> <p>Examples:</p> <p>Via: SIP/2.0/UDP pc33.atlanta.com;branch=z9hG4bK776asdhs</p> <p>The extracted value should be "9hG4bK776asdhs"</p>		
8.38.1.8			
Field	CSeq->request method	Spec Ref	RFC3621Section 20.16
TsdBreakout	sipCseqMethod[variable]	Format	b(dynamic)
Details	<p>This field should be extracted from CSeq header field.</p> <p>Example:</p> <p>CSeq: 4711 INVITE</p> <p>The extracted value should be " INVITE"</p>		
8.38.1.9			
Field	CSeq->sequence number	Spec Ref	RFC3621Section 20.16
TsdBreakout	sequenceNumber	Format	m(value)
Details	<p>This field should be extracted from CSeq header field.</p> <p>Example:</p> <p>CSeq: 4711 INVITE</p> <p>The extracted value should be 4711</p>		

8.38.1.10			
Field	Connect Information ->Connection Address in SDP & Media Port in SDP	Spec Ref	RFC 2327
TsdBreakout	sdpConnectionData	Format	s_gg59_IPAddress
Details	Currently this field will be extracted only if the Connection Network Type is "IN" and Connection Address Type is "IP4"		
8.38.1.11			
Field	Media Description -> Media Port in SDP	Spec Ref	RFC 2327
TsdBreakout	mediaPort	Format	m(value)
Details	This field should be extracted only if Media Type is "audio"		
8.38.1.12			
Field	Event	Spec Ref	RFC6035
TsdBreakout	sipEventName[variable]	Format	b (dynamic)
Details	This field should be extracted from any message that contains it. For example "Event: vq-rtpcxr", value "vq-rtpcxr" will be extracted		
8.38.1.13			
Field	Event Content	Spec Ref	RFC6035
TsdBreakout	sipEventData[variable]	Format	s_gg59_pbString (dynamic)
Details	The content should be extracted if the Content-Type is "application/vq-rtpcxr" Example: Content-Type: application/vq-rtpcxr Content-Length: ...  VQAlertReport: Type=NLR Severity=Critical Dir=local CallID: 6dg37f1890463 LocalID: Alice sip:alice@example.org ... Subfield string_pb will point to the start of content. For above case, subfield string_pb will point to "V".		
8.38.1.14			
Field	presence in content	Spec Ref	RFC3903
Field	entity in content	Spec Ref	RFC3903
TsdBreakout	sipPresentity [variable]	Format	b (dynamic)
Details	When Content-Type is "application/cpim-pidf+xml", the presentity or entity value should be extracted.		
8.38.1.15			
Field	Diversion	Spec Ref	RFC5806
TsdBreakout	sipDiversion	Format	s_gg59_pbString (mval)
Details	This filed should be populated from "Diversion:" in message header.		
8.38.1.16			
Field	Cisco-Guid	Spec Ref	TBD
TsdBreakout	sipCiscoGuid [variable]	Format	b (dynamic)
Details	For CISCO-GUID		
8.38.1.17			
Field	SIP message header	Spec Ref	RFC3621

TsdBreakout	sipHeaderFlag	Format	m(value)
Details	<p>This field is used to indicate which line presents at SIP message header. Currently the lower 3 bits of this field will be used to indicate "I", "A" and "G" in message header.</p> <p>The mask for "I", "A" and "G" are:</p> <ul style="list-style-type: none"> <li>K_GG59_SIP_HEADER_I_MASK 0x01</li> <li>K_GG59_SIP_HEADER_A_MASK 0x02</li> <li>K_GG59_SIP_HEADER_G_MASK 0x04</li> </ul>		
8.38.1.18			
Field	P-ASSERTED-IDENTITY	Spec Ref	RFC3325 Section 9.1
TsdBreakout	SipPAssertedIdentity[variable]	Format	b (dynamic)
Details	<p>This field is should be extracted from message header if it presents.</p>		
8.38.1.19			
Field	CALLED-NUMBER	Spec Ref	TBD
TsdBreakout	SipCalledNumber[variable]	Format	b (dynamic)
Details	<p>This field is should be extracted from message body if "CALLED-NUMBER" exist.</p>		
8.38.1.20			
Field	CALLING-NUMBER	Spec Ref	TBD
TsdBreakout	SipCallingNumber [variable]	Format	b (dynamic)
Details	<p>This field is should be extracted from message body if "CALLING-NUMBER" exist.</p>		
8.38.1.21			
Field	WINPHORIASDP	Spec Ref	TBD
TsdBreakout	sipWinphoriaSdp [variable]	Format	b (dynamic)
Details	<p>This field is should be extracted from sdp message if contains it.</p>		
8.38.1.22			
Field	P-Called-Party-ID	Spec Ref	RFC3455 Section 4.2
TsdBreakout	sipPcalledPartyId [variable]	Format	b (dynamic)
Details	<p>This field is should be extracted from message header if it presents.</p> <p>Example:</p> <p>P-Called-Party-ID: sip:user1-business@example.com</p> <p>the extracted value should be "sip:user1-business@example.com"</p>		
8.38.1.27			
Field	None	Spec Ref	None
TsdBreakout	higherProtocolId	Format	m(value)
Details	<p>This field is used to indicate which protocol is encapsulated in sip message. For encapsulated ISUP, this field will be set to K_GG59_SIP_ENCAP_ISUP (0x05). For other encapsulated protocol, the value will be defined in future.</p>		