3GPP TSG CN Plenary Meeting #24 **NP-040213**
2nd – 4th June 2004 Seoul, KOREA.

Source: TSG CN WG4

Title: Corrections on Location Services R99 onwards

Agenda item: 7.4

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level N4-040	Phase	Subject	Cat	Ver_C
29.002	712	1	517	R99	Introduction of North American Interim Location Based Routing of Emergency Call	F	3.19.0
29.002	713	1	518	Rel-4	Introduction of North American Interim Location Based Routing of Emergency Call	A	4.14.0
29.002	714	1	519	Rel-5	Introduction of North American Interim Location Based Routing of Emergency Call	A	5.9.0
29.002	731		520	Rel-6	Introduction of North American Interim Location Based Routing of Emergency Call	F	6.5.0

3GPP TSG CN WG4 Meeting #23 **N4-040517**
Zagreb, CROATIA, 10th – 14th MAY 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **712** ⌘ **rev** **1** ⌘ Current version: **3.19.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Introduction of North American Interim Location Based Routing of Emergency Call
Source:	⌘	CN4
Work item code:	⌘	LCS
Date:	⌘	31/03/2004
Category:	⌘	**F**
Release:	⌘	R99

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	At CN4 #19, an LS from T1P1 (N4-030586) was received that identified requirements from North America for emergency calls to be routed to the relevant PSAP based on a subscriber's actual position rather than basing this routing on the cell-Id of the cell that the subscriber was attached to. This new functionality would allow the emergency call to be handled by the PSAP that was physically closest to the subscriber making the call, rather than the PSAP closest to the cell. At CN4 #20, a CR to Rel 6 29.002 was approved to implement this feature (CR 645r1, N4-031038). It has now been decided at CN plenary that the changes to this feature should also be made to R99, R4 and R5 versions of affected specs, in order to meet FCC requirements related to Location Service for Emergency Calls. Therefore, new CR's to 29.002 are required. **This is an essential correction**
Summary of change:	⌘	New functionality is introduced to allow the GMLC to replace the NA-ESRK supplied by the MSC (if the MSC allows for this to take place) by interrogating the LCZTF (a new functional element within the GMLC defined in 23.271). New parameters are introduced for Subscriber Location Report to allow the result of the interrogation to be taken back to the MSC.
Consequences if not approved:	⌘	Emergency calls may be routed to a non-optimal PSAP, resulting ultimately in delays in responses to emergencies. FCC requirements are not met.

Clauses affected:	⌘	7.6.11.19, 13A.3, 17.7.11, 17.7.13

Y N

Other specs affected:	⌘	X		Other core specifications	⌘	23.171 CR 030
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.6.11.19 ~~7.6.11.19 Void~~NA-ESRK Request

This parameter allows the MSC to indicate that it requires the GMLC to allocate a NA-ESRK based on the target MS location estimate. This parameter only applies to emergency services calls in North America.

******* Next Changed section *******

13A.3 MAP-SUBSCRIBER-LOCATION-REPORT Service

13A.3.1 Definition

This service is used by a VMSC to provide the location of a target MS to a GMLC when a request for location is either implicitly administered or made at some earlier time. This is a confirmed service using the primitives from table 13A.3/1.

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
MSC Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)	C	C(=)
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
Additional Location Estimate	C	C(=)		
NA-ESRK Request	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in 3GPP TS 23.171.

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

MSC Number

See definition in clause 7.6.2. This parameter provides the address of the visited MSC for target MS.

IMSI

The IMSI shall be provided if available to the VMSC.

MSISDN

The MSISDN shall be provided if available to the VMSC.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

If the target MS has originated an emergency service call in North America and NA-ESRK Request is included in Subscriber_Location_Report-Arg, NA-ESRK may also be included in the response to the MSC, see 3GPP TS 23.271 [26a].

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter.

NA-ESRK Request

If the target MS has originated an emergency service call in North America, NA-ESRK Request may be included to indicate that the MSC is able to accept NA-ESRK in the Response message, see section 7.6.11.19.

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

****** *Next Changed section* ******

17.7.11 Extension data types

```
MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

   PrivateExtension,
   ExtensionContainer,
   SLR-ArgExtensionContainer;


-- IOC for private MAP extensions

MAP-EXTENSION  ::= CLASS {
    &ExtensionType                                              OPTIONAL,
    &extensionId                    OBJECT IDENTIFIER }
    -- The length of the Object Identifier shall not exceed 16 octets and the
    -- number of components of the Object Identifier shall not exceed 16


-- data types

ExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    pcs-Extensions                  [1]PCS-Extensions               OPTIONAL,
    ...}

SLR-ArgExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    slr-Arg-PCS-Extensions          [1]SLR-Arg-PCS-Extensions       OPTIONAL,
    ...}

PrivateExtensionList ::= SEQUENCE SIZE (1..maxNumOfPrivateExtensions) OF
                                    PrivateExtension

PrivateExtension ::= SEQUENCE {
    extId                           MAP-EXTENSION.&extensionId
                                    ({ExtensionSet}),
    extType                         MAP-EXTENSION.&ExtensionType
                                    ({ExtensionSet}{@extId})        OPTIONAL}

maxNumOfPrivateExtensions  INTEGER ::= 10

ExtensionSet                        MAP-EXTENSION ::=
        {...
         -- ExtensionSet is the set of all defined private extensions
    }

    -- Unsupported private extensions shall be discarded if received.


PCS-Extensions ::= SEQUENCE {
    ...}

SLR-Arg-PCS-Extensions ::= SEQUENCE {
    ...,
    na-ESRK-Request                 [0]  NULL                       OPTIONAL }

END
```

****** *Next Changed section* ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version6 (6)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation,
   SupportedGADShapes,
   Add-GeographicalInformation
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID
FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}

   ExtensionContainer,
   SLR-ArgExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version6 (6)}
;



.....
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     slr-ArgExtensionContainer          [7] SLR-ArgExtensionContainer     OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate
```

```
LCS-Event ::= ENUMERATED {
     emergencyCallOrigination  (0),
     emergencyCallRelease  (1),
     mo-lr  (2),
     ... }
     --   exception handling:
     --   a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
     --   shall be rejected by a receiver with a return error cause of unexpected data value
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
     extensionContainer                  ExtensionContainer                OPTIONAL,
     ...,
     na-ESRK                             [0] ISDN-AddressString            OPTIONAL }
```

```
END
```

3GPP TSG CN WG4 Meeting #23 ***N4-040519***
Zagreb, CROATIA, 10th – 14th MAY 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **714** ⌘ **rev** **1** ⌘ Current version: **5.9.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Introduction of North American Interim Location Based Routing of Emergency Call
Source:	⌘	CN4
Work item code:	⌘	LCS
Date:	⌘	31/03/2004
Category:	⌘	**A**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	At CN4 #19, an LS from T1P1 (N4-030586) was received that identified requirements from North America for emergency calls to be routed to the relevant PSAP based on a subscriber's actual position rather than basing this routing on the cell-Id of the cell that the subscriber was attached to. This new functionality would allow the emergency call to be handled by the PSAP that was physically closest to the subscriber making the call, rather than the PSAP closest to the cell. At CN4 #20, a CR to Rel 6 29.002 was approved to implement this feature (CR 645r1, N4-031038). It has now been decided at CN plenary that the changes to this feature should also be made to R99, R4 and R5 versions of affected specs, in order to meet FCC requirements related to Location Service for Emergency Calls. Therefore, new CR's to 29.002 are required. **This is an essential correction**
Summary of change:	⌘	New functionality is introduced to allow the GMLC to replace the NA-ESRK supplied by the MSC (if the MSC allows for this to take place) by interrogating the LCZTF (a new functional element within the GMLC defined in 23.271). New parameters are introduced for Subscriber Location Report to allow the result of the interrogation to be taken back to the MSC.
Consequences if not approved:	⌘	Emergency calls may be routed to a non-optimal PSAP, resulting ultimately in delays in responses to emergencies. FCC requirements are not met.

Clauses affected:	⌘	7.6.11.19, 13A.3, 17.7.11, 17.7.13

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	23.271 CR 246
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.6.11.19 ~~7.6.11.19 Void~~NA-ESRK Request

This parameter allows the MSC to indicate that it requires the GMLC to allocate a NA-ESRK based on the target MS location estimate. This parameter only applies to emergency services calls in North America.

****** *Next Changed section* ******

13A.3 MAP-SUBSCRIBER-LOCATION-REPORT Service

13A.3.1 Definition

This service is used by a VMSC or SGSN to provide the location of a target MS to a GMLC when a request for location is either implicitly administered or made at some earlier time. This is a confirmed service using the primitives from table 13A.3/1.

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
Network Node Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)	C	C(=)
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Positioning Data	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
Additional Location Estimate	C	C(=)		
Deferred MT-LR Data	C	C(=)		
LCS-Reference Number	C	C(=)		
NA-ESRK Request	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

Network Node Number

See definition in clause 7.6.2. This parameter provides the address of the sending node.

IMSI

The IMSI shall be provided if available to the VMSC or SGSN.

MSISDN

The MSISDN shall be provided if available to the VMSC or SGSN.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

If the target MS has originated an emergency service call in North America and NA-ESRK Request is included in Subscriber Location Report-Arg, NA-ESRK may also be included in the response to the MSC, see 3GPP TS 23.271 [26a].

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Positioning Data

This parameter indicates the usage of each positioning method that was attempted to determine the location estimate either successfully or unsuccessfully. It may be included in the message only if the access network is GERAN, see 3GPP TS 23.271 [26a].

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

GPRS Node Indicator

See definition in clause 7.6.8. This presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter..

Deferred MT-LR Data

See definition in clause 7.6.11.3.

LCS-Reference Number

This parameter shall be included if the Subscriber Location Report is the reponse to a deferred MT location request.

NA-ESRK Request

If the target MS has originated an emergency service call in North America, NA-ESRK Request may be included to indicate that the MSC is able to accept NA-ESRK in the Response message, see section 7.6.11.19.

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

******* Next Changed section *******

17.7.11 Extension data types

```
MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

   PrivateExtension,
   ExtensionContainer,
   SLR-ArgExtensionContainer;


-- IOC for private MAP extensions

MAP-EXTENSION  ::= CLASS {
    &ExtensionType                                          OPTIONAL,
    &extensionId                    OBJECT IDENTIFIER }
    -- The length of the Object Identifier shall not exceed 16 octets and the
    -- number of components of the Object Identifier shall not exceed 16

-- data types

ExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    pcs-Extensions                  [1]PCS-Extensions               OPTIONAL,
    ...}

SLR-ArgExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    slr-Arg-PCS-Extensions          [1]SLR-Arg-PCS-Extensions       OPTIONAL,
    ...}

PrivateExtensionList ::= SEQUENCE SIZE (1..maxNumOfPrivateExtensions) OF
                                    PrivateExtension

PrivateExtension ::= SEQUENCE {
    extId                           MAP-EXTENSION.&extensionId
                                    ({ExtensionSet}),
    extType                         MAP-EXTENSION.&ExtensionType
                                    ({ExtensionSet}{@extId})        OPTIONAL}

maxNumOfPrivateExtensions  INTEGER ::= 10

ExtensionSet                        MAP-EXTENSION ::=
        {...
    -- ExtensionSet is the set of all defined private extensions
    }
    -- Unsupported private extensions shall be discarded if received.

PCS-Extensions ::= SEQUENCE {
    ...}

SLR-Arg-PCS-Extensions ::= SEQUENCE {
    ...,
    na-ESRK-Request                 [0]  NULL                       OPTIONAL }

END
```

****** *Next Changed section* ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version8 (8)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation,
   SupportedGADShapes,
   Add-GeographicalInformation,
   LCSRequestorID,
   LCSCodeword
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID,
   LCSServiceTypeID
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}

   ExtensionContainer,
   SLR-ArgExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version8 (8)}

   APN
FROM MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}

   Additional-Number
FROM MAP-SM-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version8 (8)}
;


.....
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     slr-ArgExtensionContainer          [7] SLR-ArgExtensionContainer     OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrData                  [9] Deferredmt-lrData             OPTIONAL,
     lcs-ReferenceNumber                [10] LCS-ReferenceNumber          OPTIONAL,
     positioningData                    [11] PositioningDataInformation   OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
     -- included.
```

```
Deferredmt-lrData ::= SEQUENCE {
     deferredLocationEventType          DeferredLocationEventType,
     terminationCause                   [0] TerminationCause              OPTIONAL,
     lcsLocationInfo                    [1] LCSLocationInfo               OPTIONAL,
     ...}
     -- lcsLocationInfo may be included only if a terminationCause is present
     -- indicating mt-lrRestart.
```

```
LCS-Event ::= ENUMERATED {
     emergencyCallOrigination  (0),
     emergencyCallRelease  (1),
     mo-lr  (2),
     ...,
     deferredmt-lrResponse  (3) }
     --   exception handling:
     --   a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
     --   shall be rejected by a receiver with a return error cause of unexpected data value
```

```
TerminationCause ::= ENUMERATED {
     normal  (0),
     errorundefined  (1),
     internalTimeout  (2),
     congestion  (3),
     mt-lrRestart  (4),
     privacyViolation  (5),
     ...,
     shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
     extensionContainer                 ExtensionContainer                OPTIONAL,
     ...,
     na-ESRK                            [0] ISDN-AddressString            OPTIONAL }
```

```
END
```

3GPP TSG CN WG4 Meeting #23
Zagreb, CROATIA, 10th – 14th MAY 2004

N4-040518

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **713** ⌘ **rev** **1** ⌘ Current version: **4.14.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Introduction of North American Interim Location Based Routing of Emergency Call
Source:	⌘	CN4
Work item code:	⌘	LCS
Date:	⌘	31/03/2004
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	At CN4 #19, an LS from T1P1 (N4-030586) was received that identified requirements from North America for emergency calls to be routed to the relevant PSAP based on a subscriber's actual position rather than basing this routing on the cell-Id of the cell that the subscriber was attached to. This new functionality would allow the emergency call to be handled by the PSAP that was physically closest to the subscriber making the call, rather than the PSAP closest to the cell. At CN4 #20, a CR to Rel 6 29.002 was approved to implement this feature (CR 645r1, N4-031038). It has now been decided at CN plenary that the changes to this feature should also be made to R99, R4 and R5 versions of affected specs, in order to meet FCC requirements related to Location Service for Emergency Calls. Therefore, new CR's to 29.002 are required. **This is an essential correction**
Summary of change:	⌘	New functionality is introduced to allow the GMLC to replace the NA-ESRK supplied by the MSC (if the MSC allows for this to take place) by interrogating the LCZTF (a new functional element within the GMLC defined in 23.271). New parameters are introduced for Subscriber Location Report to allow the result of the interrogation to be taken back to the MSC.
Consequences if not approved:	⌘	Emergency calls may be routed to a non-optimal PSAP, resulting ultimately in delays in responses to emergencies. FCC requirements are not met.

Clauses affected:	⌘	7.6.11.19, 13A.3, 17.7.11, 17.7.13

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	23.271 CR 245
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.6.11.19 ~~7.6.11.19 Void~~NA-ESRK Request

This parameter allows the MSC to indicate that it requires the GMLC to allocate a NA-ESRK based on the target MS location estimate. This parameter only applies to emergency services calls in North America.

******* Next Changed section *******

13A.3 MAP-SUBSCRIBER-LOCATION-REPORT Service

13A.3.1 Definition

This service is used by a VMSC or SGSN to provide the location of a target MS to a GMLC when a request for location is either implicitly administered or made at some earlier time. This is a confirmed service using the primitives from table 13A.3/1.

13A.3.2 Service Primitives

Table 13A.3/1: Subscriber_Location_Report

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
LCS Event	M	M(=)		
LCS Client ID	M	M(=)		
Network Node Number	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
NA-ESRD	C	C(=)		
NA-ESRK	C	C(=)	C	C(=)
IMEI	U	C(=)		
Location Estimate	C	C(=)		
Age of Location Estimate	C	C(=)		
LMSI	U	C(=)		
GPRS Node Indicator	C	C(=)		
Additional Location Estimate	C	C(=)		
Deferred MT-LR Data	C	C(=)		
LCS-Reference Number	C	C(=)		
NA-ESRK Request	C	C(=)		
User error			C	C(=)
Provider error				O

13A.3.3 Parameter Definition and Use

All parameters are defined in clause 7.6. The use of these parameters and the requirements for their presence are specified in. 3GPP TS 23.271

LCS Event

This parameter indicates the event that triggered the Subscriber Location Report.

LCS Client ID

This parameter provides information related to the identity of the recipient LCS client.

Network Node Number

See definition in clause 7.6.2. This parameter provides the address of the sending node.

IMSI

The IMSI shall be provided if available to the VMSC or SGSN.

MSISDN

The MSISDN shall be provided if available to the VMSC or SGSN.

NA-ESRD

If the target MS has originated an emergency service call in North America, the NA-ESRD shall be provided by the VMSC if available.

NA-ESRK

If the target MS has originated an emergency service call in North America, the NA-ESRK shall be provided by the VMSC if assigned.

If the target MS has originated an emergency service call in North America and NA-ESRK Request is included in Subscriber_Location_Report-Arg, NA-ESRK may also be included in the response to the MSC, see 3GPP TS 23.271 [26a].

IMEI

Inclusion of the IMEI is optional.

Location Estimate

This parameter provides the location estimate. The absence of this parameter implies that a location estimate was not available or could not be successfully obtained. If the obtained location estimate is not encoded in one of the supported geographical shapes then this parameter shall consist of one octet, which shall be discarded by the receiving node.

Age of Location Estimate

This parameter indicates how long ago the location estimate was obtained.

LMSI

The LMSI may be provided if assigned by the VLR.

GPRS Node Indicator

See definition in clause 7.6.8. This presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Location Estimate

This parameter provides the location estimate when not provided by the Location Estimate parameter..

Deferred MT-LR Data

See definition in clause 7.6.11.3.

LCS-Reference Number

This parameter shall be included if the Subscriber Location Report is the reponse to a deferred MT location request.

NA-ESRK Request

If the target MS has originated an emergency service call in North America, NA-ESRK Request may be included to indicate that the MSC is able to accept NA-ESRK in the Response message, see section 7.6.11.19.

User error

This parameter is sent by the responder when the received message contains an error, cannot be forwarded or stored for an LCS client or cannot be accepted for some other reason and if present, takes one of the following values defined in clause 7.6.1.

- System Failure;
- Data Missing;
- Unexpected Data Value;
- Resource Limitation;
- Unknown Subscriber;
- Unauthorised requesting network;
- Unknown or unreachable LCS Client.

Provider error

These are defined in clause 7.6.1.

****** *Next Changed section* ******

17.7.11 Extension data types

```
MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version7 (7)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

   PrivateExtension,
   ExtensionContainer,
   SLR-ArgExtensionContainer;


-- IOC for private MAP extensions

MAP-EXTENSION  ::= CLASS {
    &ExtensionType                                              OPTIONAL,
    &extensionId                    OBJECT IDENTIFIER }
    -- The length of the Object Identifier shall not exceed 16 octets and the
    -- number of components of the Object Identifier shall not exceed 16


-- data types

ExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    pcs-Extensions                  [1]PCS-Extensions               OPTIONAL,
    ...}

SLR-ArgExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    slr-Arg-PCS-Extensions          [1]SLR-Arg-PCS-Extensions       OPTIONAL,
    ...}

PrivateExtensionList ::= SEQUENCE SIZE (1..maxNumOfPrivateExtensions) OF
                                    PrivateExtension

PrivateExtension ::= SEQUENCE {
    extId                           MAP-EXTENSION.&extensionId
                                    ({ExtensionSet}),
    extType                         MAP-EXTENSION.&ExtensionType
                                    ({ExtensionSet}{@extId})        OPTIONAL}

maxNumOfPrivateExtensions  INTEGER ::= 10

ExtensionSet                        MAP-EXTENSION ::=
        {...
         -- ExtensionSet is the set of all defined private extensions
    }

    -- Unsupported private extensions shall be discarded if received.


PCS-Extensions ::= SEQUENCE {
    ...}

SLR-Arg-PCS-Extensions ::= SEQUENCE {
    ...,
    na-ESRK-Request                 [0]  NULL                       OPTIONAL }


END
```

****** *Next Changed section* ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version7 (7)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation,
   SupportedGADShapes,
   Add-GeographicalInformation
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
      LCSClientInternalID
FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version7 (7)}

   ExtensionContainer,
   SLR-ArgExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version7 (7)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version7 (7)}

   APN
FROM MAP-MS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version7 (7)}

   Additional-Number
FROM MAP-SM-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version7 (7)}
;

.....
```

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     slr-ArgExtensionContainer          [7] SLR-ArgExtensionContainer     OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrData                  [9] Deferredmt-lrData             OPTIONAL,
     lcs-ReferenceNumber                [10] LCS-ReferenceNumber          OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
     -- included.
```

```
Deferredmt-lrData ::= SEQUENCE {
     deferredLocationEventType          DeferredLocationEventType,
     terminationCause                   [0] TerminationCause              OPTIONAL,
     lcsLocationInfo                    [1] LCSLocationInfo               OPTIONAL,
     ...}
     -- lcsLocationInfo may be included only if a terminationCause is present
     -- indicating mt-lrRestart.
```

```
LCS-Event ::= ENUMERATED {
     emergencyCallOrigination  (0),
     emergencyCallRelease  (1),
     mo-lr  (2),
     ...,
     deferredmt-lrResponse  (3) }
     --   exception handling:
     --   a SubscriberLocationReport-Arg containing an unrecognized LCS-Event
     --   shall be rejected by a receiver with a return error cause of unexpected data value
```

```
TerminationCause ::= ENUMERATED {
     normal  (0),
     errorundefined  (1),
     internalTimeout  (2),
     congestion  (3),
     mt-lrRestart  (4),
     privacyViolation  (5),
     ...,
     shapeOfLocationEstimateNotSupported (6) }
-- mt-lrRestart shall be used to trigger the GMLC to restart the location procedure,
-- either because the sending node knows that the terminal has moved under coverage
-- of another MSC or SGSN (e.g. Send Identification received), or because the subscriber
-- has been deregistered due to a Cancel Location received from HLR.
--
-- exception handling
-- an unrecognized value shall be treated the same as value 1 (errorundefined)
```

```
SubscriberLocationReport-Res ::= SEQUENCE {
     extensionContainer                 ExtensionContainer                OPTIONAL,
     ...,
     na-ESRK                            [0] ISDN-AddressString            OPTIONAL }
```

```
END
```

3GPP TSG CN WG4 Meeting #23
Zagreb, CROATIA, 10th – 14th MAY 2004

N4-040520

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **731** ⌘ **rev** ⌘ Current version: **6.5.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Introduction of North American Interim Location Based Routing of Emergency Call
Source:	⌘	CN4
Work item code:	⌘	LCS2
Date:	⌘	31/03/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	At CN4 #19, an LS from T1P1 (N4-030586) was received that identified requirements from North America for emergency calls to be routed to the relevant PSAP based on a subscriber's actual position rather than basing this routing on the cell-Id of the cell that the subscriber was attached to. This new functionality would allow the emergency call to be handled by the PSAP that was physically closest to the subscriber making the call, rather than the PSAP closest to the cell. At CN4 #20, a CR to Rel 6 29.002 was approved to implement this feature (CR 645r1, N4-031038). It has now been decided at CN plenary that the changes to this feature should also be made to R99, R4 and R5 versions of affected specs, in order to meet FCC requirements related to Location Service for Emergency Calls. Therefore, new CR's to 29.002 are required. In order to asure compatibility between releases this Rel-6 CR is needed although CR 645r1 was already approved. **This is an essential correction**
Summary of change:	⌘	New functionality is introduced to allow the GMLC to replace the NA-ESRK supplied by the MSC (if the MSC allows for this to take place) by interrogating the LCZTF (a new functional element within the GMLC defined in 23.271). New parameters are introduced for Subscriber Location Report to allow the result of the interrogation to be taken back to the MSC.
Consequences if not approved:	⌘	Emergency calls may be routed to a non-optimal PSAP, resulting ultimately in delays in responses to emergencies. FCC requirements are not met.

Clauses affected:	⌘	17.7.11, 17.7.13			
Other specs affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

17.7.11 Extension data types

```
MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

   PrivateExtension,
   ExtensionContainer,
   SLR-ArgExtensionContainer;


-- IOC for private MAP extensions

MAP-EXTENSION  ::= CLASS {
    &ExtensionType                                          OPTIONAL,
    &extensionId                    OBJECT IDENTIFIER }
    -- The length of the Object Identifier shall not exceed 16 octets and the
    -- number of components of the Object Identifier shall not exceed 16

-- data types

ExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    pcs-Extensions                  [1]PCS-Extensions               OPTIONAL,
    ...}

SLR-ArgExtensionContainer ::= SEQUENCE {
    privateExtensionList            [0]PrivateExtensionList         OPTIONAL,
    slr-Arg-PCS-Extensions          [1]SLR-Arg-PCS-Extensions       OPTIONAL,
    ...}

PrivateExtensionList ::= SEQUENCE SIZE (1..maxNumOfPrivateExtensions) OF
                                    PrivateExtension

PrivateExtension ::= SEQUENCE {
    extId                           MAP-EXTENSION.&extensionId
                                    ({ExtensionSet}),
    extType                         MAP-EXTENSION.&ExtensionType
                                    ({ExtensionSet}{@extId})        OPTIONAL}

maxNumOfPrivateExtensions  INTEGER ::= 10

ExtensionSet                        MAP-EXTENSION ::=
        {...
         -- ExtensionSet is the set of all defined private extensions
    }
    -- Unsupported private extensions shall be discarded if received.

PCS-Extensions ::= SEQUENCE {
    ...}

SLR-Arg-PCS-Extensions ::= SEQUENCE {
    ...,
    na-ESRK-Request                 [0]  NULL                       OPTIONAL }

END
```

****** *Next Changed section* ******

17.7.13 Location service data types

```
MAP-LCS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-LCS-DataTypes (25) version9 (9)}

DEFINITIONS
IMPLICIT TAGS
::=
BEGIN

EXPORTS
   RoutingInfoForLCS-Arg,
   RoutingInfoForLCS-Res,
   ProvideSubscriberLocation-Arg,
   ProvideSubscriberLocation-Res,
   SubscriberLocationReport-Arg,
   SubscriberLocationReport-Res,
   LocationType,
   DeferredLocationEventType,
   LCSClientName,
   LCS-QoS,
   Horizontal-Accuracy,
   ResponseTime,
   Ext-GeographicalInformation,
   SupportedGADShapes,
   Add-GeographicalInformation,
   LCSRequestorID,
   LCS-ReferenceNumber,
   LCSCodeword,
   AreaEventInfo
;

IMPORTS
   AddressString,
   ISDN-AddressString,
   IMEI,
   IMSI,
   LMSI,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID,
   LCSServiceTypeID,
   CellGlobalIdOrServiceAreaIdOrLAI
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

   ExtensionContainer,
   SLR-ArgExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

   USSD-DataCodingScheme,
   USSD-String
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0) gsm-Network (1) modules (3)
   map-SS-DataTypes (14) version9 (9)}

   APN,
   GSN-Address,
   SupportedLCS-CapabilitySets
FROM MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

   Additional-Number
FROM MAP-SM-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SM-DataTypes (16) version9 (9)}
```

;

.....

```
SubscriberLocationReport-Arg ::= SEQUENCE {
     lcs-Event                          LCS-Event,
     lcs-ClientID                       LCS-ClientID,
     lcsLocationInfo                    LCSLocationInfo,
     msisdn                             [0] ISDN-AddressString            OPTIONAL,
     imsi                               [1] IMSI                          OPTIONAL,
     imei                               [2] IMEI                          OPTIONAL,
     na-ESRD                            [3] ISDN-AddressString            OPTIONAL,
     na-ESRK                            [4] ISDN-AddressString            OPTIONAL,
     locationEstimate                   [5] Ext-GeographicalInformation   OPTIONAL,
     ageOfLocationEstimate              [6] AgeOfLocationInformation      OPTIONAL,
     slr-ArgExtensionContainer          [7] SLR-ArgExtensionContainer     OPTIONAL,
     ... ,
     add-LocationEstimate               [8] Add-GeographicalInformation   OPTIONAL,
     deferredmt-lrData                  [9] Deferredmt-lrData             OPTIONAL,
     lcs-ReferenceNumber                [10] LCS-ReferenceNumber          OPTIONAL,
     geranPositioningData               [11] PositioningDataInformation   OPTIONAL,
     utranPositioningData               [12] UtranPositioningDataInfo     OPTIONAL,
     na-ESRK-Request                    [16] NULL                         OPTIONAL,
     cellIdOrSai                        [13] CellGlobalIdOrServiceAreaIdOrLAI  OPTIONAL,
     h-gmlc-Address                     [14] GSN-Address                  OPTIONAL,
     lcsServiceTypeID                   [15] LCSServiceTypeID             OPTIONAL }

     -- one of msisdn or imsi is mandatory
     -- a location estimate that is valid for the locationEstimate parameter should
     -- be transferred in this parameter in preference to the add-LocationEstimate.
     -- the deferredmt-lrData parameter shall be included if and only if the lcs-Event
     -- indicates a deferredmt-lrResponse.
     -- if the lcs-Event indicates a deferredmt-lrResponse then the locationEstimate
     -- and the add-locationEstimate parameters shall not be sent if the
     -- supportedGADShapes parameter had been received in ProvideSubscriberLocation-Arg
     -- and the shape encoded in locationEstimate or add-LocationEstimate was not marked
     -- as supported in supportedGADShapes. In such a case terminationCause
     -- in deferredmt-lrData shall be present with value
     -- shapeOfLocationEstimateNotSupported.
     -- If a lcs event indicates deferred mt-lr response, the lcs-Reference number shall be
     -- included.
```