TSG-RAN Meeting #9
Hawaii, US, 20 - 22 September 2000

TSGRP#9(00)0377

Title: **Agreed CRs to TS 25.419**

Source: **TSG-RAN WG3**

Agenda item: **5.3.3**

Tdoc_Num	Specification	CR_Num	Revision_Num	CR_Subject	CR_Category	WG_Status	Cur_Ver_Num	New_Ver_Num
R3-001783	25.419	011		Handling of Presence field	F	agreed	3.1.0	3.2.0
R3-001872	25.419	012	1	Handling of IEs marked with "Ignore and Notify" in SABP Class 2 Procedures	F	agreed	3.1.0	3.2.0
R3-001937	25.419	014	1	Criticality in tabular format of 25.419	F	agreed	3.1.0	3.2.0
R3-001918	25.419	015		object identifier value for SBAP	F	agreed	3.1.0	3.2.0
R3-002339	25.419	016	3	Clarification of Message Identifier	F	agreed	3.1.0	3.2.0
R3-002314	25.419	017	2	Rules for SABP on how IEs become known and clarification on EP	F	agreed	3.1.0	3.2.0
R3-002341	25.419	018	2	Correcting the references in SABP & other minor corrections.	D	agreed	3.1.0	3.2.0
R3-002286	25.419	019	1	Editorial Corrections in the presentation of SABP as per Specification Notation.	D	agreed	3.1.0	3.2.0
R3-002342	25.419	020	2	Clarification of the description and usage of Elementary Procedures.	F	agreed	3.1.0	3.2.0
R3-002304	25.419	021		Correction to range of repetition indicator	F	agreed	3.1.0	3.2.0
R3-002375	25.419	022	1	New Abstract syntax error for wrong order or number or IEs	F	agreed	3.1.0	3.2.0

R3-002372	25.419	023		Combined ASN.1 definition based on agreed CRs	F	agreed	3.1.0	3.2.0

3GPP TSG-RAN WG3 Meeting #14
Helsinki, Finland, 3 - 7 July 2000

***Document* R3-001783**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	011	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	RAN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: R-WG3 **Date:** 2000-06-28

Subject: Handling of Presence field

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

In the tabular format and in the ASN.1, for many IE's and IE groups a "presence" is specified. Currently no behaviour related to this presence is indicated.

This contribution proposes to handle the absence of an IE/IE-group that should have been present according to the presence field in the corresponding object as an abstract syntax error.

The proposed handling is aligned with the criticality information specified for the concerning IE/IE-group, since mandatory rejection would disable the possibility of ever removing an IE/IE-group in a backward compatible way.

Clauses affected: 9.2.17, 10.3.

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: Similar CRs where approved for NBAP, RNSAP and RANAP at R3 #13.

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.2.17 Criticality-Diagnostics

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Criticality Diagnostics				
>Procedure Code	O		INTEGER (0..255)	Procedure code is to be used if Criticality diagnostics is part of Error Indication procedure, and not within the response message of the same operation that caused the error
>Triggering Message	O		ENUMERATED(initiating message, successful outcome, unsuccessful outcome, outcome)	The Triggering Message is used only if the Criticality diagnostics is part of Error Indication procedure except when the procedure code is not understood.
>Criticality Response	O		ENUMERATED(reject, ignore, notify)	This Criticality response IE is used for reporting the Criticality of the Triggering message
Information Element Criticality Diagnostics		0 to <maxnoof errors>		
>Criticality Response	M		ENUMERATED(reject, ignore, notify)	The Criticality response IE is used for reporting the criticality of the triggering IE. The value 'ignore' shall not be used.
>IE Id	M		INTEGER (0..65535)	The IE Id of the not understood or missing IE
>Repetition Number	O		INTEGER (0..255)	The repetition number of the not understood IE if applicable

Range bound	Explanation
Maxnooferrors	Maximum no. of IE errors allowed to be reported with a single message. The value for maxnooferrors is 256.

10.3 Abstract Syntax Error

10.3.1 General

An Abstract Syntax Error occurs when the receiving functional SABP entity:

1. receives IEs or IE groups that cannot be understood (unknown IE id);
2. . The abstract syntax error also appears if receives IEs for which the logical range of an IE is violated (e.g.: ASN.1 definition: 0 to 15, the logical range is 0 to 10 (values 11 to 15 are undefined), and 12 will be received; this case will be handled as an abstract syntax error using criticality information sent by the originator of the message);
3. does not receive IEs or IE groups but according to the specified presence of the concerning object, the IEs or IE groups should have been present in the received message.

Cases 1 and 2 (not comprehended IE/IE group) are handled based on received Criticality information. Case 3 (missing IE/IE group) is handled based on Criticality information and Presence information for the missing IE/IE group specified in the version of the specification used by the receiver.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error act according to the Criticality Information and Presence Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclauses 10.3.4 and 10.3.5.

10.3.2 Definition of Criticality Information

In the SABP messages there is criticality information set for individual IEs and/or IE groups. This criticality information instructs the receiver how to act when receiving an IE or an IE group that is not comprehended i.e. the entire item (IE or IE group) which is not (fully or partially) comprehended shall be treated in accordance with its own criticality information as specified in subclause 10.3.34.

In addition, the criticality information is used in case of the missing IE/IE group abstract syntax error (see subclause 10.3.5).

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error act according to the Criticality Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclause 10.3.3.

The receiving node shall take different actions depending on the value of the Criticality Information. The three possible values of the Criticality Information for an IE/IE group are:

- Reject IE;
- Ignore IE and Notify Sender;
- Ignore IE.

10.3.3 Presence Information

For many IEs/IE groups which are optional according to the ASN.1 transfer syntax, RANAP specifies separately if the presence of these IEs/IE groups is optional or mandatory with respect to RNS application by means of the presence field of the concerning object of class RANAP-PROTOCOL-IES, RANAP-PROTOCOL-IES-PAIR, RANAP-PROTOCOL-EXTENSION or RANAP-PRIVATE-IES.

The presence field of the indicated classes supports three values:

1. Optional;
2. Conditional;
3. Mandatory.

If an IE/IE group is not included in a received message and the presence of the IE/IE group is mandatory or the presence is conditional and the condition is true according to the version of the specification used by the receiver, an abstract syntax error occurs due to a missing IE/IE group.

10.3.4 Not comprehended IE/IE group

~~10.3.3 Handling of the Criticality Information at Reception~~

10.3.~~3~~4.1 Procedure Code

The receiving node shall treat the different types of received criticality information of the *Procedure Code* according to the following:

Reject IE:

- If a message is received with a *Procedure Code* marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall reject the procedure using the Error Indication procedure.

Ignore IE and Notify Sender:

- If a message is received with a *Procedure Code* marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the procedure and initiate the Error Indication procedure.

Ignore IE:

- If a message is received with a *Procedure Code* marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the procedure.

10.3.~~3~~4.2 IEs other than the Procedure Code

The receiving node shall treat the different types of received criticality information of an IE/IE group other than the *Procedure Code* according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more Ies/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*" which the receiving node does no comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using ~~only~~ the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IE/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using only the understood IEs/IE groups.

10.3.5 Missing IE or IE group

The receiving node shall treat the missing IE/IE group according to the criticality information for the missing IE/IE group in the received message specified in the version of this specification used by the receiver:

Reject IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Reject IE*"; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the missing IEs/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- if a received message *initiating* a procedure that does not have a message to report unsuccessful outcome is missing one or more IEs/IE groups with specified criticality "*Reject IE*", the receiving node shall initiate the Error Indication procedure.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Reject IE*, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and report in the response message of the procedure that one or more IEs/IE groups were missing.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall initiate the Error Indication procedure.

Ignore IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message.

TSG-RAN Working Group 3 Meeting #14
Helsinki, Finland, 3rd –6th July 2000

Document R3-001872
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	12r1	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: R-WG3 **Date:** July 2000

Subject: Handling of IEs marked with “Ignore and Notify” in SBAP Class 2 Procedures

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:
In the SBAP specification the handling of IEs with the Criticality Information set to “Ignore and Notify” in class 2 procedures is currently not defined.

This CR clarifies that the handling of IEs with the Criticality Information set to “Ignore and Notify” in class 2 procedures is the same as for procedures with response messages, except that the reporting shall be done by the Error Indication procedure.

Clauses affected: 10.3.4.2, 10.3.5

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	TS 25.413 CR130, TS 25.423 CR159, TS 25.433 CR189
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: This CR implements CR11.

10.3.4.2 IEs other than the Procedure Code

The receiving node shall treat the different types of received criticality information of an IE/IE group other than the *Procedure Code* according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more Ies/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*" which the receiving node does no comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored.

- if a message *initiating* a procedure that does not have a message to report the outcome of the procedure is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using the understood IEs/IE groups, and initiate the Error Indication procedure to report that one or more IEs/IE groups have been ignored.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IE/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using only the understood IEs/IE groups.

10.3.5 Missing IE or IE group

The receiving node shall treat the missing IE/IE group according to the criticality information for the missing IE/IE group in the received message specified in the version of this specification used by the receiver:

Reject IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Reject IE*"; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the missing IEs/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- if a received message *initiating* a procedure that does not have a message to report unsuccessful outcome is missing one or more IEs/IE groups with specified criticality "*Reject IE*", the receiving node shall initiate the Error Indication procedure.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Reject IE*, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and report in the response message of the procedure that one or more IEs/IE groups were missing.

- if a received message *initiating* a procedure that does not have a message to report the outcome of the procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message and initiate the Error Indication procedure to report that one or more IEs/IE groups were missing.

- if a received *response* message is missing one or more IEs/IE groups with specified criticality "*Ignore IE and Notify Sender*", the receiving node shall initiate the Error Indication procedure.

Ignore IE:

- if a received message *initiating* a procedure is missing one or more IEs/IE groups with specified criticality "*Ignore IE*", the receiving node shall continue with the procedure based on the other IEs/IE groups present in the message.

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Hensinki, Finland, 3rd – 7th July 2000

Document R3-001937
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	014r1	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG-RAN#9 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

Strategic [ ]
non-strategic [ ]
(for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: R-WG3 **Date:** 3 July 2000

Subject: Criticality in tabular format of 25.419

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	X

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: In the current version of 25.419, while the criticality are assigned in the ASN.1 but are not shown in the tabular format. This CR provides this editorial modification of the tabular format in order to align the ASN.1 and as well align the description style with other Iu specificaion.

Clauses affected: 9.1.3, 9.1.4, 9.1.5, 9.1.6, 9.1.7, 9.1.8, 9.1.9, 9.1.10, 9.1.11, 9.1.12, 9.1.13, 9.1.14, 9.1.15, 9.1.16, 9.1.17, 9.1.18, 9.1.19, 9.1.20,

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.1.2 Message Contents

9.1.2.1 Presence

All information elements in the message descriptions below are marked mandatory, optional or conditional according to the following table:

Table 3: Meaning of abbreviations used in SABP messages

Abbreviation	Meaning
M	IE's marked as Mandatory (M) will always be included in the message.
O	IE's marked as Optional (O) may or may not be included in the message.
C	IE's marked as Conditional (C) will be included in a message only if the condition is satisfied. Otherwise the IE is not included.

9.1.2.2 Criticality

Each Information Element or Group of Information Elements may have a criticality information applied to it. Following cases are possible:

Table 4: Meaning of content within "Criticality" column

Abbreviation	Meaning
–	No criticality information is applied explicitly.
YES	Criticality information is applied. This is usable only for non-repeatable IEs
GLOBAL	The IE and all its repetitions together have one common criticality information. This is usable only for repeatable IEs.
EACH	Each repetition of the IE has its own criticality information. It is not allowed to assign different criticality values to the repetitions. This is usable only for repeatable IEs.

9.1.3 WRITE-REPLACE

This message is sent by the CN to the RNC.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
New-Serial-Number	M		9.2.5		yes	ignore
Old-Serial-Number	O		9.2.4		yes	ignore
Service-Areas-List	M		9.2.6		yes	ignore
Category	O		9.2.7		yes	ignore
Repetition-Period	O		9.2.8		yes	ignore
No-of-Broadcasts-Requested	M		9.2.9		yes	ignore
Data Coding Scheme	M		9.2.15		yes	ignore
Broadcast-Message-Content	M		9.2.2		yes	ignore

9.1.4 WRITE-REPLACE COMPLETE

This message will be sent by the RNC to the CN in a successful response to a WRITE-REPLACE message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
New-Serial-Number	M		9.2.5		yes	ignore
No-of-Broadcasts-Completed-List	M		9.2.9		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.5 WRITE-REPLACE FAILURE

This message will be sent by the RNC to the CN as an unsuccessful response to a WRITE-REPLACE message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
New-Serial-Number	M		9.2.5		yes	ignore
Failure-List	M		9.2.12		yes	ignore
No-of-Broadcasts-Completed-List	O		9.2.10		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.6 KILL

This message is sent by the CN to the RNC to stop broadcasting of a specific message.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Old-Serial-Number	M		9.2.4		yes	ignore
Service-Areas-List	M		9.2.6		yes	ignore

9.1.7 KILL COMPLETE

This message is sent by the RNC to the CN as a successful response to a KILL message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Old-Serial-Number	M		9.2.4		yes	ignore
No-of-Broadcasts-Completed-List	M		9.2.9		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.8 KILL FAILURE

This message is sent by the RNC to the CN as unsuccessful response to a KILL message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Old-Serial-Number	M		9.2.4		yes	ignore
Failure-List	M		9.2.12		yes	ignore
No-of-Broadcasts-Completed-List	O		9.2.10		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.9 LOAD QUERY

This message is sent by the CN to the RNC to gain an indication of broadcast resources available.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Service-Areas-List	M		9.2.6		yes	ignore

9.1.10 LOAD QUERY COMPLETE

This message will be sent by the RNC as a successful response to the LOAD QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Radio-Resource-Loading-List	M		9.2.13		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.11 LOAD QUERY FAILURE

This message is sent by the RNC to the CN as an unsuccessful response to a LOAD QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Failure-List	M		9.2.12		yes	ignore
Radio-Resource-Loading-List	O		9.2.13		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.12 MESSAGE STATUS QUERY

This message is sent by the CN to the RNC to obtain the current status of a Service Area broadcasting message.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Old-Serial-Number	M		9.2.4		yes	ignore
Service-Areas-List	M		9.2.6		yes	ignore

9.1.13 MESSAGE STATUS QUERY COMPLETE

This message is sent by the RNC to the CN as a successful response to a MESSAGE QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Old-Serial-Number	M		9.2.4		yes	ignore
No-of-Broadcasts-Completed-List	M		9.2.10		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.14 MESSAGE STATUS QUERY FAILURE

This message is sent by the RNC to the CN in an unsuccessful response to a MESSAGE QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Failure-List	M		9.2.12		yes	ignore
Old-Serial-Number	M		9.2.4		yes	ignore
No-of-Broadcasts-Completed-List	O		9.2.10		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.15 RESET

The message is sent by the CN to the RNC to request that the RNC end broadcasting in one or more Service Areas.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Service-Areas-List	M		9.2.6		yes	ignore

9.1.16 RESET COMPLETE

This message is sent from the RNC to the CN as a successful response to a RESET message where indicated Service-Area(s) are now not broadcasting any messages.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Service-Areas-List	M		9.2.6		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.17 RESET FAILURE

This message is sent from the RNC to the CN as an unsuccessful response to a RESET message to indicate that a Service Area broadcasting related problem exists in one or more of its Service Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Failure-List	M		9.2.12		yes	ignore
Service-Areas-List	O		9.2.6		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

9.1.18 RESTART

This message is sent from the RNC to the CN to indicate a Service Area broadcasting related restart situation in one or more of its Service-Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Service-Areas-List	M		9.2.6		yes	ignore
Recovery Indication	O		9.2.16		yes	ignore

9.1.19 FAILURE

This message is sent from the RNC to the CN to indicate that a Service Area broadcasting related problem exists in one or more of its Service-Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Service-Areas-List	M		9.2.6		yes	ignore

9.1.20 ERROR INDICATION

This message is sent by the RNC to the CN in response to any message which is not understood (e.g. invalid parameter or parameter value).

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description	Criticality	Assigned Criticality
Message-Identifier	M		9.2.1		yes	ignore
Serial Number	O		9.2.3		yes	ignore
Cause	O		9.2.14		yes	ignore
Criticality Diagnostics	O		9.2.17		yes	ignore

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Document R3-001918
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or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	15	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#9	for approval	X	Strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: R-WG3 **Date:** July 2000

Subject: Object Identifier value for SABP

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

The value of Object Identifier for ASN.1 of the SABP has been decided by 3GPP. In the current SABP, the values of Object Identifier are not shown. This CR provides this change for SABP-PDU-Descriptions module, SABP-PDU-Contents module, SABP-IEs module, SABP-CommonDataTypes module, SABP-Constants module and SABP-Containers module.

If this change is not accepted, each module in ASN.1 of SABP will not be recognized.

Clauses affected: 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	R3-001915, R3-001916, R3-001917
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.3.2 Elementary Procedure Definitions

```
-- **************************************************************
--
-- Elementary Procedure definitions
--
-- **************************************************************

SABP-PDU-Descriptions -- { object identifier to be allocated }--
SABP-PDU-Descriptions {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-PDU-Descriptions (0)}

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

Partly omitted

9.3.3 PDU Definitions

```
-- **************************************************************
--
-- PDU definitions for SABP.
--
-- **************************************************************

SABP-PDU-Contents -- { object identifier to be allocated }--
SABP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

Partly omitted

9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************

SABP-IEs -- { object identifier to be allocated }--
SABP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN
```

Partly omitted

9.3.5 Common Definitions

```
-- **************************************************************
--
-- Common definitions
--
-- **************************************************************

SABP-CommonDataTypes -- { object identifier to be allocated }--
SABP-CommonDataTypes {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-CommonDataTypes (3) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Partly omitted
```

9.3.6 Constant Definitions

```
-- **************************************************************
--
-- Constant definitions
--
-- **************************************************************

SABP-Constants -- { object identifier to be allocated }--
SABP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Partly omitted
```

9.3.7 Container Definitions

```
-- **************************************************************
--
-- Container definitions
--
-- **************************************************************

SABP-Containers -- { object identifier to be allocated }--
SABP-Containers {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-Containers (5) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Partly omitted
```

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Berlin, Germany, 21st – 25th August 2000

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or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	16r3	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG-RAN#9	for approval	X	Strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source:	R-WG3	**Date:**	~~July~~August 2000

Subject:	Clarification of Message Identifier

Work item:	

Category: *(only one category shall be marked with an X)*			**Release:**	
F	Correction	X	Phase 2	
A	Corresponds to a correction in an earlier release		Release 96	
B	Addition of feature		Release 97	
C	Functional modification of feature		Release 98	
D	Editorial modification		Release 99	X
			Release 00	

Reason for change:

The current *Message Identifier* IE is defined as kind of message type of the SABP messages, this is not correct. In fact, the *Message Identifier* is the IE that shall be transferred to the UE by the RNC together with other relevant information for example *Serial Number* etc.

This CR provides the correction.

If this CR is not approved, it will lead a misunderstanding of Message identifier. Furthermore it will not possible to communicate between two nodes.

r2: in order to align the specification notation as has been agreed before, the font type of the words are aligned.

r3: editorial improvement are done.

Clauses affected:	9.1.3, 9.1.4, 9.1.5, 9.1.6, 9.1.7, 9.1.8, 9.1.9, 9.1.10, 9.1.11, 9.1.12, 9.1.13, 9.1.14, 9.1.15, 9.1.16, 9.1.17, 9.1.18, 9.1.19, 9.1.20, 9.2.1, 9.2.x(new), 9.3.4

Other specs affected:				
	Other 3G core specifications		→ List of CRs:	
	Other GSM core specifications		→ List of CRs:	
	MS test specifications		→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:	

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9 Elements for SABP Communication

9.1 Message Functional Definition and Content

9.1.1 General

NOTE: The messages have been defined in accordance to the guidelines specified in [12].

For each message there is, a table listing the signalling elements in their order of appearance in the transmitted message.

9.1.2 Message Contents

9.1.2.1 Presence

All information elements in the message descriptions below are marked mandatory, optional or conditional according to the following table:

Table 3: Meaning of abbreviations used in SABP messages

Abbreviation	Meaning
M	IE's marked as Mandatory (M) will always be included in the message.
O	IE's marked as Optional (O) may or may not be included in the message.
C	IE's marked as Conditional (C) will be included in a message only if the condition is satisfied. Otherwise the IE is not included.

9.1.2.2 Criticality

Each Information Element or Group of Information Elements may have a criticality information applied to it. Following cases are possible:

Table 4: Meaning of content within "Criticality" column

Abbreviation	Meaning
–	No criticality information is applied explicitly.
YES	Criticality information is applied. This is usable only for non-repeatable IEs
GLOBAL	The IE and all its repetitions together have one common criticality information. This is usable only for repeatable IEs.
EACH	Each repetition of the IE has its own criticality information. It is not allowed to assign different criticality values to the repetitions. This is usable only for repeatable IEs.

9.1.3 WRITE-REPLACE

This message is sent by the CN to the RNC.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
New-Serial-Number	M		9.2.5	
Old-Serial-Number	O		9.2.4	
Service-Areas-List	M		9.2.6	
Category	O		9.2.7	
Repetition-Period	O		9.2.8	
No-of-Broadcasts-Requested	M		9.2.9	
Data Coding Scheme	M		9.2.15	
Broadcast-Message-Content	M		9.2.2	

9.1.4 WRITE-REPLACE COMPLETE

This message will be sent by the RNC to the CN in a successful response to a WRITE-REPLACE message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
New-Serial-Number	M		9.2.5	
No-of-Broadcasts-Completed-List	M		9.2.9	
Criticality Diagnostics	O		9.2.17	

9.1.5 WRITE-REPLACE FAILURE

This message will be sent by the RNC to the CN as an unsuccessful response to a WRITE-REPLACE message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
New-Serial-Number	M		9.2.5	
Failure-List	M		9.2.12	
No-of-Broadcasts-Completed-List	O		9.2.10	
Criticality Diagnostics	O		9.2.17	

9.1.6 KILL

This message is sent by the CN to the RNC to stop broadcasting of a specific message.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Old-Serial-Number	M		9.2.4	
Service-Areas-List	M		9.2.6	

9.1.7 KILL COMPLETE

This message is sent by the RNC to the CN as a successful response to a KILL message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Old-Serial-Number	M		9.2.4	
No-of-Broadcasts-Completed-List	M		9.2.9	
Criticality Diagnostics	O		9.2.17	

9.1.8 KILL FAILURE

This message is sent by the RNC to the CN as unsuccessful response to a KILL message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Old-Serial-Number	M		9.2.4	
Failure-List	M		9.2.12	
No-of-Broadcasts-Completed-List	O		9.2.10	
Criticality Diagnostics	O		9.2.17	

9.1.9 LOAD QUERY

This message is sent by the CN to the RNC to gain an indication of broadcast resources available.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Service-Areas-List	M		9.2.6	

9.1.10 LOAD QUERY COMPLETE

This message will be sent by the RNC as a successful response to the LOAD QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Radio-Resource-Loading-List	M		9.2.13	
Criticality Diagnostics	O		9.2.17	

9.1.11 LOAD QUERY FAILURE

This message is sent by the RNC to the CN as an unsuccessful response to a LOAD QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Failure-List	M		9.2.12	
Radio-Resource-Loading-List	O		9.2.13	
Criticality Diagnostics	O		9.2.17	

9.1.12 MESSAGE STATUS QUERY

This message is sent by the CN to the RNC to obtain the current status of a Service Area broadcasting message.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Old-Serial-Number	M		9.2.4	
Service-Areas-List	M		9.2.6	

9.1.13 MESSAGE STATUS QUERY COMPLETE

This message is sent by the RNC to the CN as a successful response to a MESSAGE QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Old-Serial-Number	M		9.2.4	
No-of-Broadcasts-Completed-List	M		9.2.10	
Criticality Diagnostics	O		9.2.17	

9.1.14 MESSAGE STATUS QUERY FAILURE

This message is sent by the RNC to the CN in an unsuccessful response to a MESSAGE QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Failure-List	M		9.2.12	
Old-Serial-Number	M		9.2.4	
No-of-Broadcasts-Completed-List	O		9.2.10	
Criticality Diagnostics	O		9.2.17	

9.1.15 RESET

The message is sent by the CN to the RNC to request that the RNC end broadcasting in one or more Service Areas.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and	Semantics Description
Message Type	M		9.2.1	
Service-Areas-List	M		9.2.6	

9.1.16 RESET COMPLETE

This message is sent from the RNC to the CN as a successful response to a RESET message where indicated Service-Area(s) are now not broadcasting any messages.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and	Semantics Description
Message Type	M		9.2.1	
Service-Areas-List	M		9.2.6	
Criticality Diagnostics	O		9.2.17	

9.1.17 RESET FAILURE

This message is sent from the RNC to the CN as an unsuccessful response to a RESET message to indicate that a Service Area broadcasting related problem exists in one or more of its Service Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and	Semantics Description
Message Type	M		9.2.1	
Failure-List	M		9.2.12	
Service-Areas-List	O		9.2.6	
Criticality Diagnostics	O		9.2.17	

9.1.18 RESTART

This message is sent from the RNC to the CN to indicate a Service Area broadcasting related restart situation in one or more of its Service-Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and	Semantics Description
Message Type	M		9.2.1	
Service-Areas-List	M		9.2.6	
Recovery Indication	O		9.2.16	

9.1.19 FAILURE

This message is sent from the RNC to the CN to indicate that a Service Area broadcastingrelated problem exists in one or more of its Service-Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Service-Areas-List	M		9.2.6	

9.1.20 ERROR INDICATION

This message is sent by the RNC to the CN in response to any message which is not understood (e.g. invalid parameter or parameter value).

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Type	M		9.2.1	
Message-Identifier	M		9.2.~~1~~x	
Serial Number	O		9.2.3	
Cause	O		9.2.14	
Criticality Diagnostics	O		9.2.17	

9.2 Information Element Definitions

9.2.1 Message~~ Identifier~~Type

Message Type IE uniquely identifies the message being sent. It is mandatory for all messages

~~This parameter identifies the source/type of a CN message and is passed transparently from the CN to the UE.~~

IE/GROUP NAME	PRESENCE	RANGE	IE Type and	Semantics Description
Message~~ Identifier~~ Type				
>Procedure Code	M		ENUMERATED (Write-Replace, Kill, Load Query, Message Status Query, Reset, Restart, Failure, Error Indication ,…)	
>Type of Message	M		ENUMERATED (Initiating Message, Successful Outcome, Unsuccessful Outcome, Outcome)	

9.2.x Message- Identifier

Message Identifier IE is set by the CN, transfer to the UE by the RNC.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message Identifier	M		OCTET STRING (SIZE(2))	This IE is set by the CN, transfer to the UE by the RNC, the RNC needs not to understand what is the meaning of the value but shall treat it as a identifier of a message

9.3.4 Information Element Definitions

Partly omitted

```
-- L

-- M

Message-Identifier ::= OCTET STRING (SIZE (2))
-- This IE identifies the source/type of a CN message and is passed
-- transparently from the CN to the UE.

-- N

New-Serial-Number               ::= Serial-Number

No-of-Broadcasts-Completed-List ::= SEQUENCE (SIZE (1..maxNo-of-Broadcasts-Completed-List)) OF
    No-of-Broadcasts-Completed-List-Item

No-of-Broadcasts-Completed-List-Item ::= SEQUENCE {
    service-area-identifier     Service-Area-Identifier,
    no-of-broadcasts-compl      INTEGER (0..65535),
    no-of-broadcasts-compl-info No-Of-Broadcasts-Compl-Info         OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {NoOfBroadcastsCompletedListItemIE-ExtIEs} }
OPTIONAL,
        ...
}

NoOfBroadcastsCompletedListItemIE-ExtIEs SABP-PROTOCOL-EXTENSION ::= {
...
}

No-Of-Broadcasts-Compl-Info     ::= ENUMERATED {
    overflow,
    unknown,
    ...
}
```

partly omitted

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Berlin, Germany, 21-25, August 2000

***Document* R3-002314**
e.g. for 3GPP use the format TP-99xxx
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CHANGE REQUEST

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25.419	CR	17r2	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	

Source	R-WG3	**Date:**	August 24, 2000

Subject:	Rules for SABP on how IEs become known and clarification on EP knowledge

Work item:	

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

If rules on how IEs or IE groups shall become comprehended for each standard version is not specified, then the criticality handling and non support handling may be mixed.

In R3#13 it was discussed and agreed in principle that a set of rules for how IEs become known should be added to the AP specifications. The proposal for such rules was presented in Tdoc 1441.

This CR presents corresponding changes to SABP following those discussions and decisions for rules on knowledge of IEs, and also clarifies the situation on the knowledge of EPs.

Clauses affected:	10.3.2

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

10.3.2 Definition of Criticality Information

In the SABP messages there is criticality information set for individual IEs and/or IE groups. This criticality information instructs the receiver how to act when receiving an IE or an IE group that is not comprehended i.e. the entire item (IE or IE group) which is not (fully or partially) comprehended shall be treated in accordance with its own criticality information as specified in subclause 10.3.3.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error act according to the Criticality Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclause 10.3.3.

The receiving node shall take different actions depending on the value of the Criticality Information. The three possible values of the Criticality Information for an IE/IE group are:

- Reject IE;
- Ignore IE and Notify Sender;
- Ignore IE.

The following rules restrict when a receiving entity may consider an IE, an IE group or an EP not comprehended (not implemented), and when action based on criticality information is applicable:

1. IE or IE group: When one new or modified IE or IE group is implemented for one EP from a standard version~~release~~~~version~~, then other new or modified IEs or IE groups specified for that EP in that standard version~~release~~~~version~~ shall be considered comprehended by the receiving entity (some may still remain unsupported).

   Note that this restriction is applicable to a sending entity for constructing messages.

2. EP: The comprehension of different EPs within a standard version~~release~~~~version~~ or between different standard versions~~releases~~~~versions~~ is not mandated. Any EP that is not supported may be considered not comprehended, even if another EP from that standard version~~release~~~~version~~ is comprehended, and action based on criticality shall be applied.

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Berlin, Germany. 21- 25 August, 2000

Document R3-002341
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	18r2	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: TSG RAN#9 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

strategic [ ]
non-strategic [ ]
(for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source R-WG3 **Date:** August 18, 2000

Subject: Correcting the references in SABP & other minor corrections.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change:
In the reference list of SABP (section 2) there are two items: [5], [6] present, but which have not been referred to in specification text nor are they relevant for this specification.

References are renumbered accordingly.

The usage of primitives annotations are removed from section 5.

This CR adds the missing references in specification text.

Clauses affected: Title Page, Chapter 1, 2, 4, 5, 6, 9.1.1, 9.3.0 9.4, 10.4

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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3G TS 25.419 V3.1.0 (2000-06)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group RAN; UTRAN ~~Iu~~Iu-BC Interface: Service Area Broadcast Protocol SABP (Release 1999)

1 Scope

The present document specifies the *Service Area Broadcast Protocol (SABP)* between the Cell Broadcast Centre (CBC) and the Radio Network Controller (RNC). It fulfils the CBC - RNC communication requirements specified in [5~~7~~] and is defined over the Iu-BC – reference point.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] UMTS 23.930: "Iu Principles".

[2] UMTS 25.410: "UTRAN Iu Interface; General Aspects and Principles".

[3] UMTS 25.401: "UTRAN Overall Description".

[4] UMTS 25.931: "UTRAN Functions, Examples on Signalling Procedures".

~~[5] UMTS 25.412: "UTRAN Iu Interface Signalling Transport".~~

~~[6] UMTS 25.415: "Iu Interface CN-UTRAN User Plane Protocol".~~

[5~~7~~] UMTS 23.041: "Technical realization of Cell Broadcast Service (CBS)".

[6~~8~~] UMTS 25.414: "UTRAN Iu Interface Data Transport and Transport Signalling".

[7~~9~~] ITU-T Recommendation X.680 (12/94): "Information Technology - Abstract Syntax Notation One (ASN.1):Specification of basic notation".

[8~~10~~] ITU-T Recommendation X.681 (12/94): "Information Technology - Abstract Syntax Notation One (ASN.1): Information object specification".

[9~~11~~] ITU-T Recommendation X.691 (12/94): "Information Technology - ASN.1 encoding rules - Specification of Packed Encoding Rules (PER)".

[10~~12~~] UMTS 25.921: "Guidelines and Principles for Protocol Description and Error Handling".

NEXT MODIFIED SECTION

4 General

The protocol described in the present document is the protocol between CN (CBC) and RNC needed for the CBC Application. The CBC Application is described in [5~~7~~].

4.1 Specification Notations

For the purposes of the present document, the following notations apply:

Procedure	When referring to an elementary procedure in the specification the Procedure Name is written with the first letters in each word in upper case characters followed by the word "procedure", e.g. Write-Replace procedure.
Message	When referring to a message in the specification the MESSAGE NAME is written with all letters in upper case characters followed by the word "message", e.g. WRITE-REPLACE message.
IE	When referring to an information element (IE) in the specification the *Information Element Name* is written with the first letters in each word in upper case characters and all letters in Italic font followed by the abbreviation "IE", e.g. *Old Serial Number* IE.
Value of an IE	When referring to the value of an information element (IE) in the specification the "Value" is written as it is specified in subclause 9.2 enclosed by quotation marks, e.g. "Abstract Syntax Error (Reject)" or "Background ".

5 Services provided by SABP

- During normal operation the CN (CBC) initiates all message transfer and query operations. The RNC responds to the message transfer and query operations initiated by the CBC.
- The RNC will open the connection only in case an error (Failure Indication ~~P~~procedure ~~Indication~~) or recovery (Restart Indication p~~P~~rocedure~~Indication~~) is to be reported.
- The initiator of a connection is responsible for the termination of the connection.

6 Services expected from the Transport layer

Following service is expected from the transport layer:

- in sequence delivery of FP PDU. [6]

NEXT MODFICATION

9 Elements for SABP Communication

9.1 Message Functional Definition and Content

9.1.1 General

NOTE: The messages have been defined in accordance to the guidelines specified in [10~~2~~].

For each message there is, a table listing the signalling elements in their order of appearance in the transmitted message.

NEXT MODIFICATION

9.3.0 General

SABP ASN.1 definition conforms with [7~~9~~] and [8~~1~~0]

The ASN.1 definition specifies the structure and content of SABP messages. SABP messages can contain any IEs specified in the object set definitions for that message without the order or number of occurrence being restricted by ASN.1. However, for this version of the standard, a sending entity shall construct a SABP message according to the PDU definitions module and with the following additional rules (Note that in the following IE means an IE in the object set with an explicit id. If one IE needed to appear more than once in one object set, then the different occurrences have different IE ids):

- IEs shall be ordered (in an IE container) in the order they appear in object set definitions..
- Object set definitions specify how many times IEs may appear. An IE shall appear exactly once if the presence field in an object has value "mandatory". An IE may appear at most once if the presence field in an object has value "optional" or "conditional". If in a tabular format there is multiplicity specified for an IE (i.e. an IE list) then in the corresponding ASN.1 definition the list definition is separated into two parts. The first part defines an IE container list where the list elements reside. The second part defines list elements. The IE container list appears as an IE of its own. For this version of the standard an IE container list may contain only one kind of list elements.

If a SABP message that is not constructed as defined above is received, this shall be considered as Abstract Syntax Error, and the message shall be handled as defined for Abstract Syntax error in Chapter 10.

NEXT MODFICATION

9.4 Message Transfer Syntax

SABP shall use the ASN.1 Basic Packed Encoding Rules (BASIC-PER) Aligned Variant as transfer syntax as specified in ref. [9~~11~~].

LAST MODFICATION

10.4 Logical Error

Logical error situations occur when a message is comprehended correctly, but the information contained within the message is not valid (i.e. semantic error), or describes a procedure which is not compatible with the state of the receiver. In these conditions, the following behaviour shall be performed (unless otherwise specified) as defined by the class of the elementary procedure, irrespective of the criticality information of the IE's/IE groups containing the erroneous values.

Class 1:

Where the logical error occurs in a request message of a class 1 procedure, and the procedure has a failure message, the failure message shall be sent with an appropriate cause value. Typical cause values are:

- Semantic Error;
- Message not compatible with receiver state.

Where the logical error is contained in a request message of a class 1 procedure, and the procedure does not have a failure message, the ~~ERROR INDICATION~~Error Indication procedure shall be initiated with an appropriate cause value.

Where the logical error exists in a response message of a class 1 procedure, local error handling shall be initiated.

Class 2:

Where the logical error occurs in a message of a class 2 procedure, the Error Indication~~ERROR INDICATION~~ procedure shall be initiated with an appropriate cause value.

3GPP TSG-RAN WG3 Meeting #15
Berlin, Germany. 21- 25 August, 2000

Document R3-002286
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	19r1	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: R-WG3 **Date:** August 18, 2000

Subject: Editorial Corrections in the presentation of SABP as per Specification Notation.

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	X

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change: As per Change Request 132r1 on 25.413 (R3-001947), Specification Notations were agreed for presenting the names of procedures, messages and IEs or the value of an IE in R3 Application Part specifications. This CR completes correcting of presentation in SABP to follow the agreed Specification Notations.

Clauses affected: Chapters 8 & 9

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

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8 SABP Procedures

8.1 Elementary Procedures

In the following tables, all EPs are divided into Class 1, and Class 2 Procedures:

Table 1: Class 1

Elementary Procedure	Initiating Message	Successful Outcome	Unsuccessful Outcome
		Response message	Response message
Write-Replace	WRITE-REPLACE	WRITE-REPLACE COMPLETE	WRITE-REPLACE FAILURE
Kill	KILL	KILL COMPLETE	KILL FAILURE
Status Load Enquiry	LOAD QUERY	LOAD QUERY COMPLETE	LOAD QUERY FAILURE
Status Message Query	MESSAGE QUERY	MESSAGE QUERY COMPLETE	MESSAGE QUERY FAILURE
Reset	RESET	RESET COMPLETE	RESET FAILURE

Table 2: Class 2

Elementary Procedure	Message
Restart Indication	RESTART
Failure Indication	FAILURE
Error Indication	ERROR INDICATION

8.2 Write-Replace

8.2.1 General

The purpose of this Write-Replace procedure is to broadcast new information or replace a message already broadcast to a chosen Service Area(s).

8.2.2 Successful Operation

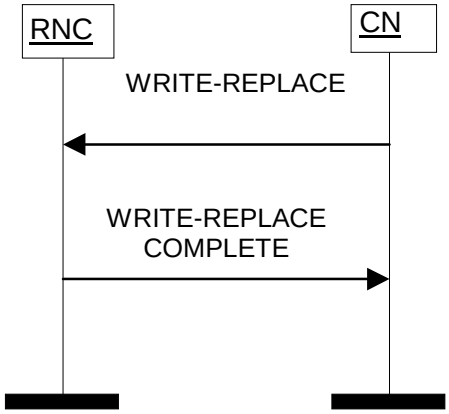

Figure 1: Write-Replace Procedure: Successful Operation

The CN shall initiate the procedure by sending a WRITE-REPLACE message to the RNC.

The presence of a *New Serial Number* IE will indicate that this is a new broadcast. The presence of both the *Old Serial Number* IE and ~~the~~ a *New Serial Number* IE will indicate that this is message is a replacement of an existing broadcast. The RNC will initiate broadcasting of a new message or replace a message already broadcast as requested.

Upon receipt of the WRITE-REPLACE message the RNC shall respond using the WRITE-REPLACE COMPLETE message containing a *New Serial Number* IE indicating that resources are available as requested for the Service Area(s) specified.

8.2.3 Unsuccessful Operation

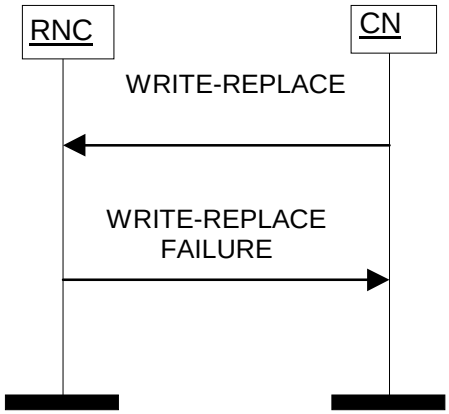

Figure 2: Write-Replace Procedure: Un-Successful Operation

If the RNC cannot allocate all the resources requested for the Service Area(s) specified in the WRITE-REPLACE message, then the RNC shall return a WRITE-REPACE FAILURE message to the CN. A list of Service Area(s) where the requested resources are unavailable will be provided in this WRITE-REPLACE FAILURE message in the *Failure List* IE.

This WRITE-REPLACE FAILURE message may also include those Service Area(s) where the requested resources were available and will indicate in the *Number of Broadcasts Completed* IE those Service Area(s) which completed the request.

8.2.4 Abnormal Conditions

8.3 Kill

8.3.1 General

The purpose of the Kill procedure is to stop the broadcast of the indicated message.

8.3.2 Successful Operation

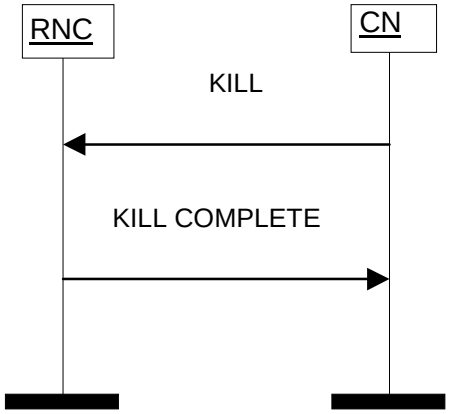

Figure 3: Kill Procedure: Successful Operation

The CN shall initiate the procedure by sending a KILL message to the RNC.

Upon receipt of the KILL message the RNC shall stop broadcasting the indicated message in the indicated Service Area(s). The RNC shall respond using the KILL COMPLETE message, containing the *Old Serial Number* IE.

8.3.3 Unsuccessful Operation

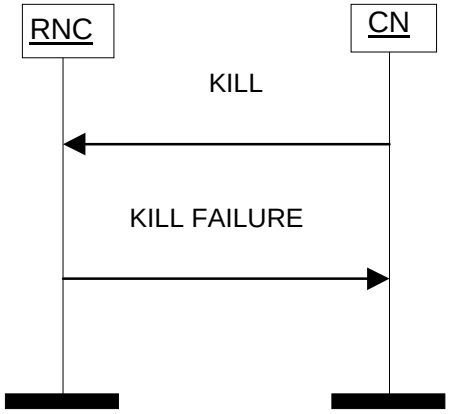

Figure 4: Kill Procedure: Un-Successful Operation

A *Failure List* IE indicating the list of Service Area(s) where the message reference is not valid will be provided in a KILL FAILURE message. This response message may also – if applicable - indicate in the *Number of Broadcasts Completed List* IE those Service Area(s) which completed the request where the KILL message was successful.

8.3.4 Abnormal Conditions

8.4 Load Status Enquiry

8.4.1 General

The purpose of this Load Status Enquiry procedure is to obtain the current permissible bandwidth available for broadcast within particular Service Area(s).

8.4.2 Successful Operation

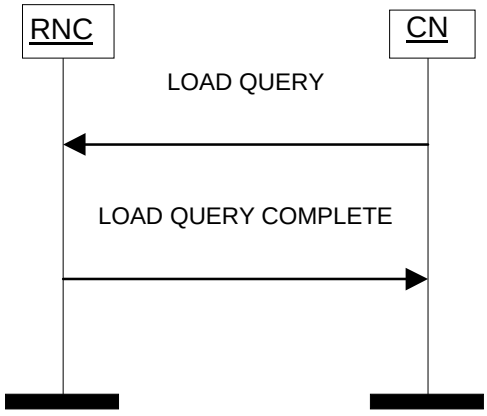

Figure 5: Load Status Enquiry Procedure: Successful Operation

The CN shall initiate the procedure by sending a LOAD QUERY message to the RNC. The message shall include a *Service Areas List* IE. Upon reception of the LOAD QUERY message the RNC shall respond with a LOAD QUERY COMPLETE message.

8.4.3 Unsuccessful Operation

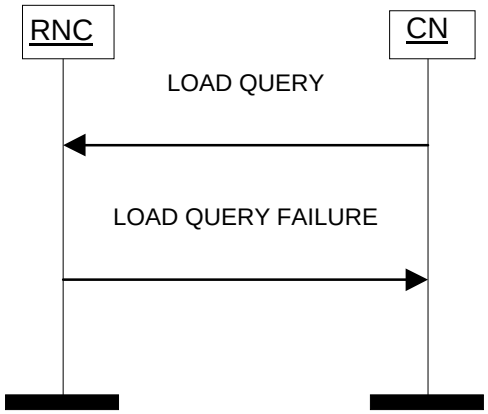

Figure 6: Load Status Enquiry Procedure: Un-Successful Operation

If the RNC contains Service Area(s) for which the RNC was not able to respond to, it shall respond with a LOAD QUERY FAILURE message which includes the *Failure List* IE.

The LOAD QUERY FAILURE ~~Message~~ response message may – if applicable - also contain a *Radio Resource Loading List* IE for which the LOAD STATUS QUERY reporting was successful.

8.4.4 Abnormal Conditions

8.5 Message Status Query

8.5.1 General

The Message Status Query procedure is used by the CN to obtain the message status of a broadcast message.

8.5.2 Successful Operation

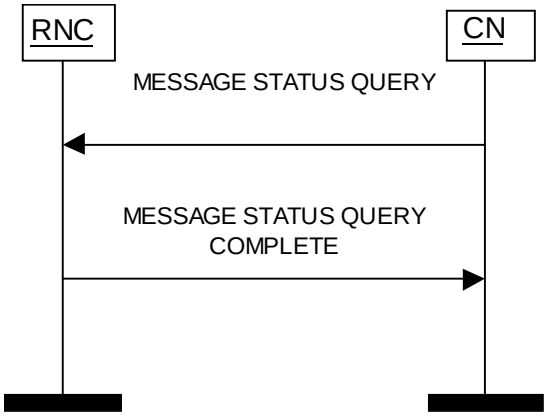

Figure 7: Message Status Enquiry Procedure: Successful Operation

The CN shall initiate the procedure by sending a MESSAGE STATUS QUERY message to the RNC. The message will contain the *Old Serial Number* IE along with the appropriate *Service Areas List* IE.

Upon receipt of the MESSAGE STATUS QUERY message the RNC shall respond using the MESSAGE STATUS QUERY COMPLETE message.

Within this message the *No of Broadcasts Completed List* IE contains each Service Area which successfully performed the requested operation and for each of these Service Area(s), the number of times this broadcast message has been sent to this particular Service Area(s) for broadcast.

8.5.3 Unsuccessful Operation

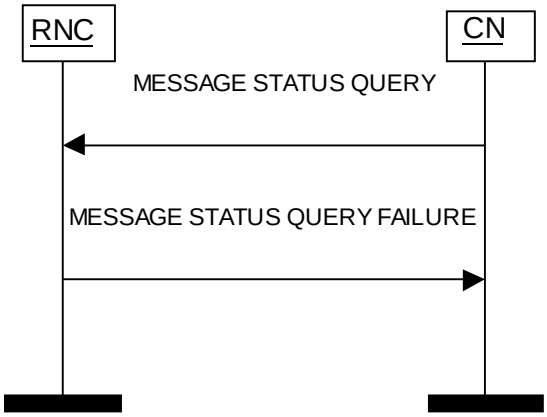

Figure 8: Message Status Enquiry Procedure: Un-Successful Operation

If the requested operation fails (e.g. because the Message Identifier is unknown, or when the RNC cannot send the status for a known Message Identifier) the RNC shall send a MESSAGE STATUS QUERY FAILURE message to the CN containing a *Failure List* IE for Service Area(s) for which the requested operation failed.

The MESSAGE STATUS QUERY FAILURE message may – if applicable - also include the *No of Broadcasts Completed List* IE indicating those Service Area(s) for which the ~~Message Status Enquiry~~MESSAGE STATUS QUERY message was successful.

8.5.4 Abnormal Conditions

8.6 Reset

8.6.1 General

The purpose of the Reset procedure is to end broadcasting in one or more Service Areas in the RNC.

8.6.2 Successful Operation

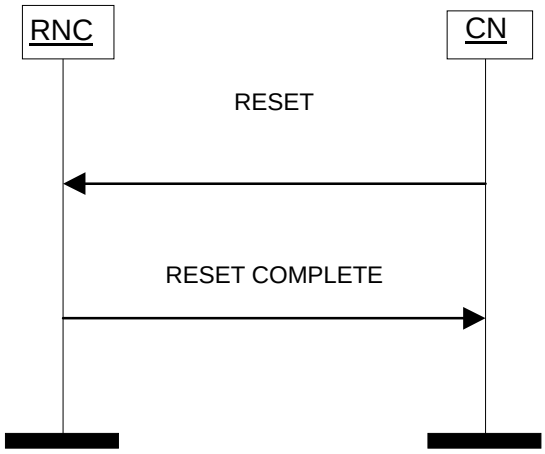

Figure 9: Reset Procedure: Successful Operation

The CN shall initiate the procedure by sending a RESET message to the RNC, in order to end broadcasting in one or more Service Areas of the RNC.

It may also be used by the CN to inquire about the Service Area broadcasting operational state of Service Area(s) who had earlier indicated as having failed.

Upon receipt of this message the RNC shall end broadcasting in the indicated Service Area(s) and shall respond using a RESET COMPLETE message.

8.6.3 Unsuccessful Operation

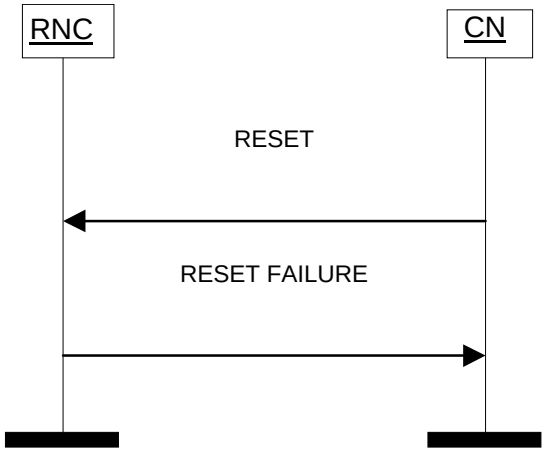

Figure 10: Reset Procedure: Un-Successful Operation

If upon receipt of this message the RNC can not end broadcasting in the indicated Service Area(s), it shall respond using a RESET FAILURE message containing the *Service Areas List* IE indicating the relevant Service Area(s).

The RESET FAILURE message may – if applicable - also include those Service Area(s) for which the RESET message was successful.

8.6.4 Abnormal Conditions

8.7 Restart Indication

8.7.1 General

The purpose of the Restart Indication ~~message~~ procedure is for the RNC to indicate to the CN that a Service Area broadcasting related restart situation has occurred in one or more of its Service Areas e.g. when a Service Area becomes operational or when the RNC is initialised.

8.7.2 Successful Operation

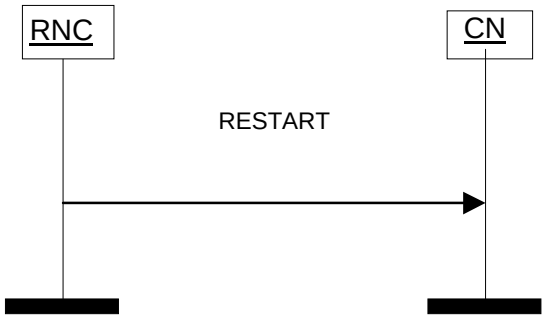

Figure 11: Restart Indication Procedure: Successful Operation

The RNC shall initiate the procedure by sending a RESTART message to the CN. This message shall contain a *Service Areas List* IE for reference and may also include an indication as to whether the previously sent information needs to be ~~re l~~re Loaded.

8.7.3 Abnormal Conditions

8.8 Failure Indication

8.8.1 General

The purpose of the Failure Indication ~~message~~ procedure is to indicate to the CN from the RNC that a Service Area broadcasting related problem is occurring in one or more of its Service Areas.

8.8.2 Successful Operation

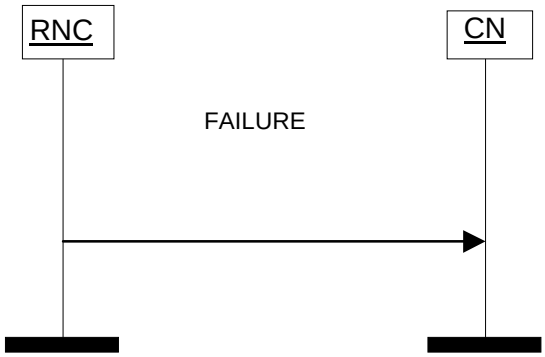

Figure 12: Failure Indication Procedure: Successful Operation

The RNC shall initiate the procedure by sending a FAILURE message to the CN.

Upon receipt of this FAILURE ~~indication~~message, the CN will not generate further WRITE or REPLACE messages for these Service Area(s) until the CN is informed by a RESTART message that the Service Area can resume normal Service Area broadcasting operation.

8.8.3 Abnormal Conditions

8.9 Error Indication

8.9.1 General

The Error Indication procedure is used by the RNC to indicate to the CN that a message is not understood, provided it cannot be reported by an appropriate failure message.

8.9.2 Successful Operation

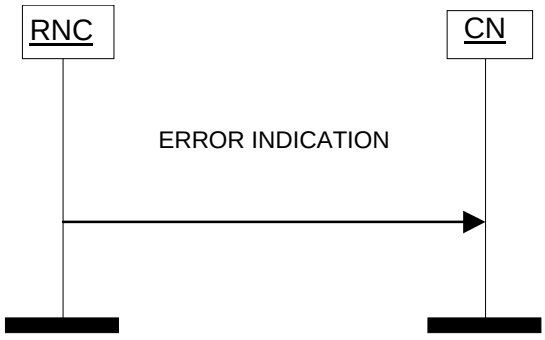

Figure 13: Error Indication Procedure: Successful Operation

The RNC shall initiate the procedure by sending an ERROR INDICATION message to the CN in response to any message that is not understood e.g. invalid parameter or parameter value. This message shall contain information

necessary for the CN to be able to identify which initial message this is in response to, and additional information e.g. Cause Value.

8.9.3 Abnormal Conditions

9 Elements for SABP Communication

9.1 Message Functional Definition and Content

9.1.1 General

NOTE: The messages have been defined in accordance to the guidelines specified in [12].

For each message there is, a table listing the signalling elements in their order of appearance in the transmitted message.

9.1.2 Message Contents

9.1.2.1 Presence

All information elements in the message descriptions below are marked mandatory, optional or conditional according to the following table:

Table 3: Meaning of abbreviations used in SABP messages

Abbreviation	Meaning
M	IE's marked as Mandatory (M) will always be included in the message.
O	IE's marked as Optional (O) may or may not be included in the message.
C	IE's marked as Conditional (C) will be included in a message only if the condition is satisfied. Otherwise the IE is not included.

9.1.2.2 Criticality

Each Information Element or Group of Information Elements may have a criticality information applied to it. Following cases are possible:

Table 4: Meaning of content within "Criticality" column

Abbreviation	Meaning
–	No criticality information is applied explicitly.
YES	Criticality information is applied. This is usable only for non-repeatable IEs
GLOBAL	The IE and all its repetitions together have one common criticality information. This is usable only for repeatable IEs.
EACH	Each repetition of the IE has its own criticality information. It is not allowed to assign different criticality values to the repetitions. This is usable only for repeatable IEs.

9.1.3 WRITE-REPLACE

This message is sent by the CN to the RNC.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
New-Serial-Nw Serial Number	M		9.2.5	
Old-Serial-Nd Serial Number	O		9.2.4	
Service-Areas-Le Areas List	M		9.2.6	
Category	O		9.2.7	
Repetition-Perion Period	O		9.2.8	
No-of-Broadcasts-Ro of Broadcasts	M		9.2.9	
Data-Coding-Schemea Coding	M		9.2.15	
Broadcast-Message-Ct Message	M		9.2.2	

9.1.4 WRITE-REPLACE COMPLETE

This message will be sent by the RNC to the CN in a successful response to a WRITE-REPLACE message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
New-Serial-Nw Serial Number	M		9.2.5	
No-of-Broadcasts-Completed-Lo of	M		9.2.9	
Criticality-Diy Diagnostics	O		9.2.17	

9.1.5 WRITE-REPLACE FAILURE

This message will be sent by the RNC to the CN as an unsuccessful response to a WRITE-REPLACE message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
New-Serial-Nw Serial Number	M		9.2.5	
Failure-Lre List	M		9.2.12	
No-of-Broadcasts-Completed-Lo of	O		9.2.10	
Criticality-Diy Diagnostics	O		9.2.17	

9.1.6 KILL

This message is sent by the CN to the RNC to stop broadcasting of a specific message.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
Old-Serial-Nd Serial Number	M		9.2.4	
Service-Areas-Le Areas List	M		9.2.6	

9.1.7 KILL COMPLETE

This message is sent by the RNC to the CN as a successful response to a KILL message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-le Identifier	M		9.2.1	
Old-Serial-Nd Serial Number	M		9.2.4	
No-of-Broadcasts-Completed-Lo of	M		9.2.9	
Criticality-Diy Diagnostics	O		9.2.17	

9.1.8 KILL FAILURE

This message is sent by the RNC to the CN as unsuccessful response to a KILL message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-le Identifier	M		9.2.1	
Old-Serial-Nd Serial Number	M		9.2.4	
Failure-Lre List	M		9.2.12	
No-of-Broadcasts-Completed-Lo of	O		9.2.10	
Criticality-Diy Diagnostics	O		9.2.17	

9.1.9 LOAD QUERY

This message is sent by the CN to the RNC to gain an indication of broadcast resources available.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Service-Areas-Le Areas List	M		9.2.6	

9.1.10 LOAD QUERY COMPLETE

This message will be sent by the RNC as a successful response to the LOAD QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Radio-Resource-Loading-Lidio	M		9.2.13	
Criticality-Diy Diagnostics	O		9.2.17	

9.1.11 LOAD QUERY FAILURE

This message is sent by the RNC to the CN as an unsuccessful response to a LOAD QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Failure-Lre List	M		9.2.12	
Radio-Resource-Loading-Lidio	O		9.2.13	
Criticality-Diy Diagnostics	O		9.2.17	

9.1.12 MESSAGE STATUS QUERY

This message is sent by the CN to the RNC to obtain the current status of a Service Area broadcasting message.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
Old-Serial-Nd Serial Number	M		9.2.4	
Service-Areas-Le Areas List	M		9.2.6	

9.1.13 MESSAGE STATUS QUERY COMPLETE

This message is sent by the RNC to the CN as a successful response to a MESSAGE QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
Old-Serial-Nd Serial Number	M		9.2.4	
No-of-Broadcasts-Completed-Lo of	M		9.2.10	
Criticality- Diy Diagnostics	O		9.2.17	

9.1.14 MESSAGE STATUS QUERY FAILURE

This message is sent by the RNC to the CN in an unsuccessful response to a MESSAGE QUERY message.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-Ie Identifier	M		9.2.1	
Failure-Lre List	M		9.2.12	
Old-Serial-Nd Serial Number	M		9.2.4	
No-of-Broadcasts-Completed-Lo of	O		9.2.10	
Criticality- Diy Diagnostics	O		9.2.17	

9.1.15 RESET

The message is sent by the CN to the RNC to request that the RNC end broadcasting in one or more Service Areas.

Direction: CN → RNC

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Service-Areas-Le Areas List	M		9.2.6	

9.1.16 RESET COMPLETE

This message is sent from the RNC to the CN as a successful response to a RESET message where indicated Service-Area(s) are now not broadcasting any messages.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Service-Areas-Le Areas List	M		9.2.6	
Criticality- Diy Diagnostics	O		9.2.17	

9.1.17 RESET FAILURE

This message is sent from the RNC to the CN as an unsuccessful response to a RESET message to indicate that a Service Area broadcasting related problem exists in one or more of its Service Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Failure-Lre List	M		9.2.12	
Service-Areas-Le Areas List	O		9.2.6	
Criticality- Diy Diagnostics	O		9.2.17	

9.1.18 RESTART

This message is sent from the RNC to the CN to indicate a Service Area broadcasting related restart situation in one or more of its Service-Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Service-Areas-Le Areas List	M		9.2.6	
Recovery- Indication	O		9.2.16	

9.1.19 FAILURE

This message is sent from the RNC to the CN to indicate that a Service Area broadcasting related problem exists in one or more of its Service -Areas.

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Service-Areas-Le Areas List	M		9.2.6	

9.1.20 ERROR INDICATION

This message is sent by the RNC to the CN in response to any message which is not understood (e.g. invalid parameter or parameter value).

Direction: RNC → CN

PARAMETER	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message-le Identifier	M		9.2.1	
Serial- Number	O		9.2.3	
Cause	O		9.2.14	
Criticality- Diy Diagnostics	O		9.2.17	

9.2 Information Element Definitions

9.2.1 Message-le Identifier

Message-le Identifier IE This parameter identifies the source/type of a CN message and is passed transparently from the CN to the UE.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Message ~~Ie~~ Identifier				
>Procedure Code	M		ENUMERATED (Write-Replace, Kill, Load Query, Message Query, Reset, ,…)	
>Type of Message	M		ENUMERATED (Initiating Message, Successful Outcome, Unsuccessful Outcome, Outcome)	

9.2.2 Broadcast ~~t Message Ct~~ Message Content

Broadcast ~~Message Ct~~ Message Content IE is sent from the CN to the RNC containing user information i.e. the message, and will be broadcast over the radio interface.

IE/GROUP NAME ~~This IE is sent~~	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Broadcast ~~t Message Ct~~ Message	M		OCTET STRING (1246)	

9.2.3 Se ~~rial Num~~ rial Number

Se ~~rial Num~~ rial Number IE ~~This parameter~~ is a 16-bit integer which identifies a particular message from the source and type indicated by the Message Identifier and is altered every time the message with a given Message Identifier is changed.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Se ~~rial Num~~ rial Number	O		INTEGER (16)	

9.2.4 Old ~~Serial Nd~~ Serial Number

~~This~~ *Old ~~Serial Nd~~ Serial Number* IE enables identification of an existing message to be identified. The format of this IE is defined in 9.2.3.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Old ~~Serial Nd~~ Serial Number	M		9.2.3	

9.2.5 New-Serial-Nw Serial Number

This *New-Serial-Nw Serial Number* IE enables identification of a new message for broadcast to be identified, and is altered every time the message is changes. The format of this IE is defined in 9.2.3.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
New- Serial- Number	O		9.2.3	

9.2.6 Service-Areas-Le Areas List

Service-Areas-Le Areas List is an IE is sent from the CN to the RNC. It indicates the group of Service- Area(s) that the message will be broadcast to. The *Service-Areas-Le Areas List* IE must include at least one Service- Area.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Service- Areas- List		1 to <maxno of SAI>		
>Service-Area-Identifvice Area Identifier	M		9.2.11	

Range bound	Explanation
MaxnoofSAI	Maximum no. of SAI in Service-Areas-Le Areas List. Value is 65535

9.2.7 Category

Category IEThis parameter is sent from the CN to the RNC, and is used to indicate the priority of the message.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Category	O		Enumerated (High Priority, Background, Normal, or Default)	This IE contains the broadcast priority of the message.

9.2.8 Repetition-Perion Period

This *Repetition-Perion Period* IE is sent from the CN to the RNC and indicates the periodicity of message broadcasts.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Repetition-Perion Period	M		INTEGER 1…4096	Range is 1 to 4096 where each unit will represent a repetition of one second to a maximum of once per ~1 hour

9.2.9 No-of-Broadcasts-Ro of Broadcasts Requested

*No-of-Broadcasts-Ro of Broadcasts Requested*This IE is sent from the CN to the RNC and indicates the number of times a message is to be broadcast.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
No-of-Broadcasts-Ro of Broadcasts Requested	M	0 to 65535	INTEGER 0…. 65535	This specifies the number of times the message is to be broadcast.

9.2.10 No-of-Broadcasts-Completed-Lo of Broadcasts Completed List

*No-of-Broadcasts-Completed-Lo of Broadcasts Completed List*This IE is sent from the RNC to the CN, and indicates the number of times that a CN message (all pages) has been sent to each Service -Area specified in the *Service-Areas-Le Areas List* IE for broadcast over the radio interface.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
No-of-Broadcasts-Completed-Lo of Broadcasts Completed List		1 to <maxnoof SAI>		
>Service-Area-Identifvice Area	M		OCTET STRING (7)	
>No -of- Broadcasts- Completed	M		INTEGER (0.. 65535)	
>No- of- Broadcasts- Compl- Info	O		ENUMERATED (overflow, unknown)	

Range bound	Explanation
MaxnoofSAI	Maximum no. of SAI in Service -Areas- List. Value is 65535

9.2.11 Service-Area-Identifvice Area Identifier

This Service-Area-Identifvice Area Identifier IE is sent from the Service Area Identifier (SAI) is used to uniquely 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.

IE/Group Name	Presence	Range	IE type and Rreference	Semantics description
SAI				
>PLMN-IDID	M		OCTET STRING (SIZE (3))	- digits 0 to 9, two digits per octet, - each digit encoded 0000 to 1001, - 1111 used as filler - bit 4 to 1 of octet n encoding digit 2n-1 - bit 8 to 5 of octet n encoding digit 2n -The PLMN-ID consists of 3 digits from MCC followed by either -a filler plus 2 digits from MNC (in case of 2 digit MNC) or -3 digits from MNC (in case of a 3 digit MNC).
>LAC	M		OCTET STRING (2)	0000 and FFFE not allowed.
>SAC	M		OCTET STRING (2)	

9.2.12 Failure-Lre List

Failure-Lre List IEThis identifies the list of Service Area(s) for which the RNC could not complete as requested.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Failure-Lre List		1 to <maxnoof SAI>		
>Service-Area-Identifvice Area	M		9.2.11	
>Cause	M		9.2.14	

Range bound	Explanation
MaxnoofSAI	Maximum no. of SAI in Service-Area-List. Value is 65535

9.2.13 Radio Resource Loading List

This *Radio Resource Loading List* Information Element IE presents the available bandwidth available for Broadcast purposes of a specific Service Area.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
Radio Resource Loading List		1 to <maxnoof SAI>		
>Service Area	M		9.2.11	
>Available Bandwidth	M		9.2.18	

Range bound	Explanation
MaxnoofSAI	Maximum no. of SAI in Service Areas List. Value is 65535

9.2.14 Cause

Cause IE indicates the reason for a particular error event for the SABP protocol.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
>Cause	M-		INTEGER (	Range is 0-255
			Parameter-not-recognised(0),	Sent when the recipient (CN or RNC) was unable to act upon the message received due to an unrecognised parameter. A message should not be rejected only because a parameter is not recognised as this would prevent extensions to the service
			Parameter-value-ie Invalid(1),	Sent when a failure occurred due to the value of a parameter being invalid, e.g. out of range, or in Write-Replace, the parameter "no of pages" does not equal the number of pages received
			Valid-CN-message-not-identified(2),	Sent when the RNC does not recognise the CN message reference
			Service-Area-identity-not-valid(3),	Sent when the RNC does not recognise a Service-Area Identity
			Unrecognised-message(4)	Sent when the RNC did not recognise the message at all
			Missing-mandatory-element(5),	Sent when a mandatory element is missing from the message
			RNC-capacity-exceeded(6),	Sent when a write-replace fails because the RNC cannot meet the requested repetition period because of the cell loading
			RNC-memory-exceeded(7),	Sent when the RNC is unable to store a CBS message as the RNC memory has been exceeded.
			Service-Area-broadcast-not-supported(8),	Sent when the SABCH/CN related Radio Resource is not configured for a Service-Area
			Service-Area-broadcast-not-operational(9),	Sent when the SABCH/CN related radio resource is not available because of error conditions or due to

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
				maintenance activities
			Message-reference already-used(10),	Sent when the recipient was unable to act upon the Write-Replace message received due to a previous Write-Replace received with the same message reference.
			Unspecified-error(11),	Sent when none of the above cause values apply.
			…)	

9.2.15 Data~~- Coding- Schema~~a Coding Scheme

Data~~ Coding Sa Coding Scheme~~ ~~This~~ IE is sent from the RNC to the CN and identifies the alphabet or coding employed for the message characters and message handling at the UE (it is passed transparently from the CN to the UE).

IE/GROUP NAME	PRESENCE	RANGE	IE Type and	Semantics Description
Data~~- Coding- Schema~~a Coding	M		INTEGER (0..255)	

9.2.16 Recovery- Indication

Recovery- Indication ~~This~~ IE is used to indicate whether the CN related data was lost or is still available.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and	Semantics Description
Recovery -Indication	O		ENUMERATED (Available, Lost)	

9.2.17 Criticality- Diagnostics

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Criticality- Diy Diagnostics				
>Procedure Code	O		INTEGER (0..255)	Procedure code is to be used if Criticality diagnostics is part of Error Indication procedure, and not within the response message of the same operation that caused the error
>Triggering Message	O		ENUMERATED(initiating message, successful outcome, unsuccessful outcome, outcome)	The Triggering Message is used only if the Criticality diagnostics is part of Error Indication procedure except when the procedure code is not understood.
>Criticality Response	O		ENUMERATED(reject, ignore, notify)	This Criticality response IE is used for reporting the Criticality of the Triggering message
Information Element Criticality Diagnostics		0 to <maxnoof errors>		
>Criticality Response	M		ENUMERATED(reject, ignore, notify)	The Criticality response IE is used for reporting the criticality of the triggering IE. The value 'ignore' shall not be used.
>IE IdID	M		INTEGER (0..65535)	The IE Id of the not understood IE
>Repetition Number	O		INTEGER (0..255)	The repetition number of the not understood IE if applicable

Range bound	Explanation
Maxnooferrors	Maximum no. of IE errors allowed to be reported with a single message. The value for maxnooferrors is 256.

9.2.18 Available- Bandwidth

This *Available- Bandwidth* IE is used to indicate the Bandwidth available for the broadcast of messages.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and	Semantics Description
Available- Bandwidth	O		INTEGER (0...20480)	The unit is: bit/second

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Berlin, Germany. 21- 25 August, 2000

Document R3-002342
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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25.419	CR	20r2	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source	R-WG3		**Date:**	August 18, 2000	
Subject:	Clarification of the description and usage of Elementary Procedures.				
Work item:					

Category: *(only one category shall be marked with an X)*			**Release:**		
F	Correction			Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change:	In R3#13 it was discussed and agreed in principle that a set of rules for how IEs become known should be added to the AP specifications. The proposal for such rules have been presented in Tdoc 1441. This CR presents the corresponding clarifications and changes to SABP concerning the rules and knowledge of EPs.
Clauses affected:	Chapters 3.1, 10.3.2.

Other specs affected:			
Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Elementary Procedure: The SABP consists of Elementary Procedures (EPs). An Elementary Procedure is a unit of interaction between the CN (CBC) and the RNC. These EPs are defined separately and are intended to be used to build up complete sequences in a flexible manner. If the independence between some EPs is restricted, it is described under the relevant EP description. Unless otherwise stated by the restrictions, the EPs may be invoked independently of each other as stand alone procedures, which can be active in parallel. Examples on using several SABP EPs together with each other and EPs from other interfaces can be found in reference [4].

An EP consists of an initiating message and possibly a response message. Two kinds of EPs are used:

- **Class 1:** Elementary Procedures with response (success or failure).
- **Class 2:** Elementary Procedures without response.

For Class 1 EPs, the types of responses can be as follows:

Successful

- A signalling message explicitly indicates that the elementary procedure successfully completed with the receipt of the response.

Unsuccessful

- A signalling message explicitly indicates that the EP failed.
- On time supervision expiry (i.e. absence of expected response).

Class 2 EPs are considered always successful.

Message Reference: This is defined as consisting of the following parameters: Message Identifier, Serial Number, and SAI (Service Area Identifier).

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CBC	Cell Broadcast Centre
CBS	Cell Broadcast Service
CN	Core Network
EP	Elementary Procedure
FP	Frame Protocol
PDU	Protocol Data Unit
RNC	Radio Network Controller
SA	Service Area
SABP	Service Area Broadcast Protocol

NEXT MODIFIED SECTION

10 Handling of Unknown, Unforeseen or Erroneous Protocol Data

10.1 General

Protocol Error cases can be divided into three classes:

- Transfer Syntax Error;
- Abstract Syntax Error;
- Logical Error.

10.2 Transfer Syntax Error

A Transfer Syntax Error occurs when the receiver is not able to decode the received physical message Transfer syntax errors are always detected in the process of ASN.1 decoding. If a Transfer Syntax Error occurs, the receiver should initiate Error Indication procedure with appropriate cause value for the Transfer Syntax protocol error.

10.3 Abstract Syntax Error

10.3.1 General

An Abstract Syntax Error occurs when the receiving functional SABP entity receives IEs or IE groups that cannot be understood. The abstract syntax error also appears if the logical range of an IE is violated (e.g.: ASN.1 definition: 0 to 15, the logical range is 0 to 10 (values 11 to 15 are undefined), and 12 will be received; this case will be handled as an abstract syntax error using criticality information sent by the originator of the message).

10.3.2 Definition of Criticality Information

In the SABP messages there is criticality information set for individual IEs and/or IE groups. This criticality information instructs the receiver how to act when receiving an IE or an IE group that is not comprehended i.e. the entire item (IE or IE group) which is not (fully or partially) comprehended shall be treated in accordance with its own criticality information as specified in subclause 10.3.3.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error act according to the Criticality Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclause 10.3.3.

The receiving node shall take different actions depending on the value of the Criticality Information. The three possible values of the Criticality Information for an IE/IE group are:

- Reject IE;
- Ignore IE and Notify Sender;
- Ignore IE.

The following rules restrict when a receiving entity may consider an IE, an IE group, or an EP not comprehended (not implemented), and when action based on criticality information is applicable:

1. IE or IE group: When one new or modified IE or IE group is implemented for one EP from a standard release, then other new or modified IEs or IE groups specified for that EP in that standard release shall be considered comprehended by a receiving entity (some may still remain unsupported).

   Note that this restriction is not applicable to a sending entity for constructing messages.

2. EP: The comprehension of different EPs within a standard release or between different standard releases is not mandated. Any EP that is not supported may be considered not comprehended, even if another EP from that standard release is comprehended, and action based on criticality shall be applied.

10.3.3 Handling of the Criticality Information at Reception

10.3.3.1 Procedure Code

The receiving node shall treat the different types of criticality information of the *Procedure Code* according to the following:

Reject IE:

- If a message is received with a *Procedure Code* marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall reject the procedure using the Error Indication procedure.

Ignore IE and Notify Sender:

- If a message is received with a *Procedure Code* marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the procedure and initiate the Error Indication procedure.

Ignore IE:

- If a message is received with a *Procedure Code* marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the procedure.

10.3.3.2 IEs other than the Procedure Code

The receiving node shall treat the different types of criticality information of an IE/IE group other than the *Procedure Code* according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more Ies/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*" which the receiving node does no comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using only the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IE/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using only the understood IEs/IE groups.

10.4 Logical Error

Logical error situations occur when a message is comprehended correctly, but the information contained within the message is not valid (i.e. semantic error), or describes a procedure which is not compatible with the state of the receiver. In these conditions, the following behaviour shall be performed (unless otherwise specified) as defined by the class of the elementary procedure, irrespective of the criticality information of the IE's/IE groups containing the erroneous values.

Class 1:

Where the logical error occurs in a request message of a class 1 procedure, and the procedure has a failure message, the failure message shall be sent with an appropriate cause value. Typical cause values are:

- Semantic Error;
- Message not compatible with receiver state.

Where the logical error is contained in a request message of a class 1 procedure, and the procedure does not have a failure message, the ERROR INDICATION procedure shall be initiated with an appropriate cause value.

Where the logical error exists in a response message of a class 1 procedure, local error handling shall be initiated.

Class 2:

Where the logical error occurs in a message of a class 2 procedure, the ERROR INDICATION procedure shall be initiated with an appropriate cause value.

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Berlin, Germany, 21-25 August 2000

Document R3-002304
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or for SMG, use the format P-99-xxx

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25.419	CR	21	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

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list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: R-WG3 **Date:** 23 Aug 00

Subject: Correction to range of repetition indicator

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:
Currently in all R3 control plane signalling specifications the repetition indicator within the criticality diagnostics IE has range 0..255. This CR proposes changing that range to 1..256 for two reasons:
a) repetition number of 0 makes no sense
b) there are some cases where 256 repetitions are possible

Clauses affected: 9.2.17, 9.3.4

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	25.423 CR194, 25.433 CR236, 25.413 CR182
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


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9.2.17 Criticality-Diagnostics

IE/Group Name	Presence	Range	IE type and reference	Semantics description
Criticality Diagnostics				
>Procedure Code	O		INTEGER (0..255)	Procedure code is to be used if Criticality diagnostics is part of Error Indication procedure, and not within the response message of the same operation that caused the error
>Triggering Message	O		ENUMERATED(initiating message, successful outcome, unsuccessful outcome, outcome)	The Triggering Message is used only if the Criticality diagnostics is part of Error Indication procedure except when the procedure code is not understood.
>Criticality Response	O		ENUMERATED(reject, ignore, notify)	This Criticality response IE is used for reporting the Criticality of the Triggering message
Information Element Criticality Diagnostics		0 to <maxnoof errors>		
>Criticality Response	M		ENUMERATED(reject, ignore, notify)	The Criticality response IE is used for reporting the criticality of the triggering IE. The value 'ignore' shall not be used.
>IE Id	M		INTEGER (0..65535)	The IE Id of the not understood IE
>Repetition Number	O		INTEGER (1~~0~~..256~~5~~)	The repetition number of the not understood IE if applicable

Range bound	Explanation
Maxnooferrors	Maximum no. of IE errors allowed to be reported with a single message. The value for maxnooferrors is 256.

9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************


SABP-IEs -- { object identifier to be allocated }--
DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

IMPORTS
    maxRadio-Resource-Loading-List,
    maxFailure-List,
    maxNo-of-Broadcasts-Completed-List,
    maxNrOfErrors,
    maxService-Areas-List
FROM SABP-Constants

    Criticality,
    ProcedureCode,
    TriggeringMessage,
    ProtocolIE-ID
FROM SABP-CommonDataTypes

    ProtocolExtensionContainer{},

    SABP-PROTOCOL-EXTENSION
FROM SABP-Containers;

--********************--
-- SOME ASN.1 MISSING --
--********************--

RepetitionNumber            ::= INTEGER(10..2565)

--********************--
-- SOME ASN.1 MISSING --
--********************--

END
```

TSG RAN3 Meeting #15
Berlin, Germany, 21-25 Aug 2000

***Document* R3-002375**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.419	CR	22r1	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME		UTRAN / Radio	X	Core Network	X

Source: R-WG3 **Date:** 24.08.00

Subject: New Abstract Syntax Error for wrong order or number of IEs

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change:

It has been defined in Section 9.3 that the order of IEs and the number of their occurrence should be as specified in that section, even though ASN.1 decoding rules allow otherwise. Also it is stated that if a message structured otherwise is received, this shall be considered an Abstract Syntax Error, and treated as specified in section 10. However, that case is not covered in section 10, and this CR proposes the corresponding definition. Also missing cause values have been added.

If this CR is not implemented, a receiving entity will not know how to behave in the defined error case for receiving correct IEs but in wrong construction.

Clauses affected: 9.2.1.4, 9.3.0, 9.3.4, 10.3.1 and new section 10.3.6

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

9.2.14 Cause

The purpose of the cause information element is to indicate the reason for a particular event for the SABP protocol.

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
>Cause	-		INTEGER (	Range is 0-255
			Parameter-not-recognised(0),	Sent when the recipient (CN or RNC) was unable to act upon the message received due to an unrecognised parameter. A message should not be rejected only because a parameter is not recognised as this would prevent extensions to the service
			Parameter-value-invalid(1),	Sent when a failure occurred due to the value of a parameter being invalid, e.g. out of range, or in Write-Replace, the parameter "no of pages" does not equal the number of pages received
			Valid-CN-message-not-identified(2),	Sent when the RNC does not recognise the CN message reference
			Service-Area-identity-not-valid(3),	Sent when the RNC does not recognise a Service-Area Identity
			Unrecognised-message(4)	Sent when the RNC did not recognise the message at all
			Missing-mandatory-element(5),	Sent when a mandatory element is missing from the message
			RNC-capacity-exceeded(6),	Sent when a write-replace fails because the RNC cannot meet the requested repetition period because of the cell loading
				Sent when the

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
			RNC-memory-exceeded(7),	RNC is unable to store a CBS message as the RNC memory has been exceeded.
			Service-Area-broadcast-not-supported(8),	Sent when the SABCH/CN related Radio Resource is not configured for a Service-Area
			Service-Area-broadcast-not-operational(9),	Sent when the SABCH/CN related radio resource is not available because of error conditions or due to maintenance activities
			Message-reference already-used(10),	**Sent when the** recipient was unable to act upon the Write-Replace message received due to a previous Write-Replace received with the same message reference.
			Unspecified-error(11),	Sent when none of the above cause values apply.
			(Transfer Syntax Error(12),	Sent to indicate transfer syntax error in any message
			Semantic Error (12),	Sent to indicate semantic error any message
			Message not compatible with receiver state (14),	Sent to indicate that received message is not compatible with the receiver state
			Abstract Syntax Error (Reject) (15),	Sent to indicate rejection due to Abstract Syntax Error

IE/GROUP NAME	PRESENCE	RANGE	IE Type and Reference	Semantics Description
			Abstract Syntax Error (Ignore and Notify) (16), Abstract Syntax Error (Falsely Constructed Message) (17), …)	Sent to indicate Abstract Syntax Error in some IE that has been ignored Sent to indicate Abstract Syntax Error due to false message consruction

NEXT MODIFIED SECTION

9.3.0 General

The ASN.1 definition specifies the structure and content of SABP messages. SABP messages can contain any IEs specified in the object set definitions for that message without the order or number of occurrence being restricted by ASN.1. However, for this version of the standard, a sending entity shall construct a SABP message according to the PDU definitions module and with the following additional rules (Note that in the following IE means an IE in the object set with an explicit id. If one IE needed to appear more than once in one object set, then the different occurrences have different IE ids):

- IEs shall be ordered (in an IE container) in the order they appear in object set definitions..
- Object set definitions specify how many times IEs may appear. An IE shall appear exactly once if the presence field in an object has value "mandatory". An IE may appear at most once if the presence field in an object has value "optional" or "conditional". If in a tabular format there is multiplicity specified for an IE (i.e. an IE list) then in the corresponding ASN.1 definition the list definition is separated into two parts. The first part defines an IE container list where the list elements reside. The second part defines list elements. The IE container list appears as an IE of its own. For this version of the standard an IE container list may contain only one kind of list elements.

If a SABP message that is not constructed as defined above is received, this shall be considered as Abstract Syntax Error, and the message shall be handled as defined for Abstract Syntax error in Chapter 10.3.6.

NEXT MODIFIED SECTION

9.3.4 Information Element Definitions

Unaffected ASN.1 definition not shown

```
Cause                    ::= INTEGER {
    parameter-not-recognised                    (0),
    parameter-value-invalid                     (1),
    valid-CN-message-not-identified             (2),
    service-area-identity-not-valid             (3),
    unrecognised-message                        (4),
    missing-mandatory-element                   (5),
    rNC-capacity-exceeded                       (6),
    rNC-memory-exceeded                         (7),
    service-area-broadcast-not-supported        (8),
    service-area-broadcast-not-operational      (9),
    message-reference-already-used              (10),
    unspecifed-error                            (11),
    transfer-syntax-error                       (12),
    semantic-error                              (13),
    message-not-compatible-with-receiver-state  (14),
    abstract-syntax-error-reject                (15),
    abstract-syntax-error-ignore-and-notify     (16),
    abstract-syntax-error-falsely-constructed-message   (17)
} (0..255)
```

Unaffected ASN.1 definition not shown

NEXT MODIFIED SECTION

10.3 Abstract Syntax Error

10.3.1 General

An Abstract Syntax Error occurs when the receiving functional SABP entity:

1. receives IEs or IE groups that cannot be understood (unknown IE id);
2. receives IEs for which the logical range is violated (e.g.: ASN.1 definition: 0 to 15, the logical range is 0 to 10 (values 11 to 15 are undefined), and 12 will be received; this case will be handled as an abstract syntax error using criticality information sent by the originator of the message);
3. does not receive IEs or IE groups but according to the specified presence of the concerning object, the IEs or IE groups should have been present in the received message.

1. receives IEs or IE groups that are defined to be part of that message in wrong order or with too many occurrences of the same IE or IE group

Cases 1 and 2 (not comprehended IE/IE group) are handled based on received Criticality information. Case 3 (missing IE/IE group) is handled based on Criticality information and Presence information for the missing IE/IE group specified in the version of the specification used by the receiver. Case 4 (IEs or IE groups in wrong order or with too many occurrences) results in rejecting the procedure.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error that belong to cases 1-3 act according to the Criticality Information and Presence Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclauses 10.3.4 and 10.3.5. The handling of case 4 is specified in subclause 10.3.6.

~~An Abstract Syntax Error occurs when the receiving functional SABP entity receives IEs or IE groups that cannot be understood. The abstract syntax error also appears if the logical range of an IE is violated (e.g.: ASN.1 definition: 0 to 15, the logical range is 0 to 10 (values 11 to 15 are undefined), and 12 will be received; this case will be handled as an abstract syntax error using criticality information sent by the originator of the message).~~

10.3.2 Definition of Criticality Information

In the SABP messages there is criticality information set for individual IEs and/or IE groups. This criticality information instructs the receiver how to act when receiving an IE or an IE group that is not comprehended i.e. the entire item (IE or IE group) which is not (fully or partially) comprehended shall be treated in accordance with its own criticality information as specified in subclause 10.3.3.

If an Abstract Syntax Error occurs, the receiver shall read the remaining message and shall then for each detected Abstract Syntax Error act according to the Criticality Information for the IE/IE group due to which Abstract Syntax Error occurred in accordance with subclause 10.3.3.

The receiving node shall take different actions depending on the value of the Criticality Information. The three possible values of the Criticality Information for an IE/IE group are:

- Reject IE;
- Ignore IE and Notify Sender;
- Ignore IE.

10.3.3 Handling of the Criticality Information at Reception

10.3.3.1 Procedure Code

The receiving node shall treat the different types of criticality information of the *Procedure Code* according to the following:

Reject IE:

- If a message is received with a *Procedure Code* marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall reject the procedure using the Error Indication procedure.

Ignore IE and Notify Sender:

- If a message is received with a *Procedure Code* marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the procedure and initiate the Error Indication procedure.

Ignore IE:

- If a message is received with a *Procedure Code* marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the procedure.

10.3.3.2 IEs other than the Procedure Code

The receiving node shall treat the different types of criticality information of an IE/IE group other than the *Procedure Code* according to the following:

Reject IE:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend; none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the rejection of one or more Ies/IE groups using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing one or more Ies/IE groups marked with "*Reject IE*" which the receiving node does not comprehend, the receiving node shall initiate the Error Indication procedure.

- If a *response* message is received containing one or more IEs marked with "*Reject IE*" which the receiving node does no comprehend, the receiving node shall initiate local error handling.

Ignore IE and Notify Sender:

- If a message *initiating* a procedure is received containing one or more Ies/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups, continue with the procedure as if the not comprehended IEs/IE groups were not received (except for the reporting) using only the understood IEs/IE groups, and report in the response message of the procedure that one or more IEs/IE groups have been ignored.

- If a *response* message is received containing one or more IEs/IE groups marked with "*Ignore IE and Notify Sender*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IE/IE groups and initiate the Error Indication procedure.

Ignore IE:

- If a message *initiating* a procedure is received containing one or more IEs/IE groups marked with "*Ignore IE*" which the receiving node does not comprehend, the receiving node shall ignore the content of the not comprehended IEs/IE groups and continue with the procedure as if the not comprehended IEs/IE groups were not received using only the understood IEs/IE groups.

10.3.6 IEs or IE groups received in wrong order or with too many occurrences

If a message with IEs or IE groups in wrong order or with too many occurrences is received, the receiving node shall behave according to the following:

- If a message *initiating* a procedure is received containing IEs or IE groups in wrong order or with too many occurrences, none of the functional requests of the message shall be executed. The receiving node shall reject the procedure and report the cause value "Abstract Syntax Error (Falsely Constructed Message)" using the message normally used to report unsuccessful outcome of the procedure.

- If a message *initiating* a procedure that does not have a message to report unsuccessful outcome is received containing IEs or IE groups in wrong order or with too many occurrences, the receiving node shall initiate the Error Indication procedure, and use cause value "Abstract Syntax Error (Falsely Constructed Message)".

- If a *response* message is received containing IEs or IE groups in wrong order or with too many occurrences, the receiving node shall initiate local error handling.

3GPP TSG-RAN WG3
E-mail approval

Document R3-002372
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.419	CR	023	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG RAN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from:* ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

Source: R-WG3 **Date:** 2000 September

Subject: Combined ASN.1 definition based on agreed CRs WITH REWISION MARKS

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: This CR is provided to help the maintenance of SABP ASN.1. It combines the ASN.1 definitions from all agreed CRs from R3#14 and R3#15, with all errors corrected and with some editorial unification.

ASN.1 modifications have been done based on the following CRs: CR 15 (R3-001518), CR21 (R3-002304), CR 22 (R3-002326), CR 16r3 (R3-002339)

Clauses affected: 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6 and 9.3.7

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments: This CR shall overtake the ASN.1 modifications from all of the CRs approved in RAN WG3 meetings #14 and #15, i.e. the CRs listed in the Reason for change section.


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<--------- double-click here for help and instructions on how to create a CR.

9.3.2 Elementary Procedure Definitions

```
-- **************************************************************
--
-- Elementary Procedure definitions
--
-- **************************************************************

SABP-PDU-Descriptions -- { object identifier to be allocated }--
SABP-PDU-Descriptions {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-PDU-Descriptions (0)}

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    Criticality,
    ProcedureCode
FROM SABP-CommonDataTypes

    Error-Indication,
    Failure,
    Kill,
    Kill-Complete,
    Kill-Failure,
    Load-Query,
    Load-Query-Complete,
    Load-Query-Failure,
    Reset,
    Reset-Complete,
    Reset-Failure,
    Restart,
    Message-Status-Query,
    Message-Status-Query-Complete,
    Message-Status-Query-Failure,
    Write-Replace,
    Write-Replace-Complete,
    Write-Replace-Failure
FROM SABP-PDU-Contents

    id-Error-Indication,
    id-Failure-Indication,
    id-Kill,
    id-Reset,
    id-Restart-Indication,
    id-Status-Load-Enquiry,
    id-Status-Message-Query,
    id-Write-Replace
FROM SABP-Constants;

-- **************************************************************
--
-- Interface Elementary Procedure Class
--
-- **************************************************************

SABP-ELEMENTARY-PROCEDURE ::= CLASS {
    &InitiatingMessage              ,
    &SuccessfulOutcome              OPTIONAL,
    &UnsuccessfulOutcome                OPTIONAL,
    &procedureCode          ProcedureCode   UNIQUE,
    &criticality            Criticality     DEFAULT ignore
}
WITH SYNTAX {
```

```
    INITIATING MESSAGE      &InitiatingMessage
    [SUCCESSFUL OUTCOME
```

```
&SuccessfulOutcome]
    [UNSUCCESSFUL OUTCOME       &UnsuccessfulOutcome]
    PROCEDURE CODE          &procedureCode
    [CRITICALITY            &criticality]
}

-- **************************************************************
--
-- Interface PDU Definition
--
-- **************************************************************

SABP-PDU ::= CHOICE {
    initiatingMessage   InitiatingMessage,
    successfulOutcome   SuccessfulOutcome,
    unsuccessfulOutcome UnsuccessfulOutcome,
    ...
}

InitiatingMessage ::= SEQUENCE {
    procedureCode   SABP-ELEMENTARY-PROCEDURE.&procedureCode    ({SABP-ELEMENTARY-PROCEDURES}),
    criticality SABP-ELEMENTARY-PROCEDURE.&criticality      ({SABP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       SABP-ELEMENTARY-PROCEDURE.&InitiatingMessage    ({SABP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}

SuccessfulOutcome ::= SEQUENCE {
    procedureCode   SABP-ELEMENTARY-PROCEDURE.&procedureCode    ({SABP-ELEMENTARY-PROCEDURES}),
    criticality SABP-ELEMENTARY-PROCEDURE.&criticality      ({SABP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       SABP-ELEMENTARY-PROCEDURE.&SuccessfulOutcome    ({SABP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}

UnsuccessfulOutcome ::= SEQUENCE {
    procedureCode   SABP-ELEMENTARY-PROCEDURE.&procedureCode    ({SABP-ELEMENTARY-PROCEDURES}),
    criticality SABP-ELEMENTARY-PROCEDURE.&criticality      ({SABP-ELEMENTARY-
PROCEDURES}{@procedureCode}),
    value       SABP-ELEMENTARY-PROCEDURE.&UnsuccessfulOutcome  ({SABP-ELEMENTARY-
PROCEDURES}{@procedureCode})
}

-- **************************************************************
--
-- Interface Elementary Procedure List
--
-- **************************************************************

SABP-ELEMENTARY-PROCEDURES SABP-ELEMENTARY-PROCEDURE ::= {
    SABP-ELEMENTARY-PROCEDURES-CLASS-1  |
    SABP-ELEMENTARY-PROCEDURES-CLASS-2  ,
    ...
}

SABP-ELEMENTARY-PROCEDURES-CLASS-1 SABP-ELEMENTARY-PROCEDURE ::= {
    write-Replace       |
    kill            |
    status-Load-Enquiry |
    status-Message-Query    |
    reset           ,
    ...
}

SABP-ELEMENTARY-PROCEDURES-CLASS-2 SABP-ELEMENTARY-PROCEDURE ::= {
    restart-Indication  |
    failure-Indication  |
    error-Indication    ,
    ...
}

write-Replace SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Write-Replace
    SUCCESSFUL OUTCOME  Write-Replace-Complete
    UNSUCCESSFUL OUTCOME    Write-Replace-Failure
    PROCEDURE CODE      id-Write-Replace
}
```

```
kill SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Kill
    SUCCESSFUL OUTCOME  Kill-Complete
    UNSUCCESSFUL OUTCOME    Kill-Failure
    PROCEDURE CODE          id-Kill
}

status-Load-Enquiry SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Load-Query
    SUCCESSFUL OUTCOME  Load-Query-Complete
    UNSUCCESSFUL OUTCOME    Load-Query-Failure
    PROCEDURE CODE          id-Status-Load-Enquiry
}

status-Message-Query SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Message-Status-Query
    SUCCESSFUL OUTCOME  Message-Status-Query-Complete
    UNSUCCESSFUL OUTCOME    Message-Status-Query-Failure
    PROCEDURE CODE          id-Status-Message-Query
}

reset SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Reset
    SUCCESSFUL OUTCOME  Reset-Complete
    UNSUCCESSFUL OUTCOME    Reset-Failure
    PROCEDURE CODE          id-Reset
}

restart-Indication SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Restart
    PROCEDURE CODE          id-Restart-Indication
}

failure-Indication SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Failure
    PROCEDURE CODE          id-Failure-Indication
}

error-Indication SABP-ELEMENTARY-PROCEDURE ::= {
    INITIATING MESSAGE  Error-Indication
    PROCEDURE CODE          id-Error-Indication
}

END
```

9.3.3 PDU Definitions

```
-- **************************************************************
--
-- PDU definitions for SABP.
--
-- **************************************************************

SABP-PDU-Contents -- { object identifier to be allocated }--
SABP-PDU-Contents {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-PDU-Contents (1) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    Broadcast-Message-Content,
    Category,
    Cause,
Criticality-Diagnostics,
    Data-Coding-Scheme,
    Failure-List,
    Message-Identifier,
```

```
    New-Serial-Number,
    No-of-Broadcasts-Completed-List,
    No-of-Broadcasts-Requested,
    Old-Serial-Number,
    Radio-Resource-Loading-List,
    Recovery-Indication,
    Repetition-Period,
    Serial-Number ,
    Service-Areas-List
FROM SABP-IEs

    ProtocolExtensionContainer{},
    ProtocolIE-Container{},
    SABP-PROTOCOL-EXTENSION,
    SABP-PROTOCOL-IES
FROM SABP-Containers

    id-Broadcast-Message-Content,
    id-Category,
    id-Criticality-Diagnostics,
    id-Cause,
    id-Data-Coding-Scheme,
    id-Failure-List,
    id-Message-Identifier,
    id-New-Serial-Number,
    id-No-of-Broadcasts-Completed-List,
    id-No-of-Broadcasts-Requested,
    id-Old-Serial-Number,
    id-Radio-Resource-Loading-List,
    id-Recovery-Indication,
    id-Repetition-Period,
    id-Serial-Number,
    id-Service-Areas-List
FROM SABP-Constants;

-- **************************************************************
--
-- Write-Replace
--
-- **************************************************************

Write-Replace ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container      { {Write-Replace-IEs} },
    protocolExtensions      ProtocolExtensionContainer { {Write-Replace-Extensions} } OPTIONAL,
    ...
}

Write-Replace-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-New-Serial-Number   CRITICALITY ignore  TYPE New-Serial-Number      PRESENCE mandatory }
|
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE optional }
|
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
|
    { ID id-Category            CRITICALITY ignore  TYPE Category           PRESENCE optional  } |
    { ID id-Repetition-Period   CRITICALITY ignore  TYPE Repetition-Period      PRESENCE optional  }
|
    { ID id-No-of-Broadcasts-Requested
                    CRITICALITY ignore  TYPE No-of-Broadcasts-Requested PRESENCE mandatory } |
    { ID id-Data-Coding-Scheme  CRITICALITY ignore  TYPE Data-Coding-Scheme     PRESENCE mandatory }
|
    { ID id-Broadcast-Message-Content
                    CRITICALITY ignore  TYPE Broadcast-Message-Content  PRESENCE mandatory } ,
    ...
}

Write-Replace-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Write-Replace-Complete
--
-- **************************************************************
```

```
Write-Replace-Complete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Write-Replace-Complete-IEs} },
    protocolExtensions      ProtocolExtensionContainer { {Write-Replace-Complete-Extensions} }
OPTIONAL,
    ...
}

Write-Replace-Complete-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-New-Serial-Number   CRITICALITY ignore  TYPE New-Serial-Number      PRESENCE mandatory }
|
    { ID id-No-of-Broadcasts-Completed-List
                        CRITICALITY ignore  TYPE No-of-Broadcasts-Completed-List
                                                        PRESENCE mandatory  }|
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics    PRESENCE optional },
    ...
}

Write-Replace-Complete-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Write-Replace-Failure
--
-- **************************************************************

Write-Replace-Failure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       { {Write-Replace-Failure-IEs} },
    protocolExtensions      ProtocolExtensionContainer { {Write-Replace-Failure-Extensions} }
OPTIONAL,
    ...
}

Write-Replace-Failure-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-New-Serial-Number   CRITICALITY ignore  TYPE New-Serial-Number      PRESENCE mandatory }
|
    { ID id-Failure-List        CRITICALITY ignore  TYPE Failure-List       PRESENCE mandatory } |
    { ID id-No-of-Broadcasts-Completed-List
                    CRITICALITY ignore  TYPE No-of-Broadcasts-Completed-List
                                            PRESENCE optional  } |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}
Write-Replace-Failure-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Kill
--
-- **************************************************************

Kill ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Kill-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Kill-Extensions}}      OPTIONAL,
    ...
}

Kill-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE mandatory }
|
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
,
    ...
}

Kill-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

-- **************************************************************
--
-- Kill-Complete
--
-- **************************************************************

Kill-Complete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Kill-Complete-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Kill-Complete-Extensions}}     OPTIONAL,
    ...
}

Kill-Complete-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE mandatory }
|
    { ID id-No-of-Broadcasts-Completed-List
                    CRITICALITY ignore      TYPE No-of-Broadcasts-Completed-List
                                                        PRESENCE mandatory }|
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Kill-Complete-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Kill-Failure
--
-- **************************************************************

Kill-Failure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Kill-Failure-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Kill-Failure-Extensions}}      OPTIONAL,
    ...
}

Kill-Failure-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE mandatory }
|
    { ID id-Failure-List        CRITICALITY ignore  TYPE Failure-List       PRESENCE mandatory } |
    { ID id-No-of-Broadcasts-Completed-List
                        CRITICALITY ignore  TYPE No-of-Broadcasts-Completed-List
                                                        PRESENCE optional } |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Kill-Failure-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Load-Query
--
-- **************************************************************

Load-Query ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Load-Query-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Load-Query-Extensions}}    OPTIONAL,
    ...
}

Load-Query-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
,
    ...
}
```

```
Load-Query-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Load-Query-Complete
--
-- **************************************************************

Load-Query-Complete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Load-Query-Complete-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Load-Query-Complete-Extensions}} OPTIONAL,
    ...
}

Load-Query-Complete-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Radio-Resource-Loading-List
                        CRITICALITY ignore  TYPE Radio-Resource-Loading-List
                                                        PRESENCE mandatory }  |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Load-Query-Complete-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Load-Query-Failure
--
-- **************************************************************

Load-Query-Failure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Load-Query-Failure-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Load-Query-Failure-Extensions}} OPTIONAL,
    ...
}

Load-Query-Failure-IEs SABP-PROTOCOL-IES ::= {

    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
|
    { ID id-Failure-List        CRITICALITY ignore  TYPE Failure-List       PRESENCE mandatory } |
    { ID id-Radio-Resource-Loading-List
                        CRITICALITY ignore  TYPE Radio-Resource-Loading-List
                                            PRESENCE optional  } |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Load-Query-Failure-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Message-Status-Query
--
-- **************************************************************

Message-Status-Query ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Message-Status-Query-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Message-Status-Query-Extensions}} OPTIONAL,
    ...
}

Message-Status-Query-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE mandatory }
|
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
,
```

```
    ...
}

Message-Status-Query-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Message-Status-Query-Complete
--
-- **************************************************************

Message-Status-Query-Complete ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container       {{Message-Status-Query-Complete-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Message-Status-Query-Complete-Extensions}}
OPTIONAL,
    ...
}

Message-Status-Query-Complete-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE mandatory }
|
    { ID id-No-of-Broadcasts-Completed-List
                        CRITICALITY ignore  TYPE No-of-Broadcasts-Completed-List
                                                        PRESENCE mandatory } |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Message-Status-Query-Complete-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Message-Status-Query-Failure
--
-- **************************************************************

Message-Status-Query-Failure ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container       {{Message-Status-Query-Failure-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Message-Status-Query-Failure-Extensions}}
OPTIONAL,
    ...
}

Message-Status-Query-Failure-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Failure-List        CRITICALITY ignore  TYPE Failure-List       PRESENCE mandatory } |
    { ID id-Old-Serial-Number   CRITICALITY ignore  TYPE Old-Serial-Number      PRESENCE mandatory }
|

    { ID id-No-of-Broadcasts-Completed-List
                    CRITICALITY ignore  TYPE No-of-Broadcasts-Completed-List
                                                        PRESENCE optional  } |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Message-Status-Query-Failure-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Reset
--
-- **************************************************************

Reset ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Reset-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Reset-Extensions}}     OPTIONAL,
```

```
    ...
}

Reset-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List         PRESENCE
mandatory } ,
    ...
}

Reset-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Reset-Complete
--
-- **************************************************************

Reset-Complete ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Reset-Complete-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Reset-Complete-Extensions}}    OPTIONAL,
    ...
}

Reset-Complete-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
|
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics        PRESENCE optional },
    ...
}

Reset-Complete-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Reset-Failure
--
-- **************************************************************

Reset-Failure ::= SEQUENCE {
    protocolIEs         ProtocolIE-Container       {{Reset-Failure-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Reset-Failure-Extensions}}     OPTIONAL,
    ...
}

Reset-Failure-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Failure-List        CRITICALITY ignore  TYPE Failure-List       PRESENCE mandatory } |
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE optional  }
|
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics    PRESENCE optional } ,
    ...
}

Reset-Failure-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Restart
--
-- **************************************************************

Restart ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container       {{Restart-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Restart-Extensions}}   OPTIONAL,
    ...
}

Restart-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
|
```

```
    { ID id-Recovery-Indication     CRITICALITY ignore  TYPE Recovery-Indication    PRESENCE
optional  } ,
    ...
}

Restart-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Failure
--
-- **************************************************************

Failure ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container       {{Failure-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Failure-Extensions}}   OPTIONAL,
    ...
}

Failure-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Service-Areas-List  CRITICALITY ignore  TYPE Service-Areas-List     PRESENCE mandatory }
,
    ...
}

Failure-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

-- **************************************************************
--
-- Error-Indication
--
-- **************************************************************

Error-Indication ::= SEQUENCE {
    protocolIEs             ProtocolIE-Container       {{Error-Indication-IEs}},
    protocolExtensions      ProtocolExtensionContainer {{Error-Indication-Extensions}}  OPTIONAL,
    ...
}

Error-Indication-IEs SABP-PROTOCOL-IES ::= {
    { ID id-Message-Identifier  CRITICALITY ignore  TYPE Message-Identifier     PRESENCE mandatory }
|
    { ID id-Serial-Number       CRITICALITY ignore  TYPE Serial-Number      PRESENCE optional  } |
    { ID id-Cause           CRITICALITY ignore  TYPE Cause              PRESENCE optional  } |
{ ID id-Criticality-Diagnostics
CRITICALITY ignore  TYPE Criticality-Diagnostics    PRESENCE optional },
    ...
}

Error-Indication-Extensions SABP-PROTOCOL-EXTENSION ::= {
    ...
}

END
```

9.3.4 Information Element Definitions

```
-- **************************************************************
--
-- Information Element Definitions
--
-- **************************************************************


SABP-IEs -- { object identifier to be allocated }--
SABP-IEs {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-IEs (2) }

DEFINITIONS AUTOMATIC TAGS ::=
```

```
BEGIN

IMPORTS
    maxRadio-Resource-Loading-List,
    maxFailure-List,
    maxNo-of-Broadcasts-Completed-List,
    maxNrOfErrors,
    maxService-Areas-List
FROM SABP-Constants

    Criticality,
    ProcedureCode,
    TriggeringMessage,
    ProtocolIE-ID
FROM SABP-CommonDataTypes

    ProtocolExtensionContainer{},

    SABP-PROTOCOL-EXTENSION
FROM SABP-Containers;


-- A

Available-Bandwidth         ::= INTEGER (0..20480)
-- bits/sec

-- B

Broadcast-Message-Content ::= OCTET STRING (SIZE (1246))
-- This IE is sent from the CN to the RNC containing user information i.e.
-- the message.

-- C

Category ::= ENUMERATED {
    high-priority,
    background-priority,
    normal-priority,
    default-priority,
    ...
}

Cause                   ::= INTEGER {
    parameter-not-recognised                (0),
    parameter-value-invalid                 (1),
    valid-CN-message-not-identified         (2),
    service-area-identity-not-valid         (3),
    unrecognised-message                    (4),
    missing-mandatory-element               (5),
    rNC-capacity-exceeded                   (6),
    rNC-memory-exceeded                     (7),
    service-area-broadcast-not-supported    (8),
    service-area-broadcast-not-operational  (9),
    message-reference-already-used          (10),
    unspecifed-error                        (11),
    transfer-syntax-error                   (12),
    semantic-error                          (13),
    message-not-compatible-with-receiver-state  (14),
    abstract-syntax-error-reject            (15),
    abstract-syntax-error-ignore-and-notify     (16),
    abstract-syntax-error-falsely-constructed-message   (17)
} (0..255)

Criticality-Diagnostics         ::= SEQUENCE {
    procedureCode           ProcedureCode           OPTIONAL,
    triggeringMessage       TriggeringMessage       OPTIONAL,
    criticalityResponse     Criticality         OPTIONAL,
    iEsCriticalityResponses     CriticalityDiagnostics-IE-List  OPTIONAL,
    iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-ExtIEs} } OPTIONAL,
    ...
}

CriticalityDiagnostics-ExtIEs SABP-PROTOCOL-EXTENSION ::= {
    ...
```

```
}

CriticalityDiagnostics-IE-List ::= SEQUENCE (SIZE (1..maxNrOfErrors)) OF
    SEQUENCE {
        criticalityResponse     Criticality,
        iE-ID               ProtocolIE-ID,
        repetitionNumber        RepetitionNumber        OPTIONAL,
        iE-Extensions           ProtocolExtensionContainer { {CriticalityDiagnostics-IE-List-ExtIEs}
} OPTIONAL,
        ...
    }

CriticalityDiagnostics-IE-List-ExtIEs SABP-PROTOCOL-EXTENSION ::= {
    ...
}


-- D

Data-Coding-Scheme          ::= INTEGER (0..255)

-- E

-- F
\
Failure-List ::= SEQUENCE (SIZE (1..maxFailure-List)) OF Failure-List-Item

Failure-List-Item ::= SEQUENCE {
    service-area-identifier     Service-Area-Identifier,
    cause                   Cause,
        iE-Extensions       ProtocolExtensionContainer { {FailureListItemIE-ExtIEs} } OPTIONAL,
        ...
}

FailureListItemIE-ExtIEs SABP-PROTOCOL-EXTENSION ::= {
...
}

-- G

-- H

-- I

-- J

-- K

-- L

-- M

Message-Identifier ::= OCTET STRING (SIZE (2))
-- This IE identifies the source/type of a CN message and is passed
-- transparently from the CN to the UE.

-- N

New-Serial-Number               ::= Serial-Number

No-of-Broadcasts-Completed-List ::= SEQUENCE (SIZE (1..maxNo-of-Broadcasts-Completed-List)) OF
    No-of-Broadcasts-Completed-List-Item

No-of-Broadcasts-Completed-List-Item ::= SEQUENCE {
    service-area-identifier     Service-Area-Identifier,
    no-of-broadcasts-compl      INTEGER (0..65535),
    no-of-broadcasts-compl-info No-Of-Broadcasts-Compl-Info         OPTIONAL,
    iE-Extensions       ProtocolExtensionContainer { {NoOfBroadcastsCompletedListItemIE-ExtIEs} }
OPTIONAL,
        ...
}

NoOfBroadcastsCompletedListItemIE-ExtIEs SABP-PROTOCOL-EXTENSION ::= {
...
}

No-Of-Broadcasts-Compl-Info     ::= ENUMERATED {
    overflow,
```

```
    unknown,
    ...
}

No-of-Broadcasts-Requested      ::= INTEGER {
    broadcast-indefinitely (0)
} (0..65535)

-- O

Old-Serial-Number               ::= Serial-Number

-- P

-- Q

-- R

Radio-Resource-Loading-List ::= SEQUENCE (SIZE (1..maxRadio-Resource-Loading-List)) OF
    Radio-Resource-Loading-List-Item

Radio-Resource-Loading-List-Item ::= SEQUENCE {
    service-area-identifier     Service-Area-Identifier,
    available-bandwidth     Available-Bandwidth,
    iE-Extensions       ProtocolExtensionContainer { {RadioResourceLoadingListItemIE-ExtIEs} }
OPTIONAL,
        ...
}

RadioResourceLoadingListItemIE-ExtIEs SABP-PROTOCOL-EXTENSION ::= {
...
}

Recovery-Indication ::= ENUMERATED {
    data-lost,
    data-available
}

RepetitionNumber            ::= INTEGER(10..2565)

Repetition-Period           ::= INTEGER (1..4096)
-- Each unit represents a repetition of one second to a maximum of
-- once per 4096 seconds (~1 hour).


-- S

Serial-Number               ::= INTEGER (0..65535)


Service-Area-Identifier ::= SEQUENCE {
    plmn-id             OCTET STRING (SIZE (3))
                    -- Digits 0 to 9, two digits per octet.          --
                    -- Each octet encoded 0000 to 1001.              --
                    -- 1111 used as filler                           --
                    -- Bit 4 to 1 of octet n encoding digit 2n-1.    --
                    -- Bit 8 to 5 of octet n encoding digit 2n.      --
                    -- The PLMN-ID consists of 3 digits from MCC     --
                    -- followed by either a filler plus 2 digits     --
                    -- from MNC (in case of 2 digit MNC) or 3 digits --
                    -- from MNC (in case of 3 digit MNC).            -- ,
    lac             OCTET STRING (SIZE (2))
                    -- 0000 and FFFE not allowed                     -- ,
    sac             OCTET STRING (SIZE (2))
}

-- **TODO** The IE type for these parameters is not known as yet
Service-Areas-List ::= SEQUENCE (SIZE (1..maxService-Areas-List)) OF Service-Area-Identifier



-- T

-- U

-- V

-- W
```

```
-- X

-- Y

END
```

9.3.5 Common Definitions

```
-- **************************************************************
--
-- Common definitions
--
-- **************************************************************

SABP-CommonDataTypes -- { object identifier to be allocated }--
SABP-CommonDataTypes {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-CommonDataTypes (3) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

Criticality     ::= ENUMERATED { reject, ignore, notify }

Presence        ::= ENUMERATED { optional, conditional, mandatory }

ProcedureCode       ::= INTEGER (0..255)

ProtocolExtensionID ::= INTEGER (0..65535)

ProtocolIE-ID       ::= INTEGER (0..65535)

TriggeringMessage       ::= ENUMERATED {initiating-message, successful-outcome, unsuccessful-
outcome,...}

END
```

9.3.6 Constant Definitions

```
-- **************************************************************
--
-- Constant definitions
--
-- **************************************************************

SABP-Constants -- { object identifier to be allocated }--
SABP-Constants {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-Constants (4) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- Elementary Procedures
--
-- **************************************************************

id-Write-Replace            INTEGER ::= 0
id-Kill                 INTEGER ::= 1
id-Status-Load-Enquiry          INTEGER ::= 2
id-Status-Message-Query         INTEGER ::= 3
id-Restart-Indication           INTEGER ::= 4
id-Reset                INTEGER ::= 5
id-Failure-Indication           INTEGER ::= 6
id-Error-Indication         INTEGER ::= 7

-- **************************************************************
--
-- IEs
--
-- **************************************************************
```

```
id-Broadcast-Message-Content        INTEGER ::= 0
id-Category                 INTEGER ::= 1
id-Cause                INTEGER ::= 2
id-Criticality-Diagnostics  INTEGER ::=3
id-Data-Coding-Scheme           INTEGER ::= 4
id-Failure-List             INTEGER ::= 5
id-Message-Identifier           INTEGER ::= 6
id-New-Serial-Number            INTEGER ::= 7
id-No-of-Broadcasts-Completed-List  INTEGER ::= 8
id-No-of-Broadcasts-Requested       INTEGER ::= 9
id-Old-Serial-Number                INTEGER ::= 10
id-Radio-Resource-Loading-List      INTEGER ::= 11
id-Recovery-Indication          INTEGER ::= 12
id-Repetition-Period            INTEGER ::= 13
id-Serial-Number            INTEGER ::= 14
id-Service-Areas-List           INTEGER ::= 15

-- **************************************************************
--
-- Extension constants
--
-- **************************************************************

-- **************************************************************
--
-- Lists
--
-- **************************************************************

maxRadio-Resource-Loading-List  INTEGER ::= 65535
maxFailure-List             INTEGER ::= 65535
maxNo-of-Broadcasts-Completed-List  INTEGER ::= 65535
maxNrOfErrors               INTEGER ::= 256
maxService-Areas-List           INTEGER ::= 65535

maxProtocolExtensions           INTEGER ::= 65535
maxProtocolIEs              INTEGER ::= 65535

END
```

9.3.7 Container Definitions

```
-- **************************************************************
--
-- Container definitions
--
-- **************************************************************

SABP-Containers -- { object identifier to be allocated }--
SABP-Containers {
itu-t (0) identified-organization (4) etsi (0) mobileDomain (0)
umts-Access (20) modules (3) sabp (3) version1 (1) sabp-Containers (5) }

DEFINITIONS AUTOMATIC TAGS ::=

BEGIN

-- **************************************************************
--
-- IE parameter types from other modules.
--
-- **************************************************************

IMPORTS
    Criticality,
    Presence,
    ProtocolExtensionID,
    ProtocolIE-ID
FROM SABP-CommonDataTypes

    maxProtocolExtensions,
    maxProtocolIEs
FROM SABP-Constants;

-- **************************************************************
--
```

```
-- Class Definition for Protocol IEs
--
-- ***************************************************************

SABP-PROTOCOL-IES ::= CLASS {
    &id             ProtocolIE-ID       UNIQUE,
    &criticality            Criticality     DEFAULT ignore,
    &Value,
    &presence           Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    TYPE                &Value
    PRESENCE            &presence
}

-- ***************************************************************
--
-- Class Definition for Protocol Extensions
--
-- ***************************************************************

SABP-PROTOCOL-EXTENSION ::= CLASS {
    &id             ProtocolExtensionID     UNIQUE,
    &criticality            Criticality     DEFAULT ignore,
    &Extension,
    &presence       Presence
}
WITH SYNTAX {
    ID              &id
    CRITICALITY         &criticality
    EXTENSION           &Extension
    PRESENCE            &presence
}

-- ***************************************************************
--
-- Container for Protocol IEs
--
-- ***************************************************************

ProtocolIE-Container {SABP-PROTOCOL-IES : IEsSetParam} ::=
    SEQUENCE (SIZE (0..maxProtocolIEs)) OF
    ProtocolIE-Field {{IEsSetParam}}

ProtocolIE-Field {SABP-PROTOCOL-IES : IEsSetParam} ::= SEQUENCE {
    id              SABP-PROTOCOL-IES.&id               ({IEsSetParam}),
    criticality         SABP-PROTOCOL-IES.&criticality          ({IEsSetParam}{@id}),
    value               SABP-PROTOCOL-IES.&Value                ({IEsSetParam}{@id})
}

-- ***************************************************************
--
-- Container Lists for Protocol IE Containers
--
-- ***************************************************************

ProtocolIE-ContainerList {INTEGER : lowerBound, INTEGER : upperBound, SABP-PROTOCOL-IES :
IEsSetParam} ::=
    SEQUENCE (SIZE (lowerBound..upperBound)) OF
    ProtocolIE-Container {{IEsSetParam}}

-- ***************************************************************
--
-- Container for Protocol Extensions
--
-- ***************************************************************

ProtocolExtensionContainer {SABP-PROTOCOL-EXTENSION : ExtensionSetParam} ::=
    SEQUENCE (SIZE (1..maxProtocolExtensions)) OF
    ProtocolExtensionField {{ExtensionSetParam}}

ProtocolExtensionField {SABP-PROTOCOL-EXTENSION : ExtensionSetParam} ::= SEQUENCE {
    id              SABP-PROTOCOL-EXTENSION.&id         ({ExtensionSetParam}),
    criticality         SABP-PROTOCOL-EXTENSION.&criticality        ({ExtensionSetParam}{@id}),
    extensionValue          SABP-PROTOCOL-EXTENSION.&Extension      ({ExtensionSetParam}{@id})
}
```

```
END
```