3GPP TSG_CN **Tdoc NP-000375**
Plenary Meeting #8, Dusseldorf, Germany
21st – 23rd June 2000.

Source: **TSG_N WG4**

Title: **Corrective CR to 3G Work Item "GTP enhancements"**

Agenda item: **6.14.4**

Document for: **APPROVAL**

Introduction:

This document contains **"1"** Corrective CR on **Work Item "GTP enhancements",** that has been agreed by **TSG_N WG4,** and is forwarded to **TSG_N Plenary** meeting #8 for approval.

TDoc	SPEC	CR	REV	PHAS	VERS	SUBJECT	CAT	NEW_VERS
N4-000258	29.060	105		R99	3.4.0	Race Conditions Avoidance	F	3.5.0

3GPP TSG CNWG4
Rotenburg, Germany, 22-26 May 2000

Document N4-000258
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.

29.060	CR	105	Current Version:	V3.4.0

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

For submission to:	CN#08	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

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

Source: N4 **Date:** 26 May 2000

Subject: Race Conditions Avoidance

Work item: GTP Enhancements

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 creation and deletion of PDP contexts as currently defined is prone to race conditions.

SGSN sends to GGSN creation of PDP context #2. This message gets lost.

SGSN sends to GGSN deletion of PDP context #1 (the primary and only PDP context already active)

GGSN ACKs deletion of PDP context # 1 and deletes all the context associated to the MS (including the TEID for signaling)

SGSN re-sends to GGSN creation of PDP context #2. The GGSN receives this message, but it is unfortunately populated with stale information (wrong TEID for signaling and linked N-SAPI) .

As a result the user gets unexpectedly disconnected, and the operator may receive complaints. This CR proposes changes to the mechanism that will avoid such situations:

The reason for the problem is that the concept of PDP session needs to be overlaid to the concept of PDP context. In R'98 this was not a problem, since a data session and a PDP contexts were isomorphic. Now, the session may be made of 1 or more PDP contexts. This introduces some problems if we don't explicitly differentiate between tear down of the session or of the PDP context.

Clauses affected: 7.3.5

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: There may be the need to send a LS toS2 and N1

help.doc

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

7.3.5 Delete PDP Context Request

A Delete PDP Context Request shall be sent from a SGSN node to a GGSN node as part of the GPRS Detach procedure or the GPRS PDP Context Deactivation procedure or from a GGSN node to a SGSN node as part of the PDP Context Deactivation Initiated by GGSN procedure. A request shall be used to deactivate an activated PDP Context or an activated set of PDP contexts associated to a PDP address assigned to a single MS.

A GSN shall be prepared to receive a Delete PDP Context Request at any time and shall always reply regardless if the PDP context exists or not, except in the case described below.

If any collision occurs, the Delete PDP Context Request takes precedence over any other Tunnel Management message.

The ~~optional~~ Teardown Ind is used to indicate that all PDP contexts that share the PDP address with the PDP context identified in the request should also be deactivated. This may trigger the deletion of all the information kept for a MS at a GSN, if no other PDP contexts associated to other PDP addresses are active on the GSN. This information element shall always be included when the Last PDP context associated to a PDP address is torn down.

If a GSN receives a Delete PDP context without a Teardown Indicator and only that PDP context is active for a PDP address, then the GSN shall ignore the message. (Note: This is symptom of a race condition. The reliable delivery of signalling messages will eventually lead to a consistent situation, allowing the teardown of the PDP context.)

The optional Private Extension contains vendor or operator specific information.

Table 10: Information elements in a Delete PDP Context Request

Information element	Presence requirement	Reference
Teardown Ind	~~Optional~~Conditional	7.7.16
NSAPI	Mandatory	7.7.17
Private Extension	Optional	7.7.44