3GPP TSG CN Plenary Meeting #12 **Tdoc NP-010317**
Stockholm, Sweden, 13th - 15th June 2001

Source: Siemens

Title: CRs on R99 Work Item “CAMEL3”

Agenda item: 7.2

Document for: APPROVAL

Introduction:

This document contains 2 CRs on R99 and Rel-4 Work Item ”CAMEL3”, that have not been agreed by TSG CN WG2, but sent directly to TSG CN Plenary meeting #12 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.078	185			R99	Use of the GPRS Reference in the case of the SCP load sharing	F	3.7.0
29.078	186			Rel-4	Use of the GPRS Reference in the case of the SCP load sharing	A	4.0.0

CR-Form-v4

CHANGE REQUEST

⌘ **29.078** **CR** **185** ⌘ rev **-** ⌘ Current version: **3.7.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Use of the GPRS Reference in the case of the SCP load sharing
Source:	⌘	Siemens AG
Work item code:	⌘	CAMEL3 ***Date:*** ⌘ 1 June 2001
Category:	⌘	**F** (Essential correction) ***Release:*** ⌘ R99

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

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

Reason for change: ⌘ 29.078 specifies that the gprsSSF shall memorise the gsmSCF address that is returned by the gsmSCF. The gprsSSF needs this address for the possible follow-up TC dialogues comprising a common GPRS dialogue. However the gsmSCF itself does not return this address. Neither the TC interface itself does provide this address to its TC user.

This CR proposes to use the GPRS Reference for this purpose, to avoid any ASN.1 change in the late stage.

Summary of change: ⌘ Delete words concerning the gsmSCF address in the response of the InitialDPGPRS.

Consequences if not approved: ⌘ The usage of SCP loadsharing is not possible if the standard TC user interface is used internally in the SGSN.

Clauses affected: ⌘ 11.31 (InitialDPGPRS), 12.1.7.1.3 (gprsSSF-to-gsmSCF messages)

Other specs affected: ⌘
☐ Other core specifications ⌘
☐ Test specifications
☐ O&M Specifications

Other comments: ⌘ This CR is the counter proposal against 23.078- 304/305 and 29.078-183/184.

Siemens agrees that the point that the above CR mentioned is the error, however those CRs propose ASN.1 change and introduce “realistically” mandatory parameter and its handling in the SGSN. There shall be another way to solve the problem in this later date of the CAMEL Phase 3.

This CR does not request any ASN.1 change. Other changes, deletion of some words is in line with other CRs.

In the subclause 12.1.7.1.2, the allocation of the SCF Process Id may be the operator/supplier dependent, i.e. the gsmSCF may include a certain value in the

	SCF Process Id to complement the gsmSCF address in the GPRS-CSI to identify the instance of the service logic uniquely in the given domain. In the case of the SCP load sharing, it is fully under SCP's responsibility to control the signalling and the distribution of the service logic. As the first contact to the SCP by the SGSN via InitialDPGPRS could be further forwarded to the final instance within the group of the SCF Process by the "gateway SCP" which is addressed by the gsmSCF address in the GPRS-CSI, the "gateway SCP" should have the capability of handling the SCF Process Id in the right direction for the second and further contact. Above mentioned mechanism, however, is not proposed in this CR. Siemens believes such description in the specification would embarrass the readers who have not participated the discussion of the load sharing.

***** First modified section *****

11.31 InitialDPGPRS procedure

…..

11.31.2 Invoking entity (gprsSSF)

11.31.2.1 Normal procedure

gprsSSF preconditions:

(1) An event has been met that is armed as TDP.

(2) There is no GPRS dialogue active for that PDP Context or for the GPRS Session.

gprsSSF postcondition:

(1) A control relationship has been established and the gprsSSF is in state "waiting for instructions".

The address of the gsmSCF that the InitialDPGPRS operation shall be sent to is fetched from the valid CSI. The gprsSSF provides all available parameters.

A control relationship is established with the gsmSCF. The gprsSSF application timer T_{SSF} is set when the gprsSSF sends InitialDPGPRS for requesting instructions from the gsmSCF. It is used to prevent from excessive GPRS session or PDP context duration or volume usage.

11.31.2.2 Error handling

If the destination gsmSCF is not accessible then the gprsSSF instructs the SGSN to handle the GPRS session or PDP context according to the Default GPRS handling parameter of the valid CSI.

On expiration of T_{SSF} before receiving any operation, the gprsSSF aborts the interaction with the gsmSCF and instructs the SGSN to handle the call according to the Default GPRS handling parameter of the valid CSI.

If the MS abandons the establishment of a GPRS session or PDP context after the sending of InitialGPRSEvent, then the gprsSSF aborts the control relationship after the first response from the gsmSCF has been received.

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

***** Next modified section *****

12.1.7 gprsSSF-gsmSCF interface

12.1.7.1 Normal procedures

12.1.7.1.1 TC-dialogues and relationships

The GPRS dialogue can consist of multiple consecutive TC-dialogues. A GPRS dialogue is identified by a GPRS-ReferenceNumber consisting of the originationReference and the destinationReference. One GPRS-Reference is assigned by the SGSN and shall be unique within this SGSN. The other GPRS-Reference is assigned by the gsmSCF and shall be unique within this gsmSCF.

The ***TC***-dialogues are closed and (re)opened whenever necessary.

12.1.7.1.2 Use of the GPRS Reference

For the use of CAP defined GPRS-ReferenceNumber, see also the ASN.1 notation in the subclause 8.1.

When the gprsSSF sends the first operation for a new GPRS dialogue (InitialDPGPRS), the gprsSSF shall include a GPRS Reference Number in the TC message. This GPRS Reference Number shall consist of the *SGSN Process Id* as originationReference, which is internally allocated by the gprsSSF. This number is used by the gprsSSF to associate an incoming TC message with an internal GPRS Process.

When the gsmSCF has received the InitialDPGPRS operation, it shall store the SGSN Process ID and allocate an *SCF Process Id* which is used by the gsmSCF to associate an incoming TC message with an internal SCF Process.

The SCP shall include the GPRS Reference Number in the first TC-CONTINUE message, *SGSN Process Id* in destinationReference and *SCF Process Id* in originationReference, returned to the gprsSSF.

When the gprsSSF receives the first TC message from the SCP for this GPRS dialogue, the gprsSSF shall store the SCP Process Id together with the SGSN Process Id.

From here onwards all the TC messages that open a new TC dialogue shall include the GPRS Reference Number consisting of the originationReference and the destinationReference to associate the internal process in the origination entity and the destination entity, respectively, until the end of the relationship between these processes.

For any TC-CONTINUE in the existing TC dialogue, transporting the GPRS Reference Number is not needed except for the first response after the InitialDPGPRS operation.

12.1.7.1.3 gprsSSF-to-gsmSCF messages

This subclause defines the normal procedures for TC messages from the gprsSSF to the gsmSCF.

gprsSSF-FSM related messages

A GPRS dialogue and a TC dialogue shall be established when the gprsSSF moves from the state Idle to the state Waiting for Instructions. The InitialDPGPRS operation shall be transmitted in the same TC message, i.e. TC-BEGIN. It shall contain the GPRS-Reference as assigned by the SGSN in the originationReference. The gprsSSF may intiate the subsequent TC dialogues for this GPRS dialogue with the following operations:

- ApplyChargingReportGPRS
- EntityReleasedGPRS
- EventReportGPRS

The gsmSCF shall memorise the gprsSSF address received along with the InitialDPGPRS, and use it in the further TC dialogues for the relationship between these processes.

The gsmSCF may open subsequent TC dialogues with the following CAP operations:

- ActivityTestGPRS;
- ApplyChargingGPRS;
- CancelGPRS;
- FurnishChargingInformationGPRS;
- ReleaseGPRS;
- RequestReportGPRSEvent;
- SendChargingInformationGPRS.

The CAP operation that opens a TC dialogue shall be sent with a TC-BEGIN request primitive. This message shall contain the GPRS-ReferenceNumber assigned by the sender of this message in the originationReference. If the operation opens a subsequent TC dialogue this message shall contain also the previously received destinationReference.

If an operation opens a GPRS dialogue then the TC message reply shall contain the originationReference as assigned by the sender, i.e. the gsmSCF.

The TC dialogue shall be closed for the idle periods, i.e. when the gprsSSF moves from the Waiting for Instructions state to the Idle state, if the gprsSSF is in the Monitoring state and has received all replies or time-outs for the operations sent, after standalone operations of the SCF in Monitoring state if gprsSSF is not going to the Idle state (ActivityTestGPRS, ApplyChargingGPRS, CancelGPRS, FurnishChargingInformationGPRS, RequestReportGPRSEvent, SendChargingInformationGPRS), or at the end of a GPRS dialogue.
Each TC dialogue shall be terminated by the gprsSSF using TC-END (basic end). The following operations can cause the end of the GPRS dialogue:

- ContinueGPRS;
- ConnectGPRS;
- ApplyChargingReportGPRS result;
- EntityReleasedGPRS rersult;
- EventReportGPRS (EDP-N) result;
- CancelGPRS;
- ReleaseGPRS;
- RequestReportGPRSEvent (disarming of DPs).

When the gprsSSF makes a non-error case state transition to the state Idle and there is one or more pending operation and TC dialogue is established, TC dialogue may be terminated by TC-END primitive with zero component(s) after all pending operations have been sent. When the gsmSSF sends the last EventReportGPRS or ApplyChargingReportGPRS the GPRS dialogue may be ended from the gprsSSF by a TC-END request primitive with basic end.

In the case that there is no pending operation, result nor error, and TC dialogue is established, TC dialogue shall be terminated by TC-END primitive with zero component.

In the case where a PDP context release or detach is initiated by any other entity than an gsmSCF, the gprsSSF shall end a GPRS dialogue with the EntityReleasedGPRS operation if the gprsSSF has no armed DP to report nor pending ApplyChargingReportGPRS which should reported.

In the case of overlapping dialogues for the same GPRS dialogue the gsmSCF opened TC dialogue is aborted by the gprsSSF with the abort reason overlapping-dialogue as specified in clause 5.7. This abort reason is used to indicate to the gsmSCF that a specific instance already has a TC dialogue open. It is typically obtained when both the gsmSCF and gprsSSF open a new dialogue at the same time. While the gprsSSF waits for a response to an operation sent in TC-BEGIN it may receive an operation from the gsmSCF in TC-BEGIN. In such cases the dialogue opened by the gprsSSF is maintained and the dialogue opened by the gsmSCF is aborted with this abort reason.

SSME-FSM related messages

The following procedures shall be followed:

- The dialogue shall be ended with basic end when the ActivityTestGPRS Return Result is sent.

3GPP TSG-CN #12 Plenary
Stockholm, Sweden, 13 – 15 June

Tdoc NP-010317, part2

CR-Form-v4

CHANGE REQUEST

⌘ **29.078** **CR** **186** ⌘ rev **-** ⌘ Current version: **4.0.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Use of the GPRS Reference in the case of the SCP load sharing
Source:	⌘	Siemens AG
Work item code:	⌘	CAMEL3
Date:	⌘	1 June 2001
Category:	⌘	**A**
Release:	⌘	Rel-4

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
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Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
REL-4 *(Release 4)*
REL-5 *(Release 5)*

Reason for change:	⌘	29.078 specifies that the gprsSSF shall memorise the gsmSCF address that is returned by the gsmSCF. The gprsSSF needs this address for the possible follow-up TC dialogues comprising a common GPRS dialogue. However the gsmSCF itself does not return this address. Neither the TC interface itself does provide this address to its TC user. This CR proposes to use the GPRS Reference for this purpose, to avoid any ASN.1 change in the late stage.
Summary of change:	⌘	Delete words concerning the gsmSCF address in the response of the InitialDPGPRS.
Consequences if not approved:	⌘	The usage of SCP loadsharing is not possible if the standard TC user interface is used internally in the SGSN.

Clauses affected:	⌘	11.31 (InitialDPGPRS), 12.1.7.1.3 (gprsSSF-to-gsmSCF messages)
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	This CR is the counter proposal against 23.078- 304/305 and 29.078-183/184. Siemens agrees that the point that the above CR mentioned is the error, however those CRs propose ASN.1 change and introduce “realistically” mandatory parameter and its handling in the SGSN. There shall be another way to solve the problem in this later date of the CAMEL Phase 3. This CR does not request any ASN.1 change. Other changes, deletion of some words is in line with other CRs. In the subclause 12.1.7.1.2, the allocation of the SCF Process Id may be the operator/supplier dependent, i.e. the gsmSCF may include a certain value in the

	SCF Process Id to complement the gsmSCF address in the GPRS-CSI to identify the instance of the service logic uniquely in the given domain. In the case of the SCP load sharing, it is fully under SCP's responsibility to control the signalling and the distribution of the service logic. As the first contact to the SCP by the SGSN via InitialDPGPRS could be further forwarded to the final instance within the group of the SCF Process by the "gateway SCP" which is addressed by the gsmSCF address in the GPRS-CSI, the "gateway SCP" should have the capability of handling the SCF Process Id in the right direction for the second and further contact. Above mentioned mechanism, however, is not proposed in this CR. Siemens believes such description in the specification would embarrass the readers who have not participated the discussion of the load sharing.

***** First modified section *****

11.31 InitialDPGPRS procedure

…..

11.31.2 Invoking entity (gprsSSF)

11.31.2.1 Normal procedure

gprsSSF preconditions:

(1) An event has been met that is armed as TDP.

(2) There is no GPRS dialogue active for that PDP Context or for the GPRS Session.

gprsSSF postcondition:

(1) A control relationship has been established and the gprsSSF is in state "waiting for instructions".

The address of the gsmSCF that the InitialDPGPRS operation shall be sent to is fetched from the valid CSI. The gprsSSF provides all available parameters.

A control relationship is established with the gsmSCF. The gprsSSF application timer T_{SSF} is set when the gprsSSF sends InitialDPGPRS for requesting instructions from the gsmSCF. It is used to prevent from excessive GPRS session or PDP context duration or volume usage.

11.31.2.2 Error handling

If the destination gsmSCF is not accessible then the gprsSSF instructs the SGSN to handle the GPRS session or PDP context according to the Default GPRS handling parameter of the valid CSI.

On expiration of T_{SSF} before receiving any operation, the gprsSSF aborts the interaction with the gsmSCF and instructs the SGSN to handle the call according to the Default GPRS handling parameter of the valid CSI.

If the MS abandons the establishment of a GPRS session or PDP context after the sending of InitialGPRSEvent, then the gprsSSF aborts the control relationship after the first response from the gsmSCF has been received.

Generic error handling for the operation related errors is described in clause 10 and the TC services which are used for reporting operation errors are described in clause 12.

***** Next modified section *****

12.1.7 gprsSSF-gsmSCF interface

12.1.7.1 Normal procedures

12.1.7.1.1 TC-dialogues and relationships

The GPRS dialogue can consist of multiple consecutive TC-dialogues. A GPRS dialogue is identified by a GPRS-ReferenceNumber consisting of the originationReference and the destinationReference. One GPRS-Reference is assigned by the SGSN and shall be unique within this SGSN. The other GPRS-Reference is assigned by the gsmSCF and shall be unique within this gsmSCF.

The ***TC***-dialogues are closed and (re)opened whenever necessary.

12.1.7.1.2 Use of the GPRS Reference

For the use of CAP defined GPRS-ReferenceNumber, see also the ASN.1 notation in the subclause 8.1.

When the gprsSSF sends the first operation for a new GPRS dialogue (InitialDPGPRS), the gprsSSF shall include a GPRS Reference Number in the TC message. This GPRS Reference Number shall consist of the *SGSN Process Id* as originationReference, which is internally allocated by the gprsSSF. This number is used by the gprsSSF to associate an incoming TC message with an internal GPRS Process.

When the gsmSCF has received the InitialDPGPRS operation, it shall store the SGSN Process ID and allocate an *SCF Process Id* which is used by the gsmSCF to associate an incoming TC message with an internal SCF Process.

The SCP shall include the GPRS Reference Number in the first TC-CONTINUE message, *SGSN Process Id* in destinationReference and *SCF Process Id* in originationReference, returned to the gprsSSF.

When the gprsSSF receives the first TC message from the SCP for this GPRS dialogue, the gprsSSF shall store the SCP Process Id together with the SGSN Process Id.

From here onwards all the TC messages that open a new TC dialogue shall include the GPRS Reference Number consisting of the originationReference and the destinationReference to associate the internal process in the origination entity and the destination entity, respectively, until the end of the relationship between these processes.

For any TC-CONTINUE in the existing TC dialogue, transporting the GPRS Reference Number is not needed except for the first response after the InitialDPGPRS operation.

12.1.7.1.3 gprsSSF-to-gsmSCF messages

This subclause defines the normal procedures for TC messages from the gprsSSF to the gsmSCF.

gprsSSF-FSM related messages

A GPRS dialogue and a TC dialogue shall be established when the gprsSSF moves from the state Idle to the state Waiting for Instructions. The InitialDPGPRS operation shall be transmitted in the same TC message, i.e. TC-BEGIN. It shall contain the GPRS-Reference as assigned by the SGSN in the originationReference. The gprsSSF may intiate the subsequent TC dialogues for this GPRS dialogue with the following operations:

- ApplyChargingReportGPRS
- EntityReleasedGPRS
- EventReportGPRS

The gsmSCF shall memorise the gprsSSF address received along with the InitialDPGPRS, and use it in the further TC dialogues for the relationship between these processes.

The gsmSCF may open subsequent TC dialogues with the following CAP operations:

- ActivityTestGPRS;
- ApplyChargingGPRS;
- CancelGPRS;
- FurnishChargingInformationGPRS;
- ReleaseGPRS;
- RequestReportGPRSEvent;
- SendChargingInformationGPRS.

The CAP operation that opens a TC dialogue shall be sent with a TC-BEGIN request primitive. This message shall contain the GPRS-ReferenceNumber assigned by the sender of this message in the originationReference. If the operation opens a subsequent TC dialogue this message shall contain also the previously received destinationReference.

If an operation opens a GPRS dialogue then the TC message reply shall contain the originationReference as assigned by the sender, i.e. the gsmSCF.

The TC dialogue shall be closed for the idle periods, i.e. when the gprsSSF moves from the Waiting for Instructions state to the Idle state, if the gprsSSF is in the Monitoring state and has received all replies or time-outs for the operations sent, after standalone operations of the SCF in Monitoring state if gprsSSF is not going to the Idle state (ActivityTestGPRS, ApplyChargingGPRS, CancelGPRS, FurnishChargingInformationGPRS, RequestReportGPRSEvent, SendChargingInformationGPRS), or at the end of a GPRS dialogue.
Each TC dialogue shall be terminated by the gprsSSF using TC-END (basic end). The following operations can cause the end of the GPRS dialogue:

- ContinueGPRS;
- ConnectGPRS;
- ApplyChargingReportGPRS result;
- EntityReleasedGPRS rersult;
- EventReportGPRS (EDP-N) result;
- CancelGPRS;
- ReleaseGPRS;
- RequestReportGPRSEvent (disarming of DPs).

When the gprsSSF makes a non-error case state transition to the state Idle and there is one or more pending operation and TC dialogue is established, TC dialogue may be terminated by TC-END primitive with zero component(s) after all pending operations have been sent. When the gsmSSF sends the last EventReportGPRS or ApplyChargingReportGPRS the GPRS dialogue may be ended from the gprsSSF by a TC-END request primitive with basic end.

In the case that there is no pending operation, result nor error, and TC dialogue is established, TC dialogue shall be terminated by TC-END primitive with zero component.

In the case where a PDP context release or detach is initiated by any other entity than an gsmSCF, the gprsSSF shall end a GPRS dialogue with the EntityReleasedGPRS operation if the gprsSSF has no armed DP to report nor pending ApplyChargingReportGPRS which should reported.

In the case of overlapping dialogues for the same GPRS dialogue the gsmSCF opened TC dialogue is aborted by the gprsSSF with the abort reason overlapping-dialogue as specified in clause 5.7. This abort reason is used to indicate to the gsmSCF that a specific instance already has a TC dialogue open. It is typically obtained when both the gsmSCF and gprsSSF open a new dialogue at the same time. While the gprsSSF waits for a response to an operation sent in TC-BEGIN it may receive an operation from the gsmSCF in TC-BEGIN. In such cases the dialogue opened by the gprsSSF is maintained and the dialogue opened by the gsmSCF is aborted with this abort reason.

SSME-FSM related messages

The following procedures shall be followed:

- The dialogue shall be ended with basic end when the ActivityTestGPRS Return Result is sent.