3GPP TSG CN Plenary Meeting #12 **Tdoc NP-010307**
Stockholm, Sweden, 13th - 15th June 2001

Source: **TSG CN WG 2**

Title: **LSs sent from CN2 since TSG#11 meeting,- pack1**

Agenda item: **6.2.1**

Document for: **Information**

Introduction:

This document contains 3 agreed LSs sent from TSG CN WG2, and are forwarded to TSG CN Plenary meeting #12 for information only.

Meeting	Doc-2nd-Level	Source	Tdoc Title	Comments
CN2#18	N2-010440	Ericsson	LS from CN2 to SA5: Inclusion of CAMEL elements in MT-SMS CDR	To: TSG SA WG5
CN2#18	N2-010465	Vodafone	Output LS to SA1: Corrections for CAMEL support of OR	To: TSG SA WG1
CN2#18	N2-010468	Alcatel	LS "Charging and Information concepts for CAMEL Call Party Handling"	To: TSG SA WG1, TSG SA WG1 CAMEL ad hoc

3GPP TSG CN WG2 Meeting #18 **Tdoc N2-010440**
Puerto Rico, 14th - 18th May 2001

Title: Liaison Statement on "Inclusion of charging data in Call Data Records for CAMEL control of MT-SMS in MSC and SGSN"

Source: TSG_CN WG2

To: TSG_SA WG5

Contact Person:

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1. Overall Description:

TSG_CN WG2 has completed the work on CAMEL control of Mobile Terminated SMS. This feature forms part of the work item “CAMEL Phase 4” (Rel-5).

TSG_CN WG2 would like to inform TSG_SA WG5 about the requirement for the inclusion of CAMEL specific information elements in the Call Detail Records for Mobile Terminated SMS, both in the terminating MSC and in the SGSN.

These elements should be reflected in the 3GPP specifications 3G TS 32.205 and 3G TS 32.215 for Rel-5.

2. Actions:

ACTION: TSG CN WG2 asks TSG_SA WG5 group to include as a minimum the following information elements in the SMS-MT record for the terminating MSC and in the SMS-MT record for the SGSN:

gsmSCF Address;
service Key;
default SMS Handling;
free Format Data;
CAMEL modified Calling Party Number.

TSG CN WG2 leaves it over to the expertise of TSG SA WG5 to decide how these information elements can be best placed in the Call Detail Record.

The ASN.1 syntax of the above listed information elements is specified in 3G TS 29.078 and 3G TS 29.002 for Rel-5. The usage of these elements is specified in 3G TS 23.078 for Rel-5.

TSG CN WG2 would like to be informed if the present Liaison Statement raises any question.

3. Date of Next CN2 Meetings:

CN2 #19	9th – 13th July 2001	Dresden, Germany.
CN2 #20	15th – 19th October 2001	U.K.

4. Attachments:

none

3GPP TSG CN WG2 Meeting #18 **Tdoc N2-010465**
Rio Grande, PUERTO RICO, 14th - 18th May 2001

Title: Liaison Statement on Optimal Routeing of a forwarded call

Source: TSG-CN WG2

To: TSG-SA WG1

cc:

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1. Overall Description:

TSG-CN WG2 have been reviewing the stage 2 specification for CAMEL support of Optimal Routeing. We have identified a particular call case, described in TS 22.079, which may give rise to undesirable complexity in implementation.

The principle for CAMEL support of Basic OR is that, if the CSE identifies that an originating call leg is directed towards a subscriber belonging to a GSM or UMTS PLMN, then it includes an indicator in the response to the PLMN which sent the enquiry to the CSE. This indicator requests the PLMN to interrogate the HPLMN of the destination subscriber for information to route the call to the VPLMN of the destination subscriber.

This is straightforward for a mobile originated call. In principle similar processing could also be applied for a forwarding leg where the forwarded-to destination is also a mobile subscriber. However subclause 5.2 of TS 22.079 rules out this possibility: "If C is a mobile subscriber, the location of C taken into account in the following paragraphs is the location of HPLMN-C." (C is the forwarded-to subscriber).

By contrast, subclause 5.2.2.1 of TS 22.079 indicates that optimal routeing of a forwarding leg **is** possible in some circumstances: "The remaining leg of the call from the intermediate point to the ultimate destination may be optimally routed." After clarification from SMG1 when GSM 03.79 (the stage 2 for Optimal Routeing) was being developed, SMG3 WP'C' concluded that the intention was to allow Optimal Routeing of a forwarding leg from the VPLMN of the forwarding subscriber, but not from the IPLMN. This has been made explicit in GSM 03.79 and (by inheritance) TS 23.079.

The processing by CAMEL of a forwarding leg does not normally take any account of whether the forwarding is from the IPLMN or the VPLMN of the forwarding subscriber. Special processing is therefore required to differentiate between forwarding from the IPLMN (when optimal routeing of a forwarding leg to a mobile subscriber **is not** permitted) and forwarding from the VPLMN of the forwarding subscriber (when optimal routeing of a forwarding leg to a mobile subscriber **may be** permitted). The CAMEL handling would be considerably simpler if the possibility of optimal routeing of a forwarding leg to a mobile subscriber was the same for forwarding in the IPLMN and forwarding in the VPLMN of the forwarding subscriber.

Three approaches are possible:

- Maintain the status quo, which prohibits OR of a forwarding leg to a mobile subscriber from the IPLMN but allows it from the VPLMN of the forwarding subscriber;
- Allow OR of a forwarding leg to a mobile subscriber from both the IPLMN and the VPLMN of the forwarding subscriber;
- Prohibit OR of a forwarding leg to a mobile subscriber from both the IPLMN and the VPLMN of the forwarding subscriber.

TSG-CN WG 2 prefers the second approach.

2. Actions:

To TSG-SA WG1.

ACTION: TSG-CN WG2 asks TSG-SA WG1 to decide which of the approaches above should be used, and to inform TSG-CN WG2 of their decision.

3. Date of Next CN2 Meeting:

CN2#19	9th – 13th July 2001	Dresden, Germany.

3GPP TSG_CN WG2#18 **TDoc N2-010468**
Rio Grande, Puerto Rico, USA, 14- 18 May 2001

Title: **LS "Charging and Information concepts for CAMEL Call Party Handling"**

Source: **TSG CN WG2**

To: **TSG SA WG1, TSG SA WG1 CAMEL ad hoc**

Cc:

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1. Introduction:

TSG CN 2 would like to thank TSG SA1 for their liaison statement entitled "Charging Requirements for Call Party Handling" (S1-010469). TSG CN2 notes the points made in this liaison statement, in particular the absence of any requirements for CPH in TS 22.078 for CAMEL Phase 4. As CAMEL Phase 4 is part of Release 5, which according to current time scales needs to be completed by December 2001, TSG CN2 is concerned about the absence of CPH charging requirements. In order to help TSG SA1 expedite the process of completing the necessary requirements, TSG CN2 offers technical analysis of the situation.

2. Overall Description:

Although we recognise that the current charging requirements for CPH are still to be provided by TSG SA1, during our meeting 14-18 May 2001 in Puerto Rico, in order to progress the work on the procedures for CPH we discussed the technical aspects of this issue. This discussion was based on an input contribution entitled "Charging and Information concepts". (N2-010326, source Alcatel). The contribution analyses from a technical perspective the various charging and reporting scenarios that may be applied to CPH, detailing all the identified advantages and disadvantages. One of our major concerns is the issue of backward compatibility, ensuring that charging principles in CAMEL Phase 3 and lower are not radically changed in CAMEL Phase 4. The input contribution is attached in this liaison statement for your information.

During this discussion, we came to the conclusion that the concept of applying charging activities on a per Call Party (Call Leg) basis gives the most flexibility, especially for the procedure of CSE control of call duration. This approach has none of the disadvantages (from CN2's perspective) that have been identified in the other scenarios. Further, this has the ability to charge for announcements (i.e. the connection to a Specialised Resource Function). The "Inclusion in charging records of information received from the CSE" and the "Support of additional charging information to the CSE" shall be on a per call leg basis too.

The CSE controlled e-values shall be provided to the CAMEL subscriber.

TSG CN2 would like to request SA1 to consider the conclusions with respect to charging on a per leg basis and would like to recommend that the concept of Charging per Call Leg basis is adopted by SA1.

3. Actions:

ACTION: TSG CN WG2 requests **TSG SA WG1** to adopt the principles outlined in this liaison statement. We expect TSG SA WG1 to provide this enhancements of 22.078 urgently.

Attachment:

N2-010326: "Charging and Information concepts"

3GPP TSG-CN2 Meeting #18 ***Tdoc N2-010326***
Rio Grande, Puerto Rico, USA, 14- 18 May 2001

Source: Alcatel

Title: Charging and Information concepts

Agenda: 8.4 Call Party Handling / Charging

General

This contribution discusses the various possibilities for charging and reporting in relation to CAMEL Phase 4. Especially the impact of CPH has been considered.

Apply Charging / Apply Charging Report

Since CAMEL phase2, the SCF may be responsible for the call duration control using AC/ACR CAMEL operations. After an ACR is reported, a new AC may be sent for the control of duration of the subsequent call portion. The AC/ACR procedure applies in the gsmSSF on call basis, the party to charge parameter being used only by the gsmSCF to identify the charged subscriber: the MS originating, the MS terminating, or the MS forwarded.

For CAMEL Phase 4, multi party calls are possible and multiple Call Segments and legs are applicable. Therefore, also multiple AC/ACR may be necessary to control a multi party call.

The following discusses various possibilities for AC/ACR in CAMEL phase4. The main important items to have in mind are the call period, the answer time, the tariff switch, the release of a leg and unsuccessfull call cases, SRF issues.

- AC/ACR per CSA

As in CAMEL Phase 2 and 3, there will be at most one AC pending for the complete call, that is one single AC/ACR is used for all Call Segments and legs in this CSA.

In addition to CAMEL Phase 2 and 3 the change of the call configuration, i.e. the export of a leg out of a Call Segment and the import of this into the Call Segment shall be reported if requested by AC so. E.g. the gsmSCF may stop charging if the Leg is put in “Hold” state”.

This solution has the advantage to have only one call duration for the charged subscriber, most probably the served mobile subscriber. Howewer complexity is given to the gsmSCF to be able to handle a multi party call as a single call, i.e to treat the multiple answers, the multiple releases.See also the case for the "Per Call Segment" case.

- AC/ACR per passive leg

The idea behind this is to see e.g. a Call Segment which is initiated by A party and which has now three parties (A, B and C) as two elementary calls A-B and A-C. There is at most one AC/ACR pending for each passive leg, passive legs are the outgoing legs for MO, CF or SCF initiated call legs, and the incoming leg for the MT and VT case.

The following needs to be considered:

- If within a terminating call the B party forwards the call there are two passive legs (A and C) but in CAMEL Phase 2 and 3 only one AC is used instead of possible two proposed by this solution. This is a lost of backward compatibility with phase2 and 3.
- If within a originating call the A party has a follow on call the leg of A party can not be charged

This solution implies that the gsmSCF uses time slices per elementary call. As before the charged subscriber will be most probably the served mobile subscriber.

- AC/ACR per outgoing leg (destination party)

There is at most one AC/ACR pending for each outgoing leg. The reason may be that mostly the outgoing legs are charged

The following needs to be considered:

- There are some cases where also the incoming leg may be charged, e.g. an incoming roaming leg This is not possible by this solution.

In a three party call, the call can be seen as the two elementary subcalls as indicated in the "AC/ACR per passive leg" discussion.

- AC/ACR per Call Segment

There is at most one AC/ACR pending for each Call Segment. In addition to CAMEL Phase 2 and 3 also the change of the call configuration, i.e. the export of a leg out of a Call Segment and the import of a leg into the Call Segment will be reported for this CS if requested by AC so. The ACR indicates the point of time when the leg is connected to or disconnected from the CS (bridge)

The following needs to be considered:

- If multiple legs are within one Call and if several of them are in the alerting phase the points of time when they are answered are to be considered for charging. This would imply either multiple answer times within a single ACR or to send mutliple ACRs as soon they are requested by individual ACs. But have in mind that at one point in time only one AC can be pending.

This solution is similar to the solution per CSA with more flexibility to be able to charge on CS basis. Various Call Segments may be charged separately.

- AC/ACR per leg

There is at most one AC/ACR pending for each leg. As usual, if the SCF is not interested in charging no AC may be used for the leg. If the leg is moved also the pending AC for this leg will be moved.

For CAMEL phase2 and phase 3 configurations (two party call, call forwarding) using only a single AC will cover the CAMEL phase2 and phase 3 behaviour. For simple configurations and for CAMEL phase2 and phase 3 compatibility the following ACs can be used: in the basic call the leg of the B-Party has an pending AC or in case of a forwarded call the leg of the C party has an pending AC.

- Charging of the SRF leg

In CAMEL Phase 2 and 3 the chrging for the SRF will occur due to the normal charging AC. This works properly.

For CAMELPhase 4 multiple legs can be within a Call Segment to which a user interaction applies. The most straight forward way will be to charge the SRF connection in the same way, that is to use a separate ID "srfCallSegment" which identifies the Call Segment to which the SRF is connected to. For simplicity and for consistency this ID should also be used if only one leg is within the Call Segment to which the SRF applies.

Conclusion

The approach to use one AC per leg is the most flexible one and should it be able to fulfill all requirements.

It is not necessary that for each leg one AC is pending, e.g. if only two parties are in the CSA (as CAMEL Phase 2 and 3) AC will work properly if in the basic call the leg of the B-Party has an pending AC and/or in case of a forwarded call the leg of the C party has an pending AC.

There shall be the possibility to have a separate srfCallSegmentID for identifying the SRF leg.

If a leg is split/moved also the corresponding pending AC will be moved too.

No separate reporting for the point of answers is necessary as for the per CS/CSA cases.

Furnish Charging Information

One FCI per leg, as in CAMEL Phases 2 and 3.

If the leg is split/moved the FCI is moved too.

Send Charging Information

One SCI for the CSA configuration, that is for the controlling leg in a MO (A party) or VT (B party) case.

No SCI if the call is initiated via the ICA new call.

The tariff switch is always the next one, that is the SCF can overwrite the current applicable SCI, with one or both sets of e-parameters and also the tariff switch.

Call Information Report

One CIR per leg, as in CAMEL Phases 2 and 3.

If the leg is split/moved the CIR is moved too.