Technical Specification Group Services and System Aspects　　**TSGS#15(02)0048**
Meeting #15, Cheju Island, Korea, 11-14 March 2002

| | |
|---|---|
| **Source:** | **SA1** |
| **Title:** | **CRs to 22.078 CAMEL Rel-5 on various issues** |
| **Document for:** | **Approval** |
| **Agenda Item:** | **7.1.3** |

| SA Doc | Spec | CR | Rev | Phase | Cat | Subject | Old Vers | New Vers | SA1 Doc |
|---|---|---|---|---|---|---|---|---|---|
| SP-020048 | 22.078 | 134 | 1 | Rel-5 | B | Removal of CAMEL4 Dialled Services enhancements | 5.5.0 | 5.6.0 | S1-020625 |
| SP-020048 | 22.078 | 135 | | Rel-5 | C | Liaison Statement on Mobility Management event reporting in the PS domain | 5.5.0 | 5.6.0 | S1-020008 |
| SP-020048 | 22.078 | 139 | | Rel-5 | C | CR 22.078 Rel.5 Transferring the MS classmark & IMEI to the CSE (update of 301) | 5.5.0 | 5.6.0 | S1-020418 |
| SP-020048 | 22.078 | 140 | | Rel-5 | C | Clarification on Releasing Individual Call Parties | 5.5.0 | 5.6.0 | S1-020358 |
| SP-020048 | 22.078 | 141 | | Rel-5 | B | Introduction of functional subsets for CAMEL Phase 4 | 5.5.0 | 5.6.0 | S1-020317 |

*CR-Form-v5*

# CHANGE REQUEST

| ⌘ | **22.078** CR **134** | ⌘ **rev** | **1** | ⌘ | Current version: | **5.5.0** | ⌘ |

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

| | | |
|---|---|---|
| ***Title:*** ⌘ | Removal of CAMEL4 Dialled Services enhancements | |
| ***Source:*** ⌘ | SA1 | |
| ***Work item code:*** ⌘ | CAMEL4 | ***Date:*** ⌘   14 Feb 2002 |
| ***Category:*** ⌘   **-B** | | ***Release:*** ⌘   Rel-5 |

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

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

| | |
|---|---|
| ***Reason for change:*** ⌘ | The work has not progressed on this item. The Rel-5 CAMEL4 shall be completed in March 2002 CN plenary. This functionality of CAMEL4 requires still CN2 work and endangers the CAMEL4 time scale.<br>CN2#21 and CN#14 did agree to recommend removal of this functionality. |
| ***Summary of change:*** ⌘ | Dialled services of DP3 will work as they did in CAMEL3. |
| ***Consequences if not approved:*** ⌘ | Delay of CAMEL4 completion. |

| | |
|---|---|
| ***Clauses affected:*** ⌘ | 1, 5.3.2, 7.2 |
| ***Other specs affected:*** ⌘ | **X** Other core specifications ⌘   23.078, 29.078<br>☐ Test specifications<br>☐ O&M Specifications |
| ***Other comments:*** ⌘ | CR impacts on CN2 work (minor). |

| **** | **FIRST MODIFIED SECTION** | **** |
|---|---|---|

# 1.    Scope

This standard specifies the stage 1 description for the CAMEL feature (Customised Applications for Mobile network Enhanced Logic) which provides the mechanisms to support services consistently independently of the serving network. The CAMEL features shall facilitate service control of operator specific services external from the serving PLMN. The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the HPLMN.

If an IPLMN or VPLMN supports CAMEL Phase 4, it shall also provide the functionality of all previous CAMEL phases.

Phase 4 network signalling shall support interworking with CAMEL Phases 3 and 2.

The CAMEL feature is applicable

-   To mobile originated and mobile terminated call related activities;

-   To supplementary service invocations;

-   To SMS MO, to GPRS sessions and PDP contexts, to the control of HLR subscriber data, to the control of network signalling load.

The mechanism described addresses especially the need for information exchange among the VPLMN, HPLMN and the CAMEL Service Environment (CSE) for support of such operator specific services. Any user procedures for operator specific services are outside the scope of this standard.

This specification describes the interactions between the functions of the VPLMN, HPLMN, IPLMN and the CSE.

The second phase of CAMEL enhances the capabilities of phase 1 where the following capabilities have been added:

-   Additional event detection points;

-   Interaction between a user and a service using announcements, voice prompting and information collection via in band interaction or USSD interaction;

-   Control of call duration and transfer of Advice of Charge Information to the mobile station;

-   The CSE can be informed about the invocation of the supplementary services ECT, CD and MPTY;

-   For easier post-processing, charging information from a serving node can be integrated in normal call records.

The third phase of CAMEL enhances the capabilities of phase 2. The following capabilities are added:

-   Support of facilities to avoid overload;

-   Capabilities to support Dialled Services;

-   Capabilities to handle mobility events, such as (Not-)reachability and roaming;

-   Control of GPRS sessions and PDP contexts;

-   Control of mobile originating SMS through both circuit switched and packet switched serving network entities.

-   Interworking with SoLSA. (Support of Localised Service Area). Support for this interworking is optional.

-   The CSE can be informed about the invocation of the GSM supplementary services CCBS.

Detailed information is given in the respective sections.

The fourth phase of CAMEL enhances the capabilities of phase 3. The following capabilities are added:

-   CAMEL support for Optimal Routeing of circuit-switched mobile-to-mobile calls;

- The capability for the CSE to create additional parties in an existing call;

- The capability for the CSE to create a new call unrelated to any other existing call;

- Capabilities for the enhanced handling of call party connections;

- ~~Enhanced CSE capability for Subscribed Dialled Services;~~

- The capability for the CSE to control sessions in the IP Multimedia Subsystem.

<div style="border:1px solid black; text-align:center;">

**\*\*\*\*   NEXT MODIFIED SECTION   \*\*\*\***

</div>

## 5.3.2  Procedure for subscribed dialled services

The purpose of this procedure is to detect a call set-up request at the point where the called party number has been compared with the dialled services information, and allow the CSE to modify the handling of the call set-up request. Triggering of this procedure shall happen immediately after the procedure when dialled digits have been collected.

### 5.3.2.1     Initiation of contact with the CSE

If (according to the CSI):

- The subscriber is provisioned with a CAMEL based originating service; and

- The call set-up request occurs; and

- The criteria are satisfied.

Then the VPLMN/IPLMN shall suspend call processing, make contact with the CSE and await further instructions.

Contact with the CSE shall (if necessary) be made in this manner before network dialled services are invoked.

For mobile originated calls the information listed in table: A-1 (Call set-up request procedure 3) shall be provided to the CSE if available.

For forwarded calls the information listed in table: A-1 (Call set-up request procedure 4) shall be provided to the CSE if available.

### 5.3.2.2     Further processing of the call

~~If a relationship exists with a CSE, then w~~When the VPLMN/IPLMN has made contact with the CSE, the CSE shall be able to instruct the VPLMN/IPLMN to act as described below:

- Perform charging activities The CSE is only allowed to send e-values (refer to sect. 15.1, 'CSE controlled e-values') and include free format data in Call Data Records (refer to sect. 15.2, 'Inclusion in charging records of information received from the CSE');

- Order in-band user interaction. (Interaction between the service triggered from previous triggering may be needed to avoid duplicated guidance etc.).

Once the CSE has concluded issuing the above instructions, it shall issue one and only one of the following instructions:

- Release the call;

- Continue the call processing;

- Continue the call processing with modified information. The CSE shall have the possibility to send the information listed in table: A-2 (Call set up request procedure 2).

- release the call.

~~If no relationship exists with a CSE for the call, then when the VPLMN/IPLMN has made contact with the CSE, the CSE shall be able to instruct the VPLMN/IPLMN to act as described below:~~

~~— Perform charging activities;~~

~~— Activate subsequent control service events for the call. The CSE shall have the possibility to send the following information:~~

~~— The subsequent service event which shall be detected and reported:~~

~~— Called party alert;~~

~~— Called party connection;~~

~~— Call disconnection;~~

~~— Calling party abandon;~~

~~— Unsuccessful call establishment. In the case of no answer the CSE may provide a no answer timer;~~

~~— Mid call event (DTMF or out of band information). The CSE shall specify the digit string(s) or the out of band information for which the instruction is valid. Out-band information may be detected during alerting phase of the call.~~

~~— The party in the call for which the event shall be detected and reported (calling or called party);~~

~~— The type of monitoring (control or notification).~~

~~— Order in-band user interaction;~~

~~— Send charging notifications.~~

~~There shall be no restriction regarding the order of the above instructions or the number of times each of the above instructions can be repeated.~~ Once the CSE has concluded issuing the above instructions, it shall issue one and only one of the following instructions:

- Allow the call processing to continue unchanged;

- Allow the call processing with modified information. The CSE shall have the possibility to send the information listed in table: A-2 (Call set up request procedure 2);

- Release the call.

# 7        Procedures for serving network dialled services

The purpose of this procedure is to detect a match between the called party number and a stored network service number at the call set-up request. It is to allow the CSE to modify the handling of the call set-up request. If this procedure is triggered it shall happen after processing of Subscribed Dialled Services triggered via the CSI. If any other CAMEL dialogue has changed the called party number then the modified called party number is used for conditional triggering check.

## 7.1        Initiation of contact with the CSE

If:

- The call set up request occurs, and

- The call set up request procedure is passed, and

- The PLMN is provisioned with network based service information

Then the VPLMN shall suspend call processing, make contact with the CSE and await further instructions.

For mobile originated calls the following information listed in table: A-1 (Procedures for serving network dialled services 1) shall be provided to the CSE if available.

For forwarded calls the information listed in table: A-1 (Procedures for serving network dialled services 2) shall be provided to the CSE if available.

## 7.2        Further processing of the call

When the serving network has made contact with the CSE, the CSE shall be able to instruct the serving network to act as described below:

- Release the call;

- Continue the call processing;

- Continue the call processing with modified information. The CSE shall have the possibility to send the information listed in table: A-2 (Procedures for serving network dialled services 2);

- Perform charging activities (the CSE is only allowed to include charging data in the Call Data Record);

- Order in-band user interaction. (Interaction between the service triggered from previous triggering may be needed to avoid duplicated guidance etc.)

Further processing of the call continues as detailed in Sections 5.3 to 5.8, and the CSE contact initiated at this procedure is terminated.

*CR-Form-v4*

# CHANGE REQUEST

| ⌘ | **22.078** | **CR** | **141** | ⌘ | ev | **-** | ⌘ | Current version: | **5.5.0** | ⌘ |

**Spec Title: Customised Applications for Mobile network Enhanced Logic (CAMEL); Service description, Stage 1 (Release 5)** ⌘

*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:** ⌘ | Introduction of functional subsets for CAMEL Phase 4 | |
| **Source:** ⌘ | SA1 | |
| **Work item code:** ⌘ | CAMEL4 | **Date:** ⌘ 31 January 2002 |
| **Category:** ⌘ | **B** | **Release:** ⌘ REL-5 |

Use <u>one</u> 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 <u>TR 21.900</u>.

Use <u>one</u> 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:** ⌘ | This Change Request introduces the support of functional subsets of CAMEL Phase 4 in the context of the CAMEL phase negotiation.<br><br>Since CAMEL Phase 4 will be introduced in network elements stepwise, network elements from different vendors will support different functional subsets of CAMEL Phase 4 for a certain period of time.<br><br>If only a full CAMEL phase is negotiated between HLR and e.g. VLR, functional subsets cannot be used for roaming purposes.<br><br>This CR introduces functional subsets for the CAMEL phase negotiation in order to make functional subsets available for roaming.<br><br>A description of the general mechanism is introduced. A proposal for a functional split is made. |
| **Summary of change:** ⌘ | The support of functional subsets of CAMEL Phase 4 is introduced. |
| **Consequences if not approved:** ⌘ | It is not possible to use functional subsets of CAMEL Phase 4 for roaming. |

| | |
|---|---|
| **Clauses affected:** ⌘ | 1, 16 |
| **Other specs affected:** | ⌘ **X** Other core specifications ⌘ 23.008, 23.078, 29.002<br>☐ Test specifications |

| | O&M Specifications | |
|---|---|---|

| | | |
|---|---|---|
| ***Other comments:*** ⌘ | The general concept of functional subsets and the negotiation mechanism introduced in this document have been discussed and have been generally aggreed within CN2. The list of functional subsets included in this document is a compromise between several proposals discussed during the CN2 #22 meeting. This list might need an update, if some topics are removed from CAMEL Phase 4.<br><br>**It is crucial, that SA1 approves the general service description at the SA1 #15 meeting in Saalfelden, so that CN2 can continue to work on this topic.**<br><br>In the CN2 #21 meeting in Cancun (November 2001), an additional liaison statement on the functional split has been sent to SA1 (S1-020009). The split proposed in this CR is slightly modified from the one proposed in S1-020009, since it reflects the discussion of this topic in the CN2 #22 meeting in Sophia Antipolis (January 2002). | |

# 1 Scope

This standard specifies the stage 1 description for the CAMEL feature (Customised Applications for Mobile network Enhanced Logic) which provides the mechanisms to support services consistently independently of the serving network. The CAMEL features shall facilitate service control of operator specific services external from the serving PLMN. The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the HPLMN.

If an IPLMN or VPLMN supports CAMEL Phase 4, it shall also provide the functionality of all previous CAMEL phases.

Phase 4 network signalling shall support interworking with CAMEL Phases 3 and 2.

The CAMEL feature is applicable

- To mobile originated and mobile terminated call related activities;

- To supplementary service invocations;

- To SMS MO, to GPRS sessions and PDP contexts, to the control of HLR subscriber data, to the control of network signalling load.

The mechanism described addresses especially the need for information exchange among the VPLMN, HPLMN and the CAMEL Service Environment (CSE) for support of such operator specific services. Any user procedures for operator specific services are outside the scope of this standard.

This specification describes the interactions between the functions of the VPLMN, HPLMN, IPLMN and the CSE.

The second phase of CAMEL enhances the capabilities of phase 1 where the following capabilities have been added:

- Additional event detection points;

- Interaction between a user and a service using announcements, voice prompting and information collection via in band interaction or USSD interaction;

- Control of call duration and transfer of Advice of Charge Information to the mobile station;

- The CSE can be informed about the invocation of the supplementary services ECT, CD and MPTY;

- For easier post-processing, charging information from a serving node can be integrated in normal call records.

The third phase of CAMEL enhances the capabilities of phase 2. The following capabilities are added:

- Support of facilities to avoid overload;

- Capabilities to support Dialled Services;

- Capabilities to handle mobility events, such as (Not-)reachability and roaming;

- Control of GPRS sessions and PDP contexts;

- Control of mobile originating SMS through both circuit switched and packet switched serving network entities.

- Interworking with SoLSA. (Support of Localised Service Area). Support for this interworking is optional.

- The CSE can be informed about the invocation of the GSM supplementary services CCBS.

Detailed information is given in the respective sections.

The fourth phase of CAMEL enhances the capabilities of phase 3. The following capabilities are added:

- CAMEL support for Optimal Routeing of circuit-switched mobile-to-mobile calls;

- The capability for the CSE to create additional parties in an existing call;

- The capability for the CSE to create a new call unrelated to any other existing call;

- Capabilities for the enhanced handling of call party connections;

- Enhanced CSE capability for Subscribed Dialled Services;

- The capability for the CSE to control sessions in the IP Multimedia Subsystem.

With CAMEL Phase 4, it is possible that only a limited subset of the new functionalities is supported, in addition to the complete support of CAMEL Phase 3.

---

| — Next modified section — |
| --- |

---

# 16 Exceptional procedures or unsuccessful outcome

## 16.1 Roaming in non-supporting networks

The HPLMN shall control handling of roaming, when a CAMEL subscriber attempts to register in a network not supporting CAMEL without relying on extra functionality in network entities not supporting CAMEL. The HPLMN can decide for each subscriber whether to allow roaming, or deny individual services (e.g. by applying ODB or denying location up-date).

If the HPLMN allows roaming, the OSSs are not supported for the roaming subscriber.

## 16.2 Call Set-up from a non-supporting interrogating PLMN

If the CAMEL feature is not supported in the IPLMN the following will happen:

- Mobile originating calls:

  Not applicable.

- Mobile terminating calls:

  Mobile terminating OSSs are not supported in the IPLMN if the HPLMN decides to allow the MT call attempt. The HPLMN may also decide to bar the incoming call attempt, or force the routeing interrogation to take place in the HPLMN.

## 16.3 Roaming in a VPLMN which supports a lower phase of CAMEL

If a CAMEL subscriber attempts to register in a VPLMN which supports CAMEL, the VPLMN shall indicate in the registration request to the HPLMN the phase of CAMEL which the VPLMN supports. If the VPLMN supports only a CAMEL phase which is lower than the one subscribed the HPLMN shall take such action (including denying the registration request or transferring to the VPLMN subscription information appropriate to the CAMEL phase supported in the VPLMN) as may be decided by the HPLMN operator. If a certain service requires a certain CAMEL phase (e.g. MO SMS requires at least CAMEL phase 3) and the VPLMN does not support that CAMEL phase, the HPLMN may decide to deny roaming or allow roaming without that particular CAMEL OSS.

## 16.4 Service attempt from a VPLMN which supports a lower phase of CAMEL

If the served subscriber requests a basic service (call, short message, GPRS attach, GPRS PDP context etc.) which requires the VPLMN to contact the CSE, the VPLMN shall indicate to the CSE which phase of CAMEL has been negotiated between the HPLMN and the VPLMN for this service. If the VPLMN supports a CAMEL phase which is lower than the one subscribed and the CSE determines that as a consequence a service which is provisioned for the subscriber will not operate correctly, the CSE shall take such action (including denying the call request or handling the call using only CAMEL capabilities supported in the VPLMN) as may be decided by the CSE operator.

## 16.5 Call setup from an IPLMN which supports a lower phase of CAMEL

The IPLMN shall indicate to the HPLMN which phases of CAMEL it supports. The HPLMN may decide to bar the incoming call attempt before contacting the CSE, or force the routeing interrogation to take place in the HPLMN. When the IPLMN contacts the CSE for instructions to handle an MT call, the IPLMN shall indicate to the CSE the phase of CAMEL which has been negotiated between the HPLMN and the IPLMN for this call. If the IPLMN supports a lower CAMEL phase than the one negotiated between the HPLMN and the IPLMN and the CSE determines that as a consequence a service which is provisioned for the subscriber will not operate correctly, the CSE shall take such action (including denying the call request or handling the call using only CAMEL capabilities negotiated between the HPLMN and the IPLMN) as may be decided by the CSE operator.

## 16.6 Roaming in a VPLMN which supports only a functional subset of CAMEL Phase 4 $(CAMEL4)$

If a CAMEL subscriber attempts to register in a VPLMN which supports at least a functional subset of CAMEL Phase 4, the VPLMN shall indicate in the registration request to the HPLMN the phase of CAMEL which the VPLMN supports (i.e. at least Phase 4). In addition, the VPLMN shall indicate which functional subsets of CAMEL Phase 4 it supports.

If the VPLMN does not support all functional subsets of CAMEL phase 4, the HPLMN shall take such action (including denying the registration request or transferring to the VPLMN subscription information appropriate to the CAMEL Phase 4 subset supported in the VPLMN) as may be decided by the HPLMN operator. If a certain service requires a certain CAMEL Phase 4 subset (e.g. MT SMS handling) and the VPLMN does not support that CAMEL Phase 4 subset, the HPLMN may decide to deny roaming or allow roaming without that particular CAMEL OSS.

With respect to this mechanism, the following functional subsets of CAMEL Phase 4 shall be supported:

- CS Call Handling (without Charging Notification and without enhanced subscribed dialled services)

- Charging Notification

- Enhancements for subscribed dialled services (D-CSI) (only together with CS Call Handling)

- SMS-MT handling (MT-SMS-CSI)

- GPRS mobility management (MG-CSI)

- ATI enhancements for GPRS

## 16.7 Call setup attempt from an IPLMN which supports only a functional subset of CAMEL Phase 4 $(CAMEL4)$

If the IPLMN supports CAMEL Phase 4, it shall indicate to the HPLMN (e.g. in the request for routeing information) which functional subsets of CAMEL Phase 4 it supports.

If the IPLMN does not support all functional subsets of CAMEL phase 4, the HPLMN shall take such action (including barring the incoming call request or transferring to the IPLMN subscription information appropriate to the CAMEL

Phase 4 subset supported in the IPLMN) as may be decided by the HPLMN operator. If a certain service requires a specific CAMEL Phase 4 subset and the IPLMN does not support that specific CAMEL Phase 4 subset, the HPLMN may decide to bar the incoming call attempt, or force the routeing interrogation to take place in the HPLMN, or allow the MT call attempt without that particular CAMEL OSS.

With respect to this mechanism, the same functional subsets of CAMEL Phase 4 as indicated in chapter 16.6 shall be supported.

---

## — End of Document —

*CR-Form-v5*

# CHANGE REQUEST

| ⌘ | **22.078 CR** | **140** | ⌘ **rev** | | ⌘ | Current version: | **5.5.0** | ⌘ |

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

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

| | | |
|---|---|---|
| ***Title:*** ⌘ | Clarification on Releasing Individual Call Parties | |
| ***Source:*** ⌘ | SA1 | |
| ***Work item code:*** ⌘ | CAMEL4 | ***Date:*** ⌘ 31ˢᵗ January 2002 |

***Category:*** ⌘ **C**                                                  ***Release:*** ⌘ REL-5

| *Use one of the following categories:* | *Use one of the following releases:* |
|---|---|
| *F (correction)* | *2 (GSM Phase 2)* |
| *A (corresponds to a correction in an earlier release)* | *R96 (Release 1996)* |
| *B (addition of feature),* | *R97 (Release 1997)* |
| *C (functional modification of feature)* | *R98 (Release 1998)* |
| *D (editorial modification)* | *R99 (Release 1999)* |
| *Detailed explanations of the above categories can* | *REL-4 (Release 4)* |
| *be found in 3GPP TR 21.900.* | *REL-5 (Release 5)* |

| | |
|---|---|
| ***Reason for change:*** ⌘ | If an individual call party is released during the set-up phase of a *normal A-B* call, this causes problems in the MSC and makes the SDL modelling very difficult. |
| ***Summary of change:*** ⌘ | To simplify the SDL modelling, the following is proposed: When the CSE receives an indication of an initial service event (for O-CSI, T-CSI and VT-CSI), the CSE can instruct the IPLMN/VPLMN that the call should not be directly routed to the destination. Instead, the handling of the leg to the calling party will continue and additional legs will be created as required. |
| | • The CSE can instruct the IPLMN/VPLMN to disconnect an individual CSE-initiated leg at any time during the set-up, alerting or active phase of the leg. |
| | • The CSE can instruct the IPLMN/VPLMN to disconnect the calling party at any time during the set-up, alerting or active phase of the leg to the calling party, if the call has not been directly routed to a destination. |
| | • If the call has continued as a *normal A-B* call, the CSE can instruct the IPLMN/VPLMN to disconnect the calling party or the called party during the active phase of the call only. |
| | • As in earlier CAMEL phases, the CSE can instruct the IPLMN/VPLMN to release the entire CPH configuration at any time. |
| ***Consequences if not approved:*** ⌘ | Complex SDL modelling is required and mis-operation may occur. |

| | |
|---|---|
| ***Clauses affected:*** ⌘ | 5.3.1, 6.3 and 8.1.3 |
| ***Other specs affected:*** ⌘ | ☐ Other core specifications ⌘<br>☐ Test specifications<br>☐ O&M Specifications |
| ***Other comments:*** ⌘ | Impact on TSG-CN2 and TSG-CN4: CN2#22 have agreed Vodafone contributions to meet this revised service requirement. TSG-CN4 have been made aware of the changes and will review them as part of the combined CAMEL4 change requests. |

# 5 Procedures for Mobile Originated Calls and Forwarded Calls

...

## 5.3.1 Procedure when dialled digits have been collected

The purpose of this procedure is to detect a call set-up request at the point where digits have been collected but not analysed, and to allow the CSE to modify the handling of the call set-up request.

If (according to the CSI):

- The subscriber is provisioned with a CAMEL based originating service; and

- The call set-up request occurs; and

- The criteria are satisfied.

Then the VPLMN/IPLMN shall suspend call processing, make contact with the CSE and await further instructions.

For mobile originated calls the information listed in table: A-1 (Call set-up request procedure 1) shall be provided to the CSE if available.

For forwarded calls the information listed in table: A-1 (Call set-up request procedure 2) shall be provided to the CSE if available.

When the VPLMN/IPLMN has made contact with the CSE, the CSE shall be able to instruct the VPLMN to act as described below.

- Perform charging activities;

- Activate subsequent control service events for the call. The CSE shall have the possibility to send the following information:

    - The subsequent service event which shall be detected and reported:

        - Called party alert;

        - Called party connection;

        - Call disconnection;

        - Calling party abandon;

        - Unsuccessful call establishment. In the case of no answer the CSE may provide a no answer timer;

        - Mid call event (DTMF or out of band information). The CSE shall specify the digit string(s) or the out of band information for which the instruction is valid. Out-band information may be detected during alerting phase of the call.

    - The party in the call for which the event shall be detected and reported (calling or called party);

    - The type of monitoring (control or notification).

- Order in-band user interaction;

- Send charging notifications. $(CAMEL4$)

There shall be no restriction regarding the order of the above instructions or the number of times each of the above instructions can be repeated. Once the CSE has concluded issuing the above instructions, it shall issue one and only one of the following instructions:

- Bar the call (i.e. release the call prior to connection);

- Continue the call processing;

- Continue the call processing with modified information. The CSE shall have the possibility to send the information listed in table: A-2 (Call set up request procedure 1).

- Continue the handling of the calling party without routeing the call to the destination. &(CAMEL4$)

**** Next Modified Section ****

# 6 Procedures for Mobile Terminated Calls

...

## 6.3 Incoming call request procedure

The purpose of this procedure is to detect an incoming call request and allow the CSE to modify the handling of the incoming call.

If (according to the CSI):

- The subscriber is provisioned with a CAMEL based terminating service; and

- The incoming call request event occurs

Then the IPLMN/VPLMN shall suspend call processing, make contact with the CSE and await further instructions.

For mobile terminated calls the following information listed in table: A-1 (Incoming call request procedure) shall be provided to the CSE if available.

When the IPLMN/VPLMN has made contact with the CSE, the CSE shall be able to instruct the IPLMN to act as described below:

- Perform charging activities;

- Activate subsequent control service events for the call. The CSE shall have the possibility to send the following information:

    - The subsequent service event which shall be detected and reported:

        - Called party alert;

        - Called party connection;

        - Call disconnection;

        - Calling party abandon;

        - Unsuccessful call establishment. In the case of no answer the CSE may provide a no answer timer.

        - Mid call event (DTMF or out of band information). The CSE shall specify the digit string(s) or the out of band information for which the instruction is valid.

    - The party in the call for which the event shall be detected and reported (calling or called party);

    - The type of monitoring (control or notification).

- Suppress tones and announcements which may be played to the calling party, if an unsuccessful call establishment occurs.

- Order in-band user interaction.

- Send charging notifications.

There shall be no restriction regarding the order of the above instructions or the number of times each of the above instructions can be repeated. Once the CSE has concluded issuing the above instructions, it shall issue one and only one of the following instructions:

- Bar the call (i.e. release the call before connection);

- Continue the call processing;

- Continue the call processing with modified information. The CSE shall have the possibility to send the information listed in table: A-2 (Incoming call request procedure).

- Continue the handling of the calling party without routeing the call to the destination. &(CAMEL4$)

If the CSE instructs the IPLMN/VPLMN to continue the call processing with a changed called party number, the CSE shall indicate whether the resulting call shall be treated by the IPLMN/VPLMN as a forwarded call. Any forwarded call resulting from a CSE Call Forwarding service may cause an invocation of any mobile originated CAMEL based service in the IPLMN/VPLMN.

If the CSE instructs the IPLMN to allow the call processing with modified information, the CSE may send to the IPLMN an alerting pattern in order to alert the called subscriber in a specific manner. This alerting pattern shall be transferred to the VPLMN.

## **** Next Modified Section ****

## 8.1.3 Releasing call parties

The purpose of this procedure is to allow the CSE to instruct the IPLMN/VPLMN to release an individual call party or all the call parties in a CPH configuration.

The CSE may instruct the IPLMN/VPLMN to release ~~an individual call party or~~ all the call parties in a CPH configuration at any point in a call if a control relationship exists.

The CSE may instruct the IPLMN/VPLMN to release an individual CSE-initiated call party at any point in a call if a control relationship exists.

If, at the initial service event, the CSE instructed the IPLMN/VPLMN not to route the call directly to the destination, then the CSE may instruct the IPLMN/VPLMN to release the calling party at any point in a call if a control relationship exists.

If, at the initial service event, the CSE instructed the IPLMN/VPLMN to proceed with the call as normal then the CSE may instruct the IPLMN/VPLMN to release the calling party or the called party during the active phase of the call only.

The release of the served subscriber shall not necessarily lead to the disconnection of the other parties in the CPH configuration.

## **** End of Document ****

*CR-Form-v4*

# CHANGE REQUEST

| ⌘ | **22.078** CR | **139** | ⌘ rev | **-** | ⌘ | Current version: | **5.5.0** | ⌘ |

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

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

| | | |
|---|---|---|
| ***Title:*** ⌘ | Transferring the MS classmark & IMEI to the CSE | |
| ***Source:*** ⌘ | SA1 | |
| ***Work item code:*** ⌘ | CAMEL4 | ***Date:*** ⌘ 1 February 2002 |
| ***Category:*** ⌘ | **C** | ***Release:*** ⌘ REL-5 |

Use <u>one</u> 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 <u>one</u> 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:*** ⌘ | CAMEL currently allows the GPRS MS class information to be transferred to the CSE for CAMEL control of GPRS traffic. With the increasing complexity of CAMEL services, the equivalent capability for CS mode would be very useful. In addition, transfer of the IMEI (with software version) to the CSE would provide a reliable method for the HPLMN operator to identify the specific model of the handset for customer care purposes. |
| ***Summary of change:*** ⌘ | Add IMEI (with software version), GPRS MS class and MS class to the information transferred to the CSE on short message submission. Add IMEI (with software version), GPRS MS class and MS class to the information which the CSE can request from the HLR. Add MS class to the information transferred to the CSE on CS call setup. Add IMEI (with software version) to the information transferred to the CSE on CS call setup, GPRS Attach and GPRS PDP context establishment. |
| ***Consequences if not approved:*** ⌘ | Lack of symmetry between CS and PS in the information on MS capability provided to the CSE |

| | |
|---|---|
| ***Clauses affected:*** ⌘ | 9.2; 13.1; A.1; A.3 |

| | | |
|---|---|---|
| ***Other specs affected:*** ⌘ | ☐ Other core specifications ⌘ | |
| | ☐ Test specifications | |
| | ☐ O&M Specifications | |
| ***Other comments:*** ⌘ | The corresponding stage 2 & 3 specification changes have been conditionally agreed in CN2 and CN4 (subject to agreement of the stage 1 change in SA1) | |

---

# **\*\*\*\* First modified section \*\*\*\***

---

## 9.2      Short message submission request procedure

The purpose of this procedure is to detect an SMS set-up request and to allow the CSE to modify the handling of the SMS set-up request.

The SMS set-up request may be circuit switched based or packet switched based.

If (according to the CSI):

-    The subscriber is provisioned with a CAMEL based SMS originating service; and

-    The SMS set-up request occurs


Then the VPLMN shall suspend SMS processing, make contact with the CSE and await further instructions.

For mobile originated SMS the following information shall be provided to the CSE if available:

-    Event met;

-    IMSI;

-    Short Message handling information:

     -    Message Type Indicator.

-    Validity Period Format;

-    Status Report Request;

-    User Data Header;

-    Reply Path;

-    Protocol Identifier;

-    Data Coding Scheme;

-    Validity Period;

-    SMSC address;

-    Calling Party Number;

-    Service Key;

-    Location information of the calling subscriber;

-    Time and time zone;

-    Called Party Number;

-    IMEI (with software version);

-    MS class (only if the short message is submitted in the CS domain);

-    GPRS MS class (only if the short message is submitted in the PS domain).

When the VPLMN has made contact with the CSE, the CSE shall be able to instruct the VPLMN to act as described below.

-    Perform charging activities;

-    Activate subsequent control service events for the SM submission. The CSE shall have the possibility to send the following information:

- The subsequent service event which shall be detected and reported:

    - Successful SM submission to the SMSC

    - Unsuccessful SM submission to the SMSC;

    - The type of monitoring.

There shall be no restriction regarding the order of the above instructions. Once the CSE has concluded issuing the above instructions, it shall issue one and only one of the following instructions:

- Bar the SM submission;

- Continue the submission;

- Continue the SM submission with modified information. The CSE shall have the possibility to send the following information:

    - Called Party Number;

    - Calling Party Number;

    - SMSC address.

If the SM submission is barred, the served subscriber shall be informed.

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

# 13      CSE interrogation and control of subscription data

## 13.1      Any time interrogation

It shall be possible for the CSE (as part of an OSS, including special handling of mobile terminating calls) to interrogate the HLR for information about a particular subscriber, for which it is entitled to do so (e.g. the subscriber belongs to the same HPLMN as the CSE).

This may be information from the list below:

- Subscriber status;

- Location information (see section 22);

- IMEI (with software version);

- MS class (only in the CS domain);

- GPRS MS class (only in the PS domain);

- Call Forwarding SS data;

- Call Barring SS data;

- Operator Determined Barring data;

- CAMEL Subscription Information;

- CAMEL phases supported at the VPLMN.

The CSE shall indicate in the request for subscriber information whether the information is requested from the HPLMN, the VPLMN in the circuit switched domain or the VPLMN in the packet switched domain.

The HPLMN shall have the possibility to reject any interrogation from any CSE.

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

# Annex A (normative):
# Information Tables

## A.1     Information provided to the CSE

The following table shows the information which is sent to the CSE at various events. The numbers reflect the applicable CAMEL phase (1, 2, 3, 4).

**Table A-1: Information transferred towards the CSE**

| | Call set-up request procedure 1 (section 5.3.1 for MO calls) | Call set-up request procedure 2 (section 5.3.1 for CF calls) | Call set-up request procedure 3 (section 5.3.2.1 for MO calls) | Call set-up request procedure 4 (section 5.3.2.1 for CF calls) | Unsuccessful call establishment (MO) | Unsuccessful call establishment (MT) | Incoming call request procedure | Procedures for serving network dialled services 1 (section 7.1 MO calls) | Procedures for serving network dialled services 2 (section 7.1 CF calls) |
|---|---|---|---|---|---|---|---|---|---|
| Event met | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| IMSI | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| Calling Party Number | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| Calling Party Category | 1 | 1 | 3 | 3 | - | 3 | 1 | 3 | 3 |
| Additional Calling Party Number | - | 1 | - | 3 | - | 3 | 1 | - | 3 |
| Called Party BCD Number | 1 | - | 3 | - | 3 | - | - | 3 | - |
| Called Party Number | - | 1 | - | 3 | - | 3 | 1 | - | 3 |
| Original Called Party Number | - | 1 | - | $3^{*1}$ | - | 3 | 1 | - | $3^{*1}$ |
| Redirecting (Party) Number | - | 1 | - | 3 | - | 3 | 1 | - | 3 |
| Redirection Information | - | 1 | - | 3 | - | 3 | 1 | - | 3 |
| Service Key | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| ISDN Bearer Capability | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| High Layer Compatibility | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| Basic Service Code | 1 | 1 | 3 | 3 | 3 | 3 | 1 | 3 | 3 |
| Call Identification Information | 1 | 1 | 3 | 3 | 3 | - | - | 3 | 3 |
| Location Information of the Calling Subscriber | 1 | - | 3 | - | 3 | - | - | 3 | - |
| Location Number of the Calling Subscriber | - | - | - | - | - | 3 | 1 | - | - |
| Location information of the called subscriber | - | - | - | - | - | 3 | 1 | - | - |
| Subscriber State of the called subscriber | - | - | - | - | - | 3 | 1 | - | - |
| Cause | - | - | - | - | 3 | 3 | - | - | - |
| Time and Time Zone Information | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| Calling Party LSA (if available) | 3 | - | 3 | - | - | - | - | 3 | - |
| MS class | 4 | | 4 | | | | | | |
| IMEI (with software version) | 4 | | 4 | | | | | | |
| NAEA Carrier Identification Code (CIC) | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 3 |
| NAEA Carrier Selection Information (pre-subscribed or on-demand) | 2 | 2 | 3 | 3 | 3 | - | 2 | 3 | 3 |
| CUG Index if received from the calling subscriber | 3 | - | - | - | - | - | - | - | - |
| CUG Interlock Code | - | 3 | - | - | - | - | 3 | - | - |
| CUG Outgoing Access Indicator | - | 3 | - | - | - | - | 3 | - | - |

[*1]: If any other CAMEL dialogue has modified the called party number then the modified number is reported to the CSE of dialled services.

---

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

---

# A.3    GPRS Information provided to the CSE

Table A-3 shows the information which shall be reported to the CSE at various GPRS events. The numbers reflect the applicable CAMEL phase (3, 4).

**Table A-3: GPRS Information transferred to the CSE**

|  | Attach | PDP Context Establishment (Initial Service Event) | PDP Context Establishment (Subsequent Service Event) | PDP Context Establishment Ack (Initial Service Event) | PDP Context Establishment Ack (Subsequent Service Event – PDP Context relationship) | PDP Context Establishment Ack (Subsequent Service Event – GPRS Session Relationship I) – **note 1** | PDP Context Establishment Ack (Subsequent Service Event – GPRS Session relationship II) – **note 2** |
|---|---|---|---|---|---|---|---|
| Event met | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Type of monitoring | - | - | 3 | - | 3 | 3 | 3 |
| MSISDN | 3 | 3 | - | 3 | - | - | - |
| IMSI | 3 | 3 | - | 3 | - | - | - |
| Service Key | 3 | 3 | - | 3 | - | - | - |
| Location information, at least to the resolution of Routing Area of the attaching subscriber | 3 | 3 | 3 | 3 | - | 3 | - |
| Time stamp information | 3 | 3 | 3 | 3 | - | 3 | - |
| Time zone information | 3 | 3 | 3 | 3 | - | 3 | - |
| GPRS MS Class (**note 3**) | 3 | 3 | - | 3 | - | - | - |
| IMEI (with software version) | 4 | 4 |  | 4 |  |  |  |
| PDP transport protocol, i.e. IP or X.25 | - | 3 | 3 | 3 | - | 3 | - |
| Quality of Service (requested) | - | 3 | 3 | 3 | - | 3 | - |
| Quality of Service (subscribed) | - | 3 | 3 | 3 | - | 3 | - |
| Quality of Service (negotiated) | - | - | - | 3 | 3 | 3 | 3 |
| Destination address information | - | 3 | 3 | 3 | - | 3 | - |
| GPRS charging ID | - | - | - | 3 | 3 | 3 | 3 |
| GGSN Address | - | - | - | 3 | 3 | 3 | 3 |

Note 1:    PDP Context Establishment Ack (Subsequent Service Event – GPRS Session relationship I): The PDP Context Establishment event for this PDP Context has not been reported.

Note 2:    PDP Context Establishment Ack (Subsequent Service Event – GPRS Session relationship II): The PDP Context Establishment event for this PDP Context has been reported.

Note 3:    GPRS MS Class: Subparameter MS RadioAccessCapability is not supported in UMTS Network.

---

# **** End of document ****

---

# CHANGE REQUEST

| | **22.078** CR | **135** | ⌘ rev | **-** | ⌘ Current version: | **5.5.0** | ⌘ |

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

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

| | | |
|---|---|---|
| *Title:* ⌘ | Reporting of the "Network initiated GPRS detach" event to the CSE | |
| *Source:* ⌘ | SA1 | |
| *Work item code:* ⌘ | CAMEL4 | *Date:* ⌘ 28th Nov 2001 |
| *Category:* ⌘ **C** | | *Release:* ⌘ Rel-5 |

Use <u>one</u> 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 <u>one</u> 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:* ⌘ | Because of a misunderstanding, the "Network initiated GPRS detach" event was not included in CR 22-078-128r1. |
| *Summary of change:* ⌘ | Add the "Network initiated GPRS detach" event to those for which the CSE can request reporting. |
| *Consequences if not approved:* ⌘ | The set of PS domain mobility events to be reported to the CSE will be incomplete |

| | |
|---|---|
| *Clauses affected:* ⌘ | 12.1 |

| *Other specs affected:* ⌘ | ☐ Other core specifications | ⌘ 23.078; 29.002 |
|---|---|---|
| | ☐ Test specifications | |
| | ☐ O&M Specifications | |

| | |
|---|---|
| *Other comments:* ⌘ | The corresponding stage 2 & stage 3 CRs have already been conditionally approved by CN2 and CN4 respectively. |

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

## 12.1 Mobility management

It shall be possible to mark for a subscriber that a notification shall be sent to the CSE when the VPLMN has completed the processing of any one or more of the following mobility events:

- For a CS subscriber:

  - Location area update of MS to a different VLR service area;

  - Location area update of MS within the same VLR service area;

  - MS-initiated detach (e.g. MS switched off);

  - Network initiated detach (periodic location update of MS failed);

  - Attach of MS (e.g.MS switched on, successful location update after network initiated detach);

- For a GPRS subscriber:

  - Routeing area update of MS to a different SGSN service area;

  - Routeing area update of MS within the same SGSN service area;

  - MS-initiated detach (e.g. MS switched off);

  - Network initiated detach;

  - Network initiated transfer to "MS not reachable for paging" (periodic routeing area update of MS failed);

  - Attach of MS (e.g. MS switched on, successful routeing area update after network initiated detach.

The notification shall contain the following information if available:

- Event met;

- Service Key;

- IMSI;

- Basic MSISDN;

- Location information;

- LSA identity;

- CAMEL phases supported at the VPLMN.

## **** End of document ****