

**Source:** TSG SA1  
**Title:** CRs to various specs. for Bearer Modification without pre-notification  
**Document for:** Approval  
**Agenda Item:** 7.1.3

Spec	CR	Rev	Phase	Cat	Subject	Vers	New Vers	SA1 Doc. No.
22.001	004		R00	B	CR on TS22.001 for Bearer Modification without pre-notification	3.2.0	4.0.0	S1-000642
22.105	027		R00	B	Bearer Modification without pre-notification	3.9.0	4.0.0	S1-000641
22.129	014		R00	B	Bearer Modification without pre-notification	3.3.0	4.0.0	S1-000613

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## CHANGE REQUEST

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**22.001 CR 004**

Current Version: **3.2.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

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

for approval   
for information

strategic   
non-strategic  (for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <http://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:** TSG SA1 **Date:** 21/07/00

**Subject:** Subscription Check

**Work item:** Bearer Modification without pre-notification

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

F Correction	<input type="checkbox"/>	<b>Release:</b> Phase 2	<input type="checkbox"/>
A Corresponds to a correction in an earlier release	<input type="checkbox"/>	Release 96	<input type="checkbox"/>
B Addition of feature	<input checked="" type="checkbox"/>	Release 97	<input type="checkbox"/>
C Functional modification of feature	<input type="checkbox"/>	Release 98	<input type="checkbox"/>
D Editorial modification	<input type="checkbox"/>	Release 99	<input type="checkbox"/>
		Release 00	<input checked="" type="checkbox"/>

**Reason for change:** Subscription checking should be performed if re-negotiation of bearer/QoS is requested.

**Clauses affected:** 4.1

**Other specs affected:**

Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
MS test specifications	<input type="checkbox"/>	→ List of CRs:	
BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:**



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## 4.1 Subscription checking for Basic Services

### General

Subscription checking is the function/process to ascertain whether a subscriber has the authorization to use the particular Basic Service deduced from the call set-up [or service modification](#) parameters. It is the responsibility of the HPLMN to transfer, to the VPLMN, only the subscription data corresponding to those services a given subscriber is entitled to use in that VPLMN.

For mobile originated calls, subscription checking is performed in the VLR, whilst for mobile terminated calls it is performed in either the HLR or the VLR (determined as described below). The prerequisite for executing the subscription check is a successful deduction of a Basic Service from the Compatibility Information contained in the call set up [or service modification](#), i.e. Bearer Capability Information Element and, in some cases, also the Low Layer and High Layer Compatibility Information elements.

For mobile originated calls an UE shall indicate the requested service by appropriate compatibility information elements according to GSM 27.001 [8]. This information is mapped to an individual Basic Service code (i.e. the MAP representation) by the MSC in order to be compared with the subscriber data available in the VLR.

An equivalent process is required in the HLR for mobile terminated calls, where the caller's requested service is indicated to the HLR (by the ISDN) by exhaustive compatibility information consisting of ISDN Bearer Capability Information Elements and in some cases - depending on the service requested - also of Low Layer and High layer Compatibility information elements. In case the compatibility information is not exhaustive, e.g. when the call is originated/transited by a PSTN, no Basic Service can be deduced and subscription checking cannot be performed in the "normal" way. Instead, rules for the Single and Multi Numbering Schemes apply.

In the Multi Numbering Scheme the Basic Service can be deduced by information stored in the HLR against the called number and hence an implicit subscription check is performed. In the Single Numbering Scheme, the Basic Service cannot be deduced until the UE has responded to the set up and therefore the HLR cannot perform subscription check. Instead, the VLR/MSC will perform the subscription check or calls are passed "unfiltered" (as regards subscription check), at the network operators' discretion.

For mobile originated/terminated calls, the subscription checking shall be performed if re-negotiation of bearer/QoS is necessary during CS calls or PS sessions. And it shall be possible to perform before re-negotiating. If the subscriber checking is negative, it shall be able to return to previous bearer/QoS attributes.

### Bearer Services

GSM 02.02 lists the Bearer Services, each of them with a specific "BS number". Single services defined independent of the fixed network user rate are called General Bearer Services. These distinct [numbered] services may individually be provided to a subscriber. Whichever the subscription arrangements are, all PLMNs (MSCs, VLRs and HLRs) shall be able to allow - as regards subscription checking - the use of individually subscribed-to Basic Services, within the range of services supported by the PLMN. That is, whenever it is possible to deduce the Basic Service from a call set up [or service modification](#), subscription check shall be performed at the granularity of that particular Basic Service or the group to which it belongs.

### TeleServices

TS 22.003 [6] lists the TeleServices, each of them with a specific "TS number". These may be provided to subscribers individually or combined, to the operators' discretion, however TS 12 (Emergency calls) and TS 23 (CBS) are not subscribable. But, as for Bearer Services, networks shall be able to handle subscription checking at the granularity of individual TeleServices.

Table 2 summarizes the basis on which a successful subscription checking will result. It also describes on which basis Supplementary Service handling for a given call set-up should be performed.

**Table 2**

<b>Set Up</b>	<b>Subscription Check</b>	<b>SS handling</b>
BS 20	BS 20	BS Group 2x
BS 30	BS 30	BS Group 3x
TS 11	TS 11, TS Group 1x or TS Group All	TS Group 1x
TS 12	N.A.	
TS 21	TS 21, TS Group 2x or TS Group All	TS Group 2x
TS 22	TS 22, TS Group 2x or TS Group All	TS Group 2x
TS 23	N.A.	
TS 61	TS 61, TS Group 6x or TS Group All	TS Group 6x
TS 62	TS 61, 62, Group 6x or TS Group All	TS Group 6x
TS 91	TS 91, TS Group 9x or TS Group All	TS Group 9x
TS 92	TS 92, TS Group 9x or TS Group All	TS Group 9x
Legend: <ul style="list-style-type: none"> <li>- set-up: The Basic Service which is set up for the call;</li> <li>- subscription check: Required VLR or HLR data for successful subscription check;</li> <li>- SS handling: Against which VLR or HLR data SS handling should be performed. For example;               <ul style="list-style-type: none"> <li>a call set-up indicating BS61 and Asynchronous mode should be treated for SS purposes in accordance with the SS-data stored against BS group 2x.</li> </ul> </li> </ul>		

When TS61 is requested in a call set-up and the subscription check for TS61 is negative, but a subscription check for TS62 is positive, then the call shall proceed according to the TS 22.003 [6]and TS 27.001 [8]. If a subscription check for both TS61 and TS62 is negative, then the call shall be released. When TS61 is requested in service modification and the subscription check for TS61 is negative, but a subscription check for TS62 is positive, then the call shall proceed according to the TS 22.003 [6]and TS 27.001 [8]. If a subscription check for both TS61 and TS62 is negative, then the call mode shall not be modified.

## CHANGE REQUEST

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**22.105 CR 027**

Current Version: **3.9.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

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**Proposed change affects:**  
(at least one should be marked with an X)

(U)SIM  ME  UTRAN / Radio  Core Network

**Source:** SA 1 **Date:** 21 July 2000

**Subject:** Bearer Modification without pre-notification

**Work item:** Bearer Modification without pre-notification

**Category:**

(only one category shall be marked with an X)

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

**Release:**

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

**Reason for change:**

Addition of feature to reflect the WID on "Bearer modification without pre-notification".

**Clauses affected:** 5.2

**Other specs affected:**

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

**Other comments:**



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## 5.2 Description of bearer services

Bearer services are characterised by a set of end-to-end characteristics with requirements on QoS. The characteristics and requirements shall cover major network scenarios, i.e. the cases when the terminating network is PSTN, ISDN, GSM, IP networks/LANs, X.25 and a PLMN.

Quality of Service is the quality of a requested service (Teleservice or Bearer Service or any other service, e.g. customer care) as perceived by the customer (ITU-T M.xxxx). QoS is always meant end-to-end. Network Performance of several network elements of the originating and terminating network(s) contribute to the QoS as perceived by the customer including terminals and terminal attachments. In order to offer the customer a certain QoS the serving network need to take into account network performance components of their network, reflect the performance of the terminal and ad sufficient margin for the terminating networks in case network performance requirements cannot be negotiated.

As far as the QoS to the subscriber is concerned network elements have to provide sufficient performance (reflecting possible performance constraints in terminating networks) so that the PLMN cannot be considered as a bottleneck.

This section outlines the requirements on bearer services in two main groups;

- Requirements on information transfer, which characterise the networks transfer capabilities for transferring user data between two or more access points.
  
- Information quality characteristics, which describe the quality of the user information transferred between two or more access points.

It shall be possible to negotiate / re negotiate the characteristics of a bearer service at session / connection establishment and during an on going session / connection.

The re-negotiation of bearer/QoS is used for modifying its capability during CS calls or PS sessions. This functionality may be initiated by an application, the user via an application or a change in the radio conditions (handover, cell load modification etc.) It may be initiated by mobile station or network. There is a requirement to provide the flexibility within the existing technical solutions utilized, allowing the end users to flexibly change type of bearer and /or QoS parameters within a call as easily as possible. Subscription check shall be performed when re-negotiation is invoked. It may not be necessary in case of the single numbering scheme is used. It shall be possible to have the capability to charge for each bearer respectively.

Re-negotiation of the bearer characteristics during a session / connection (bearer modification without pre-notification) is required for:

- 1) Modification between speech and fax
- 2) Modification between speech and modem
- 3) Fallback multimedia to speech (Fallback is the modification at the call set phase)
- 4) Modification between speech and 3.1kHz/UDI multimedia
- 5) Modification bearer/QoS because of radio conditions

\* Note: Above requirements from 1) to 4) are applied to CS domain only.



## 5 Requirements for Handover from UMTS to UMTS

### 5.1 Handover due to UE Movement

It should be possible to provide a technical implementation of handover such that there is no measurable impact on the quality of any service when handover due to UE movement occurs. This does not imply that all UMTS handovers will achieve this ideal. However, the standards shall define at least one UTRA radio access mode in which this is possible given the following:

- UE speed stays within limits for given service;
- UE stays constantly within UMTS coverage of a single UTRAN.

When there is handover to a new cell with different radio conditions, one of the following processes may be implemented:

- If a Multimedia call is unable to maintain the required QoS, the call may fallback to a lower bit rate Multimedia call or speech and continue communication.
- If a PS sessions is unable to maintain the required quality of service, the QoS of the sessions may be modified to lower quality to continue communication.

### 5.3 Handover between UTRA Radio Access Modes

The standards shall permit a technical implementation of handover between radio access modes, although there may be a temporary degradation of QoS on bearer services at the time of handover.

### 5.3 UMTS cell capacity

Consideration must be given services such as multimedia, which may involve use of multiple bearers. Due for example to cell loading, it may happen that a target cell cannot support the combination of bearer services provided by the current serving cell. Means shall be provided for the application(s) to indicate minimum acceptable QoS for services continuation after handover. Although all UMTS bearer services may not be handed over, the handover to another UMTS cell should not be precluded.

### 5.4 Handover of a Multicall

**The handover event can trigger changes to individual calls in any multicall scenario.**

It shall be possible to handover all the calls in a multicall configuration.. If the target cell is not able to accommodate all the calls in a multicall configuration, then the calls that are handed over shall be selected in following order:

- i. The call of teleservice emergency call
- ii. The call of teleservice telephony
- iii. The call of any other type

Calls that cannot be handed over will be released.

If no single call can be selected according to the above criteria, handover shall be rejected.

A change in the availability of suitable radio resources may also occur for other reasons in addition to handover.