TSG-SA Working Group 1 (Services) meeting #3 *TSGS1#3(99)~~xxx~~317*
Hampton Court, Surrey, UK 10th-12th May 1999

Agenda Item: 7.4.3 UMTS Reports & Specs in progress

Source: **Ericsson**

Title: Requested changes to TS 22.135 v 1.0.0

Document for: Approval

Background:

The ETSI UMTS technical specification 22.135 "Service aspects, Stage 1; Multicall" version 1.0.0 states that subscription is one means to limit the number of allowed calls. There are a number of other possibilities as well such as terminal restrictions, network restrictions, radio restrictions and user settings. These other possibilities should be enough and there is no need to add the extra administrative overhead caused by handling individual multicall subscriptions. The requirement on subscription based limitations also requires extra standardisation efforts to define how the subscriber data is organised and how it is distributed. This causes just extra costs and no revenue. Therefore it is here proposed that the requirement on subscription based multicall settings should be removed.

As a consequence of the proposal above it is also proposed that call charge information is provided for each individual call and that no charge is provided for the service as such.

Another good reason to limit the number of speech calls to one in UMTS release 99 is that the terminals will only need to have one codec.

A text is proposed to the eMLPP section where it shall be possible for individual calls to have different priority.

An editorial comment:

In section 1 "... should not prohibit the possibility of multiple speech..." is a better wording than "... should not prohibit a complete set of multiple speech..."

CHANGE REQUEST No :	**No Need**	*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*			
Technical Specification 3GPP:	22.135	Version	1.0.0		
Submitted to TSG SA *list plenary meeting or STC here ↑*		for approval	X	without presentation ("non-strategic")	X
		for information		with presentation ("strategic")	

PT SMG CR cover form. Filename: crf26_3.doc

Proposed change affects: SIM [ ] ME [ ] Network [X]
(at least one should be marked with an X)

Work item: Multicall

Source: Ericsson **Date:** 5 May, 1999

Subject: Requested Multicall changes

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

F	Correction	X	**Release:** Phase 2	
A	Corresponds to a correction in an earlier release		Release 96	
B	Addition of feature		Release 97	
C	Functional modification of feature		Release 98	
D	Editorial modification		Release 99	X
			UMTS	X

Reason for change: The requirement of subscription based multicall should be removed due to administration overhead. The busy condition should be clarified using GSM 02.01 as a basis.

Clauses affected: Mainly 5 and Annex A. Some minor changes also in other clauses.

Other specs affected:

Other releases of same spec		→ List of CRs:	
Other core specifications		→ List of CRs:	
MS test specifications / TBRs		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

1 Scope

The present document presents multicall scenarios and requirements for UMTS phase 1 release '99.

One or more of the following can achieve multicall:

1. Several Circuit Switched calls share the same Circuit Switched bearer

2. Several Circuit Switched calls where each of the calls is mapped to a separate Circuit Switched bearer

3. Several Packet Switched sessions are multiplexed on the same Packet Switched bearer

4. Several Packet Switched sessions where each of the sessions is mapped to a separate Packet Switched bearer

Packet switched and circuit switched bearers are treated separately in multicall feature.

In Release 99, bullet 2 does not apply for speech teleservice. However, Release 99 Call control should not prohibit ~~a complete set~~the possibility of multiple speech bearer services in future releases. In Release 99, GSM SS Call Wait, Multiparty and Call Hold are used to offer simultaneous speech calls to user.

The case of an individual call with Multiple bearers is out of the scope of this document.

Multicall is an optional feature in both mobile terminal and network.

2 References

[1~~1~~] TS 22.00 UMTS Phase 1

[2] TS 22.29 Handover Requirements between UMTS and GSM or other Radio Systems

[3] GSM 02.01 Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)

3 Definitions, symbols and abbreviations

3.1 Definitions

Multiparty call: GSM Supplementary Service for speech conference service

CS Call: FFS

PS Session: FFS

3.2 Abbreviations

4 Description

4.1 Description of multicall

One or more of the following can achieve multicall:

- Several Circuit Switched calls share the same Circuit Switched bearer
- Several Circuit Switched calls where each of the calls is mapped to a separate Circuit Switched bearer
- Several Packet Switched sessions are multiplexed on the same Packet Switched bearer
- Several Packet Switched sessions where each of the sessions is mapped to a separate Packet Switched bearer

It shall be possible for each CS call / PS session to have independent traffic and performance characteristics.

It is a requirement, that the current GSM supplementary services are preserved when suitable. Support of UMTS-GSM interworking and handovers, GSM evolution, GSM user conventions etc. are reasons for this requirement.

UTRAN shall be designed in a flexible way to support multiple speech bearers.

4.2 Circuit switched shared and dedicated bearers

The protocol architecture in GSM allows several parallel CS calls, the limitation being that there is only one traffic channel, which the different CS calls share. This is facilitated by e.g. the Call Hold, Call Transfer and Multiparty SSs. This is called shared bearer concept.

A basic assumption with CS multicall is that each CS call has one dedicated bearer, i.e. the default is that each new call (MO and MT) may generate a new bearer. However, the shared bearer mode is also required.

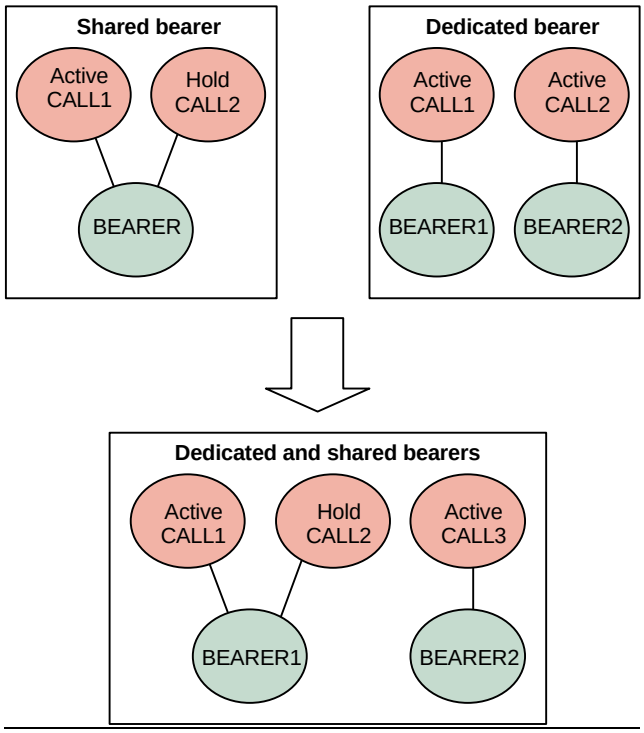

Figure 1:Dedicated and shared bearer concepts

4.3 Multicall service scenarios

4.3.1 Terminating CS call

Terminating speech call

a) Speech bearer has been allocated
-existing bearer shall be shared (Evolution for future releases seen)

b) No speech bearer has been allocated
-allocate a new bearer, if possible

Terminating non-speech call

a) Speech bearer has been allocated
-allocate a new bearer, if possible, or
-existing bearer shall be shared

b) No speech bearer has been allocated
allocate a new bearer, if possible

All terminating CS calls are always indicated to the users to select the action to be taken.

For all terminating cases it shall be possible to release any of the allocated calls/bearers and then accept the incoming call. In all above cases it shall be possible to reject the incoming call.

Note: Limitations pointed out at this section is described in detail at section 5.2.

4.3.2 Originating CS call

Originated speech call

a) speech bearer has been allocated
-existing bearer shall be shared (Evolution for future releases seen)

b) No speech bearer has been allocated
-allocate a new bearer, if possible

Originating non-speech call

a) speech bearer has been allocated
-allocate a new bearer, if possible, or
-existing bearer shall be shared

b) no speech bearer has been allocated
-allocate a new bearer, if possible

For all originating cases it shall be possible to release any of the allocated calls/bearers and then set up the call.

Note: Limitations pointed out at this section is described in detail at section 6.

4.3.3 PS sessions

PS sessions shall be handled independently of any CS calls.

Editors note: GPRS Class A kind of behaviour is assumed. More detailed requirements FFS.

5 Normal procedures

5.1 Provision

~~The provision of multicall is provided by prior arrangement with home environment~~Multicall is a basic service that is limited by the conditions described in the following section.

~~It shall be possible to set subscriber dependent limits for multicall.~~

5.2 Limiting the number of multicalls

It should be possible for the number of active calls or sessions supported simultaneously to be restricted and selected by network operator, by the capabilities of the used terminal, the available radio resources~~, by user subscription~~ and/or user setting. The maximum number of CS calls and PS sessions should be set respectively. It shall be possible to have one or more CS calls simultaneously with one or more parallel PS sessions.

Editors Note: More detailed requirements FFS.

5.3 Multicall Reconfiguration

It shall be possible for an active multicall to be re-configured within the limits set by the operator/user and within the capability of the terminal by:

- Adding a new CS calls or PS session
- Subtracting an active CS calls or PS sessions
- Suspending and resume a PS session
- Put an active CS speech call on hold and retrieve it

5.4 Handover

It shall be possible to re-configure the bearers automatically due to a change in the availability of suitable radio resources (Note 1). It shall be possible for the network operator to set the priority of active connections and this priority may influence the automatic re-configuration process. If supported by the terminal, it shall be possible for the user to set the priority of active connections and this priority shall influence the automatic re-configuration process.

Note 1: A change in the availability of suitable radio resources may also occur for other reasons in addition to handover.

For further handover requirements please refer to TS 22.29.

5.5 Multicall Termination

The following options for terminating a multicall shall be provided:

- Termination of active CS calls and PS sessions individually
- FFS

6 Interaction with other services

6.1 General on Supplementary Services

Relation between multicall and supplementary services are considered only in circuit switched connection.

6.2 Line Identification

6.2.1 Calling Line Identification Presentation (CLIP)

No impact, i.e. CLIP shall be provided with all calls.

6.2.2 Calling Line Identification Restriction (CLIR)

No impact, i.e. CLIR shall be provided with all calls.

6.2.3 Connected Line Identification Presentation (COLP)

No impact, i.e. COLP shall be provided with all calls.

6.2.4 Connected Line Identification Restriction (COLR)

No impact, i.e. COLR shall be provided with all calls.

6.3 Call Forwarding

6.3.1 Call Forwarding Unconditional (CFU)

No impact.

6.3.2 Call Forwarding on Busy (CFB)

No impact.

6.3.3 Call Forwarding on No Reply (CFNRy)

No impact.

6.3.4 Call Forwarding on Not Reachable (CFNRc)

No impact.

6.4 Call Completion

6.4.1 Call Hold (CH)

Call hold is applicable to the speech call only.

6.4.2 Call Waiting (CW)

FFS

6.5 Multi Party (MPTY)

Multi Party is applicable to the speech call only.

6.6 Closed User Group (CUG)

No impact.

6.7 Advice of Charge (AoC)

FFS

6.8 Call Barring

No impact.

6.8.1 Barring of all outgoing calls

No impact.

6.8.2 Barring of outgoing international calls

No impact.

6.8.3 Barring of outgoing international calls except those directed to the HPLMN country

No impact.

6.8.4 Barring of all incoming calls

No impact.

6.8.5 Barring of incoming calls when roaming

No impact.

6.9 Explicit Call Transfer (ECT)

ECT is applicable to the speech call only.

6.10 Completion of Call to Busy Subscriber (CCBS)

FFS

6.11 Multiple Subscriber Profile (MSP)

FFS

6.12 Calling Name Presentation (CNAP)

No impact.

6.13 User-to-User Signalling (UUS)

FFS

6.14 enhanced Multi-Level Precedence and Pre-emption service (eMLPP)

It shall be possible for individual calls to be set up with different priority markings. Other requirements are FFS

6.15 CAMEL

FFS

Annex A (Informative): Outstanding issues

A.1 Evolution towards several speech bearers

Due to problems foreseen in the interaction of multicall and existing services, the multicall feature is be introduced in a phased manner, meaning that in ~~the first phase, i.e.~~ UMTS Release 99, ~~-~~

~~T~~there is a need to limit the number of parallel circuit switched speech calls to one. ~~to avoid p~~

Potential interactions with supplementary services e.g detection of the user busy condition for supplementary services i.e. CH, CW and MPTY are then avoided. The terminals do only need one codec if only one speech call is allowed at a time. ~~The need for this limitation needs to be studied further.~~

UTRAN shall be designed in a flexible way to support multiple speech bearers.

A.2 Busy definition

It~~Main assumption is that it~~ shall be possible to offer all calls to the user. ~~It seen that user may want to set busy status to serving network due to charging or other reasons. This new alternative functionality needs to be further studied. Also the existing Call Waiting SS need to be reviewed.~~

~~For GSM busy definition see 02.01 Annex C.~~

A.2.1 Network Determined User Busy (NDUB) condition

The NDUB condition occurs, when a call is about to be offered, if the maximum number of total calls has been reached.

The maximum number of calls is N which may include one speech call. N is limited by terminal capabilities, by the available radio resources or by the network operator.

When the supplementary service "Call Waiting" is applicable, the maximum number of speech calls is 1+M where M is the maximum number of calls that can be waiting.

The total maximum number of calls is thus N+M.

When NDUB condition occurs, the PLMN will clear the call and indicate "busy" back towards the calling subscriber.

A.2.2 User Determined User Busy (UDUB) condition

See GSM 02.01 Annex C.3 User Determined User Busy (UDUB) condition.

A.2.3 Mobile subscriber busy

See GSM 02.01 Annex C.4 Mobile subscriber busy.

~~*From NTT DoCoMo: The NDUB (Network Determined User Busy) occurs, when a call is about to be offered, if the traffic channel is busy and the maximum number of total calls has been reached. The maximum number of calls depends on the limitation for multicall.*~~

~~*Separation of Speech and Non-speech?*~~

A.2 Charging aspects

Call charge information is provided for each individual call. No extra charging is provided for the multicall service as such.

tbd