Source: **TSG S1**

Title: **Editorial CRs to align GSM and UMTS Specifications**

Document for: **Approval**

Agenda Item: **5.1.3**

S1 Doc. No.	Spec. No.	CR No.	Release	Title
1-99-319	02.60	A023	R97	R97 - GPRS Stage 1
1-99-351	02.60	A024	R98	R98 - GPRS Stage 1 removal of example
S1-99608	22.002	001	R99	Editorial update of references for GSM/3GPP use.
S1-99609	22.004	001	R99	Editorial update of references for GSM/3GPP use.
S1-99610	22.011	001	R99	Editorial update of references for GSM/3GPP use.
S1-99611	22.016	001	R99	Editorial update of references for GSM/3GPP use.
S1-99612	22.022	001	R99	Editorial update of references for GSM/3GPP use.
S1-99613	22.024	001	R99	Editorial update of references for GSM/3GPP use.
S1-99614	22.030	001	R99	Editorial update of references for GSM/3GPP use.
S1-99615	22.034	001	R99	Editorial update of references for GSM/3GPP use.
S1-99616	22.041	001	R99	Editorial update of references for GSM/3GPP use.
S1-99617	22.042	001	R99	Editorial update of references for GSM/3GPP use.
S1-99618	22.043	001	R99	Editorial update of references for GSM/3GPP use.
S1-99619	22.057	001	R99	Editorial update of references for GSM/3GPP use.
S1-99620	22.060	001	R99	Editorial update of references for GSM/3GPP use.
S1-99665	22.060	005	R99	R99 - GPRS Stage 1 rel 99 Editorial corrections (revised 1-99-352)
S1-99621	22.066	001	R99	Editorial update of references for GSM/3GPP use.
S1-99622	22.067	001	R99	Editorial update of references for GSM/3GPP use.
S1-99623	22.068	001	R99	Editorial update of references for GSM/3GPP use.
S1-99624	22.069	001	R99	Editorial update of references for GSM/3GPP use.
S1-99625	22.071	004	R99	Editorial update of references for GSM/3GPP use.
S1-99626	22.072	001	R99	Editorial update of references for GSM/3GPP use.
S1-99627	22.079	001	R99	Editorial update of references for GSM/3GPP use.
S1-99628	22.081	001	R99	Editorial update of references for GSM/3GPP use.
S1-99629	22.082	001	R99	Editorial update of references for GSM/3GPP use.
S1-99630	22.083	001	R99	Editorial update of references for GSM/3GPP use.
S1-99631	22.084	001	R99	Editorial update of references for GSM/3GPP use.
S1-99632	22.085	001	R99	Editorial update of references for GSM/3GPP use.
S1-99633	22.086	001	R99	Editorial update of references for GSM/3GPP use.
S1-99634	22.087	001	R99	Editorial update of references for GSM/3GPP use.
S1-99635	22.088	001	R99	Editorial update of references for GSM/3GPP use.
S1-99636	22.090	001	R99	Editorial update of references for GSM/3GPP use.
S1-99637	22.091	001	R99	Editorial update of references for GSM/3GPP use.
S1-99638	22.093	001	R99	Editorial update of references for GSM/3GPP use.
S1-99639	22.096	001	R99	Editorial update of references for GSM/3GPP use.
S1-99640	22.097	001	R99	Editorial update of references for GSM/3GPP use.
S1-99544	22.100	023	R99	Editorial changes related to terminology
S1-99382	22.100	022	R99	Editorial Changes to account for the new specification numbering scheme
S1-99641	22.100	024	R99	Editorial update of references for GSM/3GPP use.
S1-99481	22.105	016	R99	Editorial Change to 22.105
S1-99761r1	22.105	017	R99	Correction of nomenclature (rev1)
S1-99548	22.105	018	R99	CR for 22.105 removing the notes below the QoS tables

CHANGE REQUEST No : **A023** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification GSM / UMTS: 02.60 Version 6.3.0

Submitted to SMG *list plenary meeting or STC here ↑*

for approval **X**
for information

Without presentation ("non-strategic") **X**
With presentation ("strategic")

PT SMG CR cover form. Filename: crf26_3.doc

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

Work item: GPRS

Source: Nokia **Date:** 7 July, 1999

Subject: GPRS Stage 1 removal of example

Category: *(one category and one release only 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	X

Release:

Phase 2	
Release 96	
Release 97	X
Release 98	
Release 99	
UMTS	

Reason for change: GPRS does not have 9.6kbit/s channel coding, which was referred as an example. Example was removed.

Clauses affected:

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:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

5.3 Transfer Characteristics

The packet multiplexing mechanisms developed for GPRS shall be independent of a given channel type. It shall be possible to operate GPRS over low and high capacity channels. These may be existing and/or future channels whose capacities are as yet unspecified (e.g., a signalling channel, or two time-slots or an entire 200 kHz carrier). Table 3 is only applicable to the GPRS part of the connection.

Table 3: Transfer Characteristics

Attributes		Supported capabilities
Information Transfer Capability		Unrestricted digital information
Information Transfer Mode	Connection mode	Connection orientated, connectionless
	Traffic type (a)	Variable bit rate and variable delay
	Timing end-to-end (b)	Asynchronous
Information Transfer Rate (c)		Maximum bit rate. Values from one TCH ~~(e.g. 9.6 kbit/s)~~ up to eight TCH ~~(e.g. 8x9.6 kbit/s)~~ inclusive.
Information Structure		- Service data unit integrity - Data sequence integrity
Communication Configuration		- Point to point
Establishment of Communication (d)		Demand mobile originated or mobile terminated
Negotiation		- Out of band - In band
Symmetry		- Bi-directional - Unidirectional
Radio Channel assignment		Shared, multi-user

a) Traffic type: describing data streams with constant bit rate or variable bit rate characteristics.

b) Timing end-to-end: describing the timing relation between the source and destination of signals.

c) Flexible channels with a maximum bit rate that depends on the type of channel and the number of time slots that are used. This capability defines the maximum capability associated with the channel(s). The actual bit rate for a particular user may be any value up to this maximum value.

d) Establishment of communication: may be on demand, reserved or permanent.

5.4 Service characteristics

5.4.1 Subscriber profile

The subscriber profile holds subscription information about services and other parameters that have been assigned for an agreed contractual period. It includes the following information:

- subscribed services (PTP-CLNS, PTP-CONS);
- subscribed QoS profile (service precedence(priority), reliability, delay, throughput).

An invocation of a service by any user with the appropriate subscription profile shall be possible.

ETSI STC SMG1 meeting #64 (99/2)
Quebec City, Quebec, Canada 5th-6th July

SMG1 (99) 351
Agenda item 6.6

CHANGE REQUEST No : **A024** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification GSM / UMTS: 02.60 Version 7.2.0

Submitted to SMG *list plenary meeting or STC here ↑* | for approval **X** | for information | without presentation ("non-strategic") **X** | With presentation ("strategic")

PT SMG CR cover form. Filename: crf26_3.doc

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

Work item: GPRS

Source: Nokia **Date:** 7 July, 1999

Subject: GPRS Stage 1 removal of example

Category: *(one category and one release only 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	X

Release:

Phase 2	
Release 96	
Release 97	X
Release 98	X
Release 99	
UMTS	

Reason for change: GPRS does not have 9.6kbit/s channel coding, which was referred as an example. Example was removed.

Clauses affected:

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:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

5.3 Transfer Characteristics

The packet multiplexing mechanisms developed for GPRS shall be independent of a given channel type. It shall be possible to operate GPRS over low and high capacity channels. These may be existing and/or future channels whose capacities are as yet unspecified (e.g., a signalling channel, or two time-slots or an entire 200 kHz carrier). Table 3 is only applicable to the GPRS part of the connection.

Table 3: Transfer Characteristics

Attributes		Supported capabilities
Information Transfer Capability		Unrestricted digital information
Information Transfer Mode	Connection mode	Connection orientated, connectionless
	Traffic type (a)	Variable bit rate and variable delay
	Timing end-to-end (b)	Asynchronous
Information Transfer Rate (c)		Maximum bit rate. Values from one TCH ~~(e.g. 9.6 kbit/s)~~ up to eight TCH ~~(e.g. 8x9.6 kbit/s)~~ inclusive.
Information Structure		- Service data unit integrity - Data sequence integrity
Communication Configuration		- Point to point
Establishment of Communication (d)		Demand mobile originated or mobile terminated
Negotiation		- Out of band - In band
Symmetry		- Bi-directional - Unidirectional
Radio Channel assignment		Shared, multi-user

a) Traffic type: describing data streams with constant bit rate or variable bit rate characteristics.

b) Timing end-to-end: describing the timing relation between the source and destination of signals.

c) Flexible channels with a maximum bit rate that depends on the type of channel and the number of time slots that are used. This capability defines the maximum capability associated with the channel(s). The actual bit rate for a particular user may be any value up to this maximum value.

d) Establishment of communication: may be on demand, reserved or permanent.

5.4 Service characteristics

5.4.1 Subscriber profile

The subscriber profile holds subscription information about services and other parameters that have been assigned for an agreed contractual period. It includes the following information:

- subscribed services (PTP-CLNS, PTP-CONS);
- subscribed QoS profile (service precedence(priority), reliability, delay, throughput).

An invocation of a service by any user with the appropriate subscription profile shall be possible.

TSG-SA Working Group 1 (Services) meeting #4 *TSGS1#4(99)382*
Québec, Canada, 5th-9th July 1999 **Agenda 6.1.5.2**

CHANGE REQUEST No : **022** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification / Report UMTS 22.100 Version: 3.3.0

Submitted to TSG_SA	5	for approval	X	without presentation ("non-strategic")	X
list TSG plenary meeting no. here ↑		for information		with presentation ("strategic")	

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip

Proposed change affects: USIM [ ] TE [ ] Network [X]

(at least one should be marked with an X)

Work item: UMTS phase 1 release 99

Source: Rapporteur **Date:**

Subject: Editorial changes

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

F	Correction		**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	X		UMTS 99	X

Reason for change: To account for new numbering principles (e.g. 22.00 to 22.100) and other editorial changes.

Clauses affected:

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:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.100 3.3.0 (1999-0

Technical Specificati

3rd Generation Partnersl
Technical Specification Group Services and System Aspects
UMTS phase 1 Release 99
(3G TS 22.100 version 3.3.0)

Reference
DTS/TSGS-0122100U

Keywords
<keyword[, keyword]>

3GPP

Postal address

3GPP support office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet
http://www.3gpp.org

Contents

Foreword

This Technical Specification has been produced by the 3GPP.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The UMTS system will be defined in a phased approach. This document specifies the requirements for Release 99 of UMTS. Some requirements which are necessary to ensure a smooth transition to later releases are also indicated. This document should, however, be read in conjunction with the other 22.000 series documents which provide a complete description of the requirements for UMTS Release '99 and beyond.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

2.1 Normative references

This document is the starting point of the set of specifications that define the UMTS Service Requirements for UMTS Phase 1 Release 99. The UMTS Service requirements for Release 99 are defined in the following normative specifications. Since these specifications may also address some requirements for later Releases of UMTS phase 1, they explicitly state when a requirement does not apply to Release '99.

[1] 3G TS 22.101: "Universal Mobile Telecommunications System (UMTS): Service aspects; Service principles".

[2] 3G TS 22.105: "Universal Mobile Telecommunications System (UMTS); Services and Service Capabilities".

[3] 3G TS 22.115: "Universal Mobile Telecommunications System (UMTS); Service Aspects: Charging and Billing".

[4] 3G TS 22.121: "Universal Mobile Telecommunications System (UMTS); VHE Stage 1".

[5] 3G TS TS 22.129, Handover requirements between UMTS and GSM or other Radio System]".

[6] 3G TS 21.133 : "Universal Mobile Telecommunications System (UMTS) ; Security threats and requirements"

[7] GSM 03.45: "Technical realization of facsimile group 3 transparent"

[8] GSM 03.46: "Technical realization of facsimile group 3 non-transparent"

These specifications may refer (directly or indirectly) to further specifications which provide detailed descriptions of service requirements incorporated in UMTS. In particular the service requirements of any GSM component of a UMTS system are specified by reference to GSM service requirements specifications.

3 Definitions, and abbreviations

3.1 Definitions

Definitions applicable to current document :

CAC (Connection Admission Control) : is a set of measures taken by the network to balance between the QoS requirements of new connections request and the current network utilisation without affecting the grade of service of existing/already established connections.

Capability Class : is a piece of information which indicates general UMTS mobile station characteristics (e.g. supported radio interfaces,...) for the interest of the network.

Connection mode : characterizes the type of association between two endpoints as required by the bearer service for the transfer of information. A bearer service is either connection-oriented or connectionless. In a connection oriented mode, a logical association called *connection* needs to be established between the source and the destination entities before information can be exchanged between them. Within the connection, information is delivered to the destination entity in the same order as it was provided by the source entity. Connection oriented bearer services lifetime is the period of time between the establishment and the release of the connection.

In a connectionless mode, no connection is established beforehand between the source and the destination entities ; the source and destination network addresses need to be specified in each message. Transferred information cannot be guaranteed of ordered delivery. Connectionless bearer services lifetime is reduced to the transport of one message.

FC (Flow Control) : is a set of mechanisms used to prevent the network from becoming overloaded by regulating the input rate transmissions.

GSM BSS : refers in this specification to the GSM/GPRS access network.

GSM core network : refers in this specification to the GSM NSS and GPRS backbone infrastructure.

Home environment : enables a user to obtain UMTS services in a consistent manner regardless of the user's location or terminal used (within the limitations of the serving network and current terminal).

Performance : is concerned with the ability to track service and resource usage levels and provides feedback on the responsiveness and reliability of the network.

Serving network : provides the user with access to the services of home environment.

UMTS core network : refers in this specification to an evolved GSM core network infrastructure or any new UMTS core network infrastructures, integrating circuit and packet switched traffic..

UMTS mobile termination : part of the UMTS Mobile Station which provides functions specific to the management of the radio interface (Um).

UMTS network: refers to a network operated by a single network operator and consisting of :
UTRAN access networks (WCDMA and/or TD-CDMA),
optionally GSM BSS access networks,
an UMTS core network.

UPC (Usage Parameter Control) : is a set of actions taken by the network to monitor and control the offered traffic and the validity of the connection with respect to the traffic contract negotiated between the user and the network.

Further definitions [Tbd]

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BSS Base Station System

CDMA	Code Division Multiple Access
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
NSS	Network Sub System
PC	Personal Computer
QoS	Quality of Service
SIM	GSM Subscriber Identity Module
TD-CDMA	Time Division-Code Division Multiple Access
UICC	UMTS IC Card
UMTS	Universal Mobile Telecommunications System
USIM	User Service Identity Module
UTRAN	UMTS Terrestrial Radio Access Network
VHE	Virtual Home Environment
WCDMA	Wideband Code Division Multiple Access

4 UMTS phasing and releases overview

The UMTS system will be defined in a phased approach. This specification addresses the UMTS phase 1 capabilities for Release '99 and it provides pointers to other 22.000 series documents which contain detailed requirements.

The UMTS phase 1 requirements can be met by the capabilities of GSM phase 2+ release 99 including specific enhancements for UMTS. Additional developments to fully meet the requirements for UMTS phase 1 standardisation are listed in this specification.

The fundamental difference between GSM and UMTS phase 1 resides in the support of high bit rate bearer services with the notion of negotiated traffic and QoS characteristics. UMTS phase 1 shall in particular support bursty and asymmetric traffic in an efficient way. This shall allow UMTS phase 1 to support single- and multi-media N-ISDN applications and single- and multi-media IP applications.

The phase 1 USIM is developed on the basis of the phase 2+ release 99 SIM. When UMTS specific requirements have not been stated in this specification it is assumed that the GSM phase 2+ release 99 specifications for the SIM is adopted for the UMTS phase 1 requirements.

No specific requirement is addressed for the mobile termination since it relates to the UMTS access stratum and to the UMTS core network (depending whether peer entities end either in the access or in the core).

Regarding the phase 1 standardisation of UMTS access network, only the UTRAN (including all UTRA modes if several modes are defined) is considered as being part of the UMTS access network. Other types of access networks are for further consideration. UTRAN is a new access network and as such all the UTRAN requirements are defined in this specification. This includes in particular the interoperability requirements put on the UTRAN and GSM BSS access networks to cater with UMTS networks operating the two types of access networks.

UMTS phase 1 shall be developed in such a way that it supports compatibility with an evolved GSM network from the point of view of roaming and handover. This could be achieved by evolving from a GSM phase 2+ network but does not exclude other developments. Therefore, phase 1 specifications shall allow operators to introduce new technologies (such as ATM, IP,...). An overall UMTS system approach is needed for UMTS phase 1 development as it is more than the addition of a UTRAN to a GSM Phase 2+ architecture. Requirements to the GSM phase 2+ core network for UMTS should be incorporated.

To enable operators to utilize the network resources efficiently, the optimization of the signalling load as well as the reduction of the required overall transmission capacity is a critical success factor. Therefor the standard should aim for an architecture with minimal signalling traffic and optimized transmission infrastructure. If advantageous common mobility management and common subscriber data management for CS and PS traffic should be implemented in all relevant network elements. Furthermore the standard should support an integrated node (MSC/SGSN) for PS and CS traffic as well as separated nodes as in GSM/GPRS.

From the viewpoint of the necessity of providing multi-vendor environments, interfaces within the UTRAN (such as Iub) shall be standardized. However, since operator dependent O&M requirements over these interfaces may exist, specifications should be able to be expanded flexibly according to operator specific requirements

It should be noted that the advanced bearer capabilities of the phase 1 UMTS access network may not be fully supported by the phase 1 UMTS core network. This however guarantees the viability of the UMTS access network to allow the scope within phase 1 to support broadband bearer services.

A standard default speech codec shall be standardised for UMTS phase 1. UMTS should support tandem free operation from day 1 to enable lower transmission and equipment costs and for higher speech quality. Crossphase compatibility issues in transcoder location should be considered when moving from Phase 1 UTRAN to later releases.

4.1 Post UMTS Phase 1 operation

After phase 1, the new capabilities of UMTS shall be defined in annual releases where each release constitutes a coherent set of specifications covering UMTS mobile station, access network and core network .

UMTS phase 1 should facilitate evolution towards a single integrated core network infrastructure.

The introduction of Phase 1 UMTS shall not limit or restrict the evolution to later UMTS releases, however, the different starting points to introduce UMTS need to be taken into account.

Cross Phase compatibility shall be considered from day 1 and should include the following aspects:

1) Terminals (e.g. support of phase1 terminals in later releases of UMTS networks and vice-versa).

2) Signalling and protocols, including UTRAN to Core Network, inter network and terminal to network.

3) Security aspects (e.g. the relationship of GSM and UMTS security mechanisms).

Efficient mechanisms for communicating versions and managing cross phase issues shall be designed into the UMTS system from the very start. The mechanisms should be applicable to any components of the system that are planned to be, or might in the future be, phased. These principles might be applicable to : Hardware, Firmware, Software, APIs.

5 UMTS access arrangements

UMTS will support a number of access arrangements which will enable UMTS users to access UMTS Core Networks and VHE services from a variety of fixed and mobile terminals. In all cases, access to UMTS networks will require the use of the UMTS USIM. The UMTS specifications shall enable the design of UMTS Mobile Terminals that can be used in different radio access environments, including those provided by public and private radio access networks connected to public and private networks using paired and unpaired radio bands in licensed and licence exempt spectrum.

It is not expected that all of the above access arrangements will be fully supported in UMTS Release'99. However, it is important that the above vision is recognized and that short term decisions that may prevent the realization of that vision are not taken.

6 Services

UMTS phase 1 will enable the introduction of a range of new services (e.g. Internet services and Multimedia) and applications with the concept of service capabilities. The service capabilities are bearer services defined by parameters (e.g. QoS attributes) and mechanisms needed to realise services.

6.1 Teleservices and supplementary services

UMTS phase 1 shall at least support the following GSM teleservices currently handled by GSM : speech, emergency call and SMS. UMTS phase 1 shall support these teleservices as stated below :

Speech: A default speech codec shall be specified to provide speech service across the UTRAN and GSM access networks. The selected speech codec shall operate with no discernible loss of speech on handover between the GSM access network and the UTRAN.

***Short Message Service-Point to Point (SMS-PP)*:** A short message service point to point shall be provided seamlessly (as far as the user or the users terminal equipment is concerned) across the UMTS and GSM access network.

Short Message Service-Cell Broadcast (SMS-CB): A short message service cell broadcast shall be provided seamlessly (as far as the user or the users terminal equipment is concerned) across the UMTS and GSM network.

Supplementary Services : The standard shall support GSM Release '99 supplementary services. The control of such supplementary services shall be the same as for GSM, from the user's perspective.

6.2 Facsimile service

The UMTS standards shall insure that both of the services described below may be provided. The operator may then select either none, one or both services depending on the market needs. The fax service shall inter-work with existing fax technology.

6.2.1 Store-and-Forward

A UMTS store-and-forward fax service, where a file or message transfer program is used to transfer text or images from a mobile terminal to a store and forward unit for subsequent delivery to the facsimile machine in the PSTN/ISDN, shall be standardised. The user (or the user's PC) may receive notification of successful delivery of the fax. Fax messages from PSTN/ISDN to mobile terminals are stored in a store-and-forward unit. The user retrieves the fax message with a file or message transfer program from the store-and-forward unit. The mobile terminal may be notified that a fax message is available.

6.2.2 End-to-End

A UMTS fax service using an end-to-end fax session between a PSTN/ISDN fax machine and a mobile terminal shall be standardised. This service shall work end-to-end such that a sender on the PSTN is aware of whether or not the fax has succeeded, and such that a mobile sender is aware of whether or not the fax has succeeded. From the user perspective the end-to-end fax service must look and feel like a T.30 based fax service. The end-to-end service may work with ordinary T.30 based fax machines at the mobile end using a mobile fax adapter [6][7] with a modem that terminates the analogue 2-wire connection from the fax machine.

6.3. Bearer services

UMTS phase 1 shall support GSM phase 2+ Release '99 data bearer services :

***Circuit switched data*:** Circuit switched data services and "real time" data services shall be provided for interworking with the PSTN/ISDN so that the user is unaware of the access network used (UMTS and GSM access network or handover between access networks). Both transparent (constant delay) and non-transparent (zero error with flow control) services shall be supported. These data services shall operate with minimum loss of data on handover between the GSM access network and the UTRAN.

Packet switched data: Packet switched data services shall be provided for interworking with packet networks such as IP-networks and LANs. The standard shall provide mechanisms which ensure the continuity of packet based services upon handover e.g. between GSM and UMTS.

6.4 Emergency Call

UMTS Phase 1 R'99 shall support an emergency call teleservice as defined in [1].

7 UTRAN capabilities

NOTE : The term performance refers in this clause to the realisation of the QoS objectives inside the UTRAN.

UTRAN capabilities for UMTS are the complete set of bearer capabilities and bearer control specified in UMTS 22.105. The UTRAN shall have the following capabilities :

1) A UTRAN shall be contained within only one UMTS network. (In the case of a network with a phase 1 UMTS core network consisting of an evolved GSM core network, it shall be possible to connect the UTRAN to the GSM NSS and GPRS backbone infrastructures or only one of them.)

2) The UTRAN shall support the set-up, re-negotiation and clearing of connections with a range of traffic and performance characteristics. The re-negotiation of QoS attributes / bearer attributes may result from an upper layer request or a change in the radio conditions (handover, cell load modification,...) and may be mobile station (e.g. by an application or the user via an application) or network initiated. It shall be possible for the UTRAN to apply the following traffic policing mechanisms such as :
   . connection admission control (CAC) during connection set-up and re-negotiation,
   . flow control (FC) on a connection during its lifetime,
   . usage parameter control (UPC) on a connection during its lifetime..

3) The UTRAN shall support a range of traffic and performance characteristics for the connectionless traffic.

4) The range of traffic and performance characteristics that shall be supported by UTRAN for connection oriented and connectionless traffic is indicated in TS 22.105 sections 5.2 to 5.4.

5) The UTRAN shall allow one mobile termination to handle more than one bearer service simultaneously and to have bearer services of different connection modes. It is nevertheless expected that the terminal and network capabilities will put some limitations on the number of bearer services that can be handled simultaneously. It shall be possible for each connection to have independent traffic and performance characteristics. It shall be possible for each connectionless message to have independent traffic and performance characteristics.

6) Seamless handover of active bearer service(s) from a single mobile termination, between cells of one UTRAN shall be supported. This shall result in an imperceptible loss of speech (if any) for the user of telephony services and without incurring degradation of QoS for data services.

7) At least one Capability Class shall be standardised for mobile terminals supporting more than one UTRA mode (e.g. UTRA FDD and TDD modes). It shall support monitoring of the different types of cells in idle mode (cell reselection procedure) and active mode (handover preparation procedure).

8) For UMTS networks composed of UTRANs with different UTRA modes, the cell selection and the paging procedures shall accommodate to the fact that service areas may be covered by cells supporting one specific mode (e.g. FDD or TDD mode), and cells supporting more than one mode (e.g. FDD and TDD modes).

9) Handover of one mobile termination handling one or more bearer services between cells of two UTRANs using different UTRA modes and operated by one single UMTS network operator shall be supported in both directions. Furthermore, handover between cells using two different UTRA modes should be supported similarly to handover within one mode.

10) The UTRAN shall facilitate determination of the location of a UMTS mobile termination. The realisation of a positioning service can be determined by several methodologies, namely *mobile-based positioning*, *network-based positioning*, or a *hybrid position* architecture. It shall be possible for the location precision to be a UMTS network operator choice, with the precision of the location varying from one part of the service area to another. It shall be possible to achieve a minimum precision of around 50 meters in all types of terrestrial radio environments. Location requirements are detailed in UMTS 22.105 subclause 8.5.

11) The UTRAN shall support the Localised Service Area (LSA) concept. It shall facilitate user-dependent radio resource selection based on LSA (e.g. when user is located at his office, radio coverage provided with indoor radio solutions should be preferred). Corresponding GSM feature has been specified in GSM 02.43.

12) The optimisation of the UTRAN radio interface shall be based upon the objectives expressed in UMTS 22.105 clause 5.

13) Standardised protocols shall be defined for the operation, administration and maintenance of each of the UTRAN components in UMTS phase 1 in cooperation with ETSI TMN.

14) The USIM requirements defined for later releases of UMTS should be taken into account in the design of UTRAN (for any impact).

8 UTRAN and GSM BSS relationship

There is a special relationship between the UTRAN and GSM access networks as it is expected that UTRANs will start as islands in a sea of GSM BSS. GSM BSS access networks will be a key element for service continuity in UMTS networks. The requirements are the following for UMTS phase 1 :

1) UMTS phase 1 shall support dual mode UMTS/GSM terminals. At least one Capability Class shall be standardised for mobile terminals supporting the GSM and UTRA modes. It shall support monitoring of cells belonging to the two types of access networks in idle mode (cell reselection procedure) and active mode (handover preparation procedure).

2) Cell selection and paging procedures shall be designed to accommodate to the fact that networks may consist of GSM BSS cells, UTRAN cells or a combination of both.

3) For UMTS networks composed of both GSM BSS and UTRAN access networks, handover of bearer services shall be supported between GSM BSS and UTRAN cells, in both directions (i.e. UTRAN to GSM BSS and GSM BSS to UTRAN). Some traffic flows may be re-negotiated, temporarily released or re-established during these handover procedures because of the different bearer capabilities of the GSM BSS and UTRAN access networks.

9 UMTS Core Network

NOTE 1: The term performance refers in this clause to the resource level usage and reliability of the UMTS core network.

NOTE 2: SMG1 does not use the (circuit switched) notion of call to define UMTS phase 1 core network capabilities. If SMG12 decides to use this notion to fulfil SMG1 requirements, it shall be noted that it is not required for phase 1 UMTS core networks to support calls with multiple connections. Multiple connections for a single mobile could be realised through several calls.

In the first phase of UMTS, the UMTS core network capabilities are a superset of the phase 2+ release 99 GSM core network capabilities. The additional requirements for the phase 1 UMTS core network are the following :

1) The phase 1 UMTS core network shall support circuit switched data service capability of at least 64 kbit/s per user. *This shall not limit the user from choosing lower data rates.*

2) The phase 1 UMTS core network shall support packet switched data service capabilities of at least 2 Mbit/s peak bit rate per user. *This shall not limit the user from choosing lower data rates.*

3) The phase 1 UMTS core network shall enable set-up, re-negotiation and clearing of connections with a range of traffic and performance characteristics. . The re-negotiation of QoS attributes / bearer may be caused by an application or the user via an application (see UTRAN capability section). It shall be possible to apply traffic policing (e.g. connection admission control, flow control, usage parameter control...) on a connection during its set-up and lifetime.

4) The phase 1 UMTS core network shall support a range of traffic and performance characteristics for connectionless traffic.

5) The range of traffic and performance characteristics that shall be supported by the phase 1 UMTS core network for connection oriented and connectionless traffic shall be at least those of GPRS phase 2+ release 99. This means that the support of the full set of bearer services defined in TS 22.105 section 5.2 to 5.4 is not required for the phase 1 UMTS core network.

6) Point to multipoint communication configurations as defined in TS 22.105 shall be supported by the phase 1 UMTS core network.

7) The phase 1 UMTS core network shall allow one mobile termination to handle more than one bearer service simultaneously and to have bearer services of different connection modes. It is nevertheless expected that the terminal and network capabilities will put some limitations on the number of bearer services that can be handled simultaneously. It shall be possible for each connection to have independent traffic and performance characteristics. It shall be possible for each connectionless message to have independent traffic and performance characteristics.

8) In order to facilitate the development of new applications, it shall be possible to address applications to/from a phase 1 UMTS mobile termination in connection oriented and connectionless traffic modes (e.g. the notion of Internet port).

9) Operator specific services based on the VHE concept shall be supported~~provided~~ by the phase 1 UMTS core network. This functionality could be provided through available toolkits (such as CAMEL, MExE, WAP and SIM Toolkit).

10) If UMTS authentication is invoked while a user has services active, the authentication shall not degrade the user services.

11) The phase 1 UMTS core network shall support the generation of standardised charging records based upon parameters such as the dialled number, call duration, traffic (volume, bit rate) and perceived Quality of Service provided to the user.

12) The phase 1 UMTS core network shall support on-line billing. Billing of 3rd party value added services with the concept of one-stop-billing shall be supported by the phase 1 UMTS core network through standardised procedures.

13) The phase 1 UMTS core network shall support both bilateral and (possibly via 3rd party) automatic roaming procedures to UMTS networks with improved security as defined by SMG10.

14) The phase 1 UMTS core network shall support interworking with PSTN, N-ISDN, GSM, X.25 and IP networks with their respective numbering schemes.

15) It shall be possible for the standardised classes of phase 1 UMTS mobile terminals supporting the GSM BSS and UTRAN radio interfaces to roam in GSM networks and receive GSM services.

16) Standardised protocols shall be defined for the operation, administration and maintenance of the UMTS phase 1 core network in cooperation with ETSI TMN.

17) The USIM requirements defined for later releases of UMTS should be taken into account in the design of the phase 1 UMTS core network.

~~19)~~18) The phase 1 UMTS core network shall provide an effective solution of inter-network traffic and signalling in case of global roaming.

~~21)~~19) The phase 1 UMTS core network shall support facilities for monitoring and measurement of traffic flows and characteristics within the network eg for congestion control.

~~22)~~20) The phase 1 UMTS core network shall support single and multiple numbering schemes described in 22.101

10 USIM

In the first phase of UMTS, the USIM shall be developed on the basis of the phase 2+ release 99 GSM SIM. The additional requirements for the phase 1 UMTS USIM are as follows :

1) USIM shall provide new and enhanced security features (e.g. mutual authentication...) as defined by SMG10.

2) The UMTS mobile terminal shall support phase 2 and phase 2+ GSM SIMs as access modules to UMTS networks. The services that can be provided in this case may be limited to GSM like services provided by that UMTS network. UMTS mobile terminals shall not support 5V SIMs. It shall be up to the UMTS network operator to accept or reject the use of GSM SIM as access modules in its network.

3) It shall be possible to have multiple applications on the UMTS IC Card (UICC). There shall be a secured and easy mechanism for application selection. An authorised access for each application is mandatory, however it shall be possible to have shared directories between applications where appropriate. The UICC shall be capable of supporting SIM and USIM applications.

4) Simultaneous activation of several USIMs on one mobile terminal need not be supported in UMTS phase 1.

5) A standardised mechanism allowing highly secure transfer of applications and/or associated data to/from the UICC shall be supported in UMTS phase 1.

11 Security Features

Security requirements for UMTS Phase 1 Release 99 are defined in the UMTS 21.133 specification [6].

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)608***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.002	**CR**	001	Current Version:	3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG: SA#5 *list TSG meeting no. here ↑*

for approval: **X** for information: *(only one box should be marked with an X)*

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122002

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs Other 3G core specifications [ ] → List of CRs:

affected:	Other 2G 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:	

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.002 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Bearer Services (BS) supported by a ~~GSM~~ Public Land Mobile Network (PLMN) (3G TS 22.002 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines a set of Bearer Services to be provided within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The~~is 3G TS~~ present document defines a set of Bearer Services to be provided to ~~GSM~~ PLMN subscribers by a ~~GSM~~ PLMN itself and in connection with other networks. This TS should also be used as a reference for defining the corresponding required mobile network capabilities~~ which are specified by means of the "GSM PLMN connection type" concept, defined in GSM 03.10 [4]~~.

~~The recommended provision of the Bearer Services is under the control of the GSM MoU and is out of the scope of ETSI TC SMG.~~

Bearer Services not included in this TS that require modifications to the ~~GSM~~ signalling specifications should not be introduced unilaterally by a mobile network operator.

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".

[3] ~~GSM~~ TS 2~~0~~2.0~~0~~4: "~~Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

~~[4] GSM 03.10: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) connection types".~~

~~[5] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".~~

[4~~6~~] TS ~~GSM~~ 2~~0~~7.0~~0~~1: "~~Digital cellular telecommunications system (Phase 2+);~~ General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[5~~7~~] ~~GSM 0~~TS 27.0~~0~~2: "~~Digital cellular telecommunications system (Phase 2+);~~ Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities".

[6~~8~~] ~~GSM 0~~TS 27.0~~0~~3: "~~Digital cellular telecommunications system (Phase 2+);~~ Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities".

[7~~9~~] ~~GSM 0~~TS 27.0~~0~~5: "~~: "Digital cellular telecommunications system (Phase 2+);~~ Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE - DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)".

[8~~10~~] ~~GSM 0~~TS 29.0~~0~~2: "~~Digital cellular telecommunications system (Phase 2+);~~ Mobile Application Part (MAP) specification".

~~[11] GSM 09.03: "Digital cellular telecommunications system; Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".~~

~~[12] GSM 09.04: "Digital cellular telecommunications system; Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".~~

~~[13] GSM 09.05: "Digital cellular telecommunications system; Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access".~~

[9~~14~~] ~~GSM 0~~TS 29.006: "~~Digital cellular telecommunications system (Phase 2+);~~ Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet switched data transmission services".

[10~~5~~] ~~GSM 0~~TS 29.007: "~~Digital cellular telecommunications system (Phase 2+);~~ General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[11~~6~~] ~~GSM 0~~TS 29.010: "~~Digital cellular telecommunications system (Phase 2+);~~ Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".

[12~~7~~] ~~GSM 0~~TS 29.011: "~~Digital cellular telecommunications system (Phase 2+);~~ Signalling interworking for supplementary services".

[13~~8~~] ~~CCITT~~ ITU-T Recommendation V.120: "Support by an ISDN of data terminal equipments with V-series type interface with provision for statistical multiplexing".

[14~~9~~] ~~GSM 0~~TS 22.060: "~~ Digital cellular telecommunications system (Phase 2+);~~General Packet Radio Service (GPRS); Service description; Stage 1"

[15~~20~~] ~~GSM 0~~TS 27.060: "~~Digital cellular telecommunications system (Phase 2+);~~ General Packet Radio Service (GPRS); Mobile Station (MS) supporting GPRS"

[16~~21~~] ~~GSM 0~~TS 29.060: "~~Digital cellular telecommunications system (Phase 2+);~~ General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface"

[17] TR 21.905: "Vocabulary for 3GPP Specifications"

0.2 Abbreviations

Abbreviations used in this TS are listed in GSM 01.04 [1] and TR 21.905 [17].

1 Framework for defining Bearer Services

Bearer Services are described by attributes, which are intended to be independent. These attributes are described and defined in GSM 02.01 [2]. They are grouped into four categories:

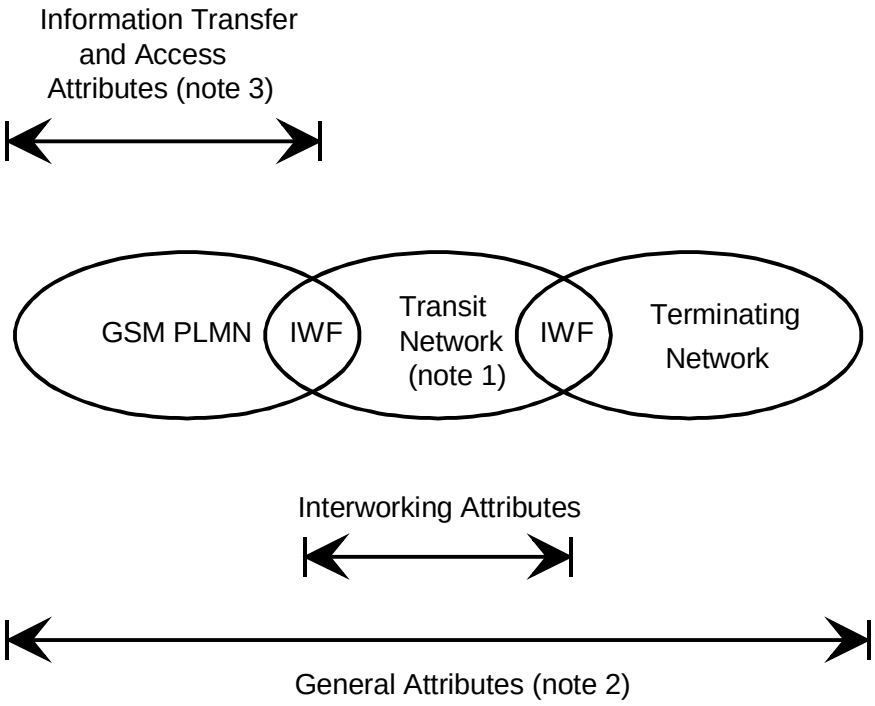
i) Information transfer attributes, which characterize the network capabilities for transferring information from a user access point in a ~~GSM~~ PLMN to a user access point in another network. (Refer to GSM 02.01 [2] ~~and GSM 04.02 [5] for definitions of user access points, originating and terminating networks~~).

ii) Access attributes, which describe the means for accessing network functions or facilities as seen at the access point in the PLMN (see GSM 02.01 [2]).

iii) Interworking attributes, which describe properties of the terminating network and its access point. The terminating network may include another ~~GSM~~ PLMN or the originating PLMN ~~(see GSM 02.01 [2])~~.

iv) General attributes, which deal with the service in general.

Figure 1 shows the relation between the groups of attributes and their fields of applicability.



NOTE 1: A transit network may not exist for a Bearer Service.
NOTE 2: Communication may be established from either end.
NOTE 3: The information transfer and access attributes of a Bearer Service relate to a direct peer-to-peer communication of:
- TE to TE;
- TE to a network gateway (supporting, for example, PSTN interworking); or
- network gateway to a TE.

Figure 1: Relation between the groups of attributes and fields of applicability

The following table lists the individual attributes in each of the four groups. The ~~GSM~~ Bearer Service definitions in this specification are based on the "Minimal Set" of attributes.

Table 1: List of Bearer Service attributes

	Minimal Set
Information Transfer Attributes	
Information Transfer Mode	X
Information Transfer Rate	X
Information Transfer Capability	X
Establishment of Communication	X
Symmetry	X
Communication Configuration	X
Data Compression	
Access Attributes	
Access Channel and Rate	
Signalling Access Protocols	
Information Access Protocols	
Information Access Structure	X
Information Access Rate	X
Interworking Attributes	
General Attributes	
Supplementary Services Provided	
Quality of Service	X
Operational and Commercial	

Attributes that are not part of the minimal set provide further technical detail and are required to fully define the use of each Bearer Service.

General Packet Radio Service (GPRS) is specified in ~~GSM~~ TS 2~~0~~2.0~~6~~0 [1~~4~~9].

See ~~the GSM 07 series~~ specifications [~~4~~6], [~~5~~7], [~~6~~8], [~~7~~9], [15~~20~~] for information about the Signalling Access Protocols, Information Access Protocols and related access attributes.

~~GSM s~~Supplementary services are defined in ~~GSM~~ TS 2~~0~~2.0~~0~~4 [3].

Intercommunication is required with services in the PSTN, ISDN, ~~CSPDN,~~ PDN, PSPDN and other PLMNs. The capabilities that describe the Interworking Attributes are described in ~~GSM 03.10 [4] and the GSM 09 series~~ specifications [~~8~~10] to [10~~5~~] and [16~~21~~].

2 Bearer Service categories

All Bearer Service categories provide information transfer between R/S reference points and allow the use of sub-rate information streams which are rate-adapted.

The Bearer Services can be grouped into the following categories:

- Unrestricted Digital Information (UDI);

  Provides the transfer of unrestricted digital information.

- 3,1 kHz (External to the PLMN);

  Used to select a "3,1 kHz audio" interworking function at the MSC. This service category is used when interworking with the ISDN or PSTN "3,1 kHz audio" service and includes the capability to select a modem at the interworking function. "External to the PLMN" indicates that the "3,1 kHz audio" service is only used outside of the PLMN, in the ISDN/PSTN. The connection within the PLMN, user access point to the interworking function, is an unrestricted digital connection.

- PAD;

  Provides an asynchronous connection to a PAD. This enables PLMN subscribers to access a packet network (PSPDN/ISDN). ~~See GSM 09.05 [13] for service and interworking specifications.~~

  Note: From release 99 onwards only Basic PAD access is supported.

- Packet;

  Provides a synchronous connection that enables PLMN subscribers to access a packet network (PSPDN/ISDN). See ~~GSM 0~~TS 2~~9~~.0~~6~~ [9~~14~~] for service and interworking specifications.

NOTE: From release 99 onwards only Basic Packet access is supported;
General Packet Radio Service (GPRS). GPRS provides Internet (IP) and X.25 interworking with external networks. See TS 22.060 [14].~~GSM 02.60.~~

3 Bearer Services

This clause provides a list of the existing ~~GSM~~ Bearer Services and indicates the values for each attribute in the minimal set.

The following attributes have the same value for all ~~GSM~~ Bearer Services. Their values are as follows:

Information Transfer Mode:	"Circuit" (note 1);
Information Transfer Rate:	Not applicable (note 2);
Establishment of Communication:	"Demand";
Symmetry:	"Bi-directional Symmetric" (note 3);

Communication Configuration: "Point to point".

NOTE 1: GPRS (BS 70) requires "packet" information transfer mode.

NOTE 2: The Information Transfer Rate attribute is not applicable because it depends on the reference point assumed in the ~~GSM~~ PLMN, transit or terminating network.

NOTE 3: GPRS (BS 70) require a value of "Bi-directional Asymmetric".

All ~~GSM~~ asynchronous NT Bearer Services may support data compression to enhance user data throughput.

~~GSM~~ NT Bearer Services 20 and 30 may support V.120 interworking, enabling data terminals connected to an MS to interwork with V.120 [13~~8~~] terminal adapters on the ISDN as shown in the figure 2 below.

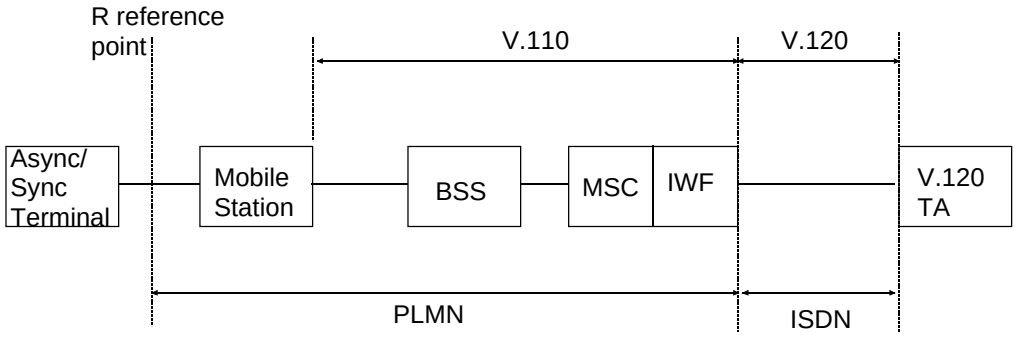


Figure 2: Model of GSM V.120 Interworking

Table 2 contains the list of the Bearer Services and the values for the remaining attributes in the minimal set.

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)609***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.004	**CR**	001	Current Version:	3.0.0

3G specification number ↑ *↑ CR number as allocated by 3G support team*

For submision to TSG: SA#5 *list TSG meeting no. here ↑*

for approval: **X** for information: *(only one box should be marked with an X)*

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122042

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs Other 3G core specifications [ ] → List of CRs:

affected:	Other 2G 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:	

<--------- double-click here for help and instructions on how to create a CR.

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines a recommended set of supplementary services to the Teleservices and Bearer services which will be supported within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The purpose of this Technical Specification (TS) is to define a recommended set of supplementary services to the Teleservices and Bearer services which will be supported by a ~~GSM~~ PLMN in connection with other networks as a basis for the definition of the network capabilities required.

~~The descriptions of the different supplementary services are contained in the GSM 02.80 series.~~

Supplementary services not covered in ~~GSM 02.04~~TS 22.004 ~~or GSM 02.80 series~~ cannot be introduced unilaterally in any ~~GSM~~ PLMN if they require modification of the ~~GSM~~ signalling Specifications.

Technical realization of supplementary services is described in ~~GSM 0~~TS 23.011 and 2~~0~~4.010.

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] GSM 02.01: "Digital cellular telecommunication system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".

[3] TS~~GSM 0~~22.002: "~~Digital cellular telecommunication system (Phase 2+);~~ Bearer Services (BS) supported by a ~~GSM~~ Public Land Mobile Network (PLMN)".

[4] GSM 02.03: "Digital cellular telecommunication system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

[5] ~~GSM 0~~TS 22.030: "~~Digital cellular telecommunication system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[6] ~~GSM 0~~TS 22.067: "~~Digital cellular telecommunication system (Phase 2+);~~ enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".

[7] ~~GSM 0~~TS 02.081: "~~Digital cellular telecommunication system (Phase 2+;~~ Line identification supplementary services - Stage 1".

[8] ~~GSM 0~~TS 22.082: "~~Digital cellular telecommunication system (Phase 2+;~~ Call Forwarding (CF) supplementary services - Stage 1".

[9] TS ~~GSM 0~~22.083: "~~Digital cellular telecommunication system (Phase 2+;~~ Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".

[10] TS~~GSM 2~~02.084: "~~Digital cellular telecommunication system (Phase 2+;~~ MultiParty (MPTY) supplementary services - Stage 1".

[11] TS ~~GSM 0~~22.085: "~~Digital cellular telecommunication system (Phase 2+;~~ Closed User Group (CUG) supplementary services - Stage 1".

[12] ~~GSM 0~~TS 22.086: "~~Digital cellular telecommunication system (Phase 2+;~~ Advice of Charge (AoC) supplementary services - Stage 1".

[13] TS 2~~GSM 0~~2.0~~8~~8: "~~Digital cellular telecommunication system (Phase 2+;~~ Call Barring (CB) supplementary services - Stage 1".

[14] TS 22.072: "Call Deflection (CD) - Stage 1".

[15] TS 22.087: "User-to-user signalling (UUS) - Stage 1".

[16] TS 22.091: "Explicit Call Transfer (ECT) supplementary services - Stage 1".

[17] TS 22.093: "Call Completion to Busy Subscriber (CCBS) - Stage 1".

[18] TS 22.096: "Calling Name Presentation (CNAP) - Stage 1".

[19~~4~~] ~~GSM 0~~TS 23.011: "~~Digital cellular telecommunication system (Phase 2+;~~ Technical realization of supplementary services".

[20~~15~~] TS ~~GSM 0~~24.010: "~~Digital cellular telecommunication system (Phase 2+);~~ Mobile radio interface layer 3 Supplementary services specification General aspects".

[21~~16~~] ~~GSM 0~~TS 24.080: "~~Digital cellular telecommunication system (Phase 2+);~~ Mobile radio interface layer 3 supplementary services specification Formats and coding".

[22~~17~~] ~~CCITT~~ITU-T Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

[23] TS 22.101: "UMTS Service Principles".

[24] TS 22.105: "Services and service capabilities".

[25] TR 21.905: "Vocabulary for 3GPP Specifications"

1.2 Abbreviations

Abbreviations and acronyms used in this TS are listed in GSM 01.04 and TR 21.905 [25].

2 General

2.1 Supplementary service

A supplementary service modifies or supplements a basic Telecommunication service.

~~NOTE 1: Provision of supplementary services by PLMN operators may be considered as essential (E) or additional (A). E supplementary services shall be made available in all GSM PLMNs. A supplementary services may be offered by GSM PLMN operators for national service and can be made available internationally on the basis of bilateral agreement.~~

NOTE 1~~2~~: Offered supplementary services may be used by subscribers/users at their discretion.

2.2 Concepts associated with supplementary services

For the purpose of this TS the following terms are defined:

Provision

An action to make a service available to a subscriber. The provision may be:

- general: where the service is made available to all subscribers (subject to compatibility restrictions enforced) without prior arrangements being made with the service provider.

- pre-arranged: where the service is made available to an individual subscriber only after the necessary arrangements have been made with the service provider.

Withdrawal

An action taken by the service provider to remove an available service from a subscriber's access. The withdrawal may be:

- general: where the service is removed from all subscribers provided with the service.

- specific: where the service is removed on an individual basis from subscribers provided with the service.

Registration

The programming by the service provider or subscriber of information to enable subsequent operation of a service. The programming action involves input of specific supplementary information. For certain services the registration procedure may cause activation whilst for others the service may already be in the action phase.

Erasure

The deletion by the service provider, the subscriber or the system of information stored against a particular service by a previous registration(s).

Activation

An action taken by either the service provider, the subscriber or the system to enable a process to run as and when required by the service concerned, resulting in the active phase. Some services can be either "operative" or "quiescent" (not operative) during the active phase according to whether or not the system would be able to invoke or use the service.

Deactivation

An action taken by either the service provider, the subscriber or the system to terminate the process started at the activation.

Invocation

An action to invoke the service required, taken by the subscriber (e.g. pressing a specific button) or automatically by the network or terminal as a result of a particular condition (e.g. calling number identification for each incoming call).

Normal operation with successful outcome

Description of the normal operation of the service, the normal served subscriber's actions and the system response. Decision points, timing and call progress signals would be some of the aspects defined for the service if they can be perceived by the subscriber.

Interrogation

The request by the subscriber to the PLMN to provide information about a specific supplementary service. This information can be requested by a:

- status check;

  The following values can be returned by the PLMN:

  - not supported

  - active and operative

  - active and quiescent

- not active

Not all values are applicable to all supplementary services.

- data check;

  This interrogation function compares the data input by the subscriber during an interrogation procedure with the information stored in the PLMN. The PLMN signals an appropriate indication (e.g. "check is positive" or "check is negative").

- data request;

  This interrogation function enables the subscriber to obtain confirmation of her input data. The PLMN signals an appropriate indication (e.g. "the forwarded-to number is etc."). The response to a data request may comprise the status of the service (e.g. not active).

Exceptional operation or unsuccessful outcome

Abnormal situations not described in "normal operation with successful outcome". Procedures on time-out, unexpected signalling response and other such events would be defined.

Interaction with other supplementary services

When more than one supplementary service is active, new logical situations, decisions, priorities, etc., may arise. This section would identify and define the resolution of such situations as they affect subscriber perception of the service. Special procedures may therefore be required, e.g. to allow, where possible, the simultaneous use of different supplementary services by one mobile subscriber.

Interworking considerations

Identification of subscriber perceptions when a call exits from an ISDN/PLMN to another network or enters an ISDN/PLMN from another network (e.g. PSTN).

Unstructured SS Operations

These operations are characterized by:

- In the mobile to network direction the transparent transport of MMI strings entered by the user to the network.

  In the network to mobile direction the transparent transport of text strings that are displayed by the mobile for user information.

- transparent transfer of data between an application in the MS and a corresponding application in the network.

These operations provide capabilities that can either be used as part of operator specified services, or to facilitate the early introduction of ~~GSM~~ specified services.

NOTE: This Specification does not distinguish between subscriber, user and customer, since all three do not fully cover the textual needs. Generally the term "subscriber" is used, even if this person is not having the subscription.

3 Categories and framework of supplementary services

3.1 Framework for the description of supplementary services

GSM 02.01 [2] and TS 22.101 [23] describe~~s~~ the principles of the Telecommunication services ~~provided in a GSM PLMN~~. ~~It~~ They also defines the concepts of Telecommunication services and describes their characterization by

appropriate attributes. Bearer services and Teleservices, which are offered by a ~~GSM~~ PLMN in connection with other networks, are ~~respectively~~ defined in ~~GSM 0~~TS 22.002 [3], TS 22.105 [24] and GSM 02.03 [4]. Besides these basic Telecommunication services, their enhancement or modification by supplementary services need also to be offered.

A supplementary service modifies or enhances a basic Telecommunication service and, hence, cannot be offered to a subscriber on a stand alone basis. It must be offered together with or in association with a basic Telecommunication service. The same supplementary service may be offered with a number of different Telecommunication services. For applicability of a Supplementary Service to a Telecommunication service refer to annex A.

Table 3.1/~~GSM 02.04~~TS 22.004 (identical to table 1/GSM 02.01 [2] and to table 1 of ~~CCITT~~ITU-T Recommendation I.210 [22]) illustrates the description of Telecommunication services.

Table 3.1/TS 22.004~~GSM 02.04~~: Categorisation of Telecommunication services

TELECOMMUNICATION SERVICE			
BEARER SERVICE		TELESERVICE	
Basic Bearer Service	Basic Bearer service + supplementary services	Basic Teleservice	Basic Teleservice + supplementary service

Provision and withdrawal of a supplementary service, with the exception of Closed User Group, shall apply to all basic services the subscriber subscribes to.

Registration, erasure, activation and deactivation of a supplementary service shall apply to one or more group of basic services. The groups of basic services are defined to avoid handling of many basic service codes.

An operation is effective on the basic services, within the basic service group, which have been provisioned and for which the supplementary service is applicable. The fact that a basic service is provisioned but is not supplied by the network shall not lead to reject the request. The request shall be accepted since there is one basic service within the group(s) which is provisioned and for which the supplementary service is applicable. For applicability of a Supplementary Service to a basic service or service group refer to annex A.

The basic service groups are define in table 3.2/TS~~GSM 02.04~~22.004.

Table 3.2/TS 22.004~~GSM 02.04~~: List of basic service groups

Basic service group		**Basic service (1) (2)**	
number	**name**	**Number (2)**	**name**
1	Speech	TS 11 TS 12	Telephony Emergency call
2	Short message service	TS 21 TS 22 TS 23	Short message MT/PP Short message MO/PP Short message CB
3 - 5	Not allocated		
6	Facsimile services	TS 61 TS 62	Alternate speech and facsimile group 3 Automatic facsimile group 3
7	All Data circuit asynchronous	BS 20	General asynchronous bearer service
8	All Data circuit synchronous	BS 30	General synchronous bearer service
12	Voice group services	TS 91 TS 92	Voice Group Call Service Voice Broadcast Service
13	All GPRS access	BS 70	GPRS bearer service
NOTE 1: Basic services are defined in ~~GSM~~ TS 02.02 [3] and GSM 02.03 [4]. NOTE 2: TS: Teleservice BS: Bearer service.			

3.2 Categories of supplementary services

Below follows a list of the possible categories of supplementary services related to provision, withdrawal, registration, erasure, activation, deactivation, invocation and interrogation.

Provision of a supplementary service can be made on a subscription basis, i.e. after pre-arrangement with the service provider, or the supplementary service can be made generally available to all mobile subscribers having access to ~~GSM~~ PLMNs.

Withdrawal of a supplementary service can be as a result of a subscriber's request or for administrative reasons. Both withdrawal actions are performed by the service provider.

Registration of a supplementary service is only applicable to those supplementary services in which specific data is required to enable subsequent operation of the service. This registration can be the result of provision or it can be a subscriber controlled procedure. Registration of a supplementary service may mean simultaneous activation of that service.

Erasure of a supplementary service is only applicable to those supplementary services for which registration is necessary. It can be the result of withdrawal, it can be the result of a new registration overruling, and thus effectively erasing the previous registration, or it can be a subscriber controlled procedure. Erasure of a Supplementary Service may mean simultaneous deactivation of that service.

Activation of a supplementary service can be the result of provision. In some cases the supplementary service is only activated if the conditions in the subscription options are met. A supplementary service can also be activated by means of a procedure controlled either by the mobile subscriber or the service provider. Some supplementary services may also be activated as a result of registration.

Deactivation of a supplementary service can be the result of withdrawal or erasure of the service. In some cases the supplementary service is deactivated if the conditions in the subscription options are not met. A supplementary service can also be deactivated by means of a procedure controlled either by the mobile subscriber or the service provider. A supplementary service can be automatically deactivated at the end of a call if the supplementary service was specifically activated for that call. Finally, a supplementary service may be automatically deactivated by the network as a consequence of activation of another supplementary service if it conflicts with the other activated supplementary service.

Invocation of a supplementary service can take place by means of a subscriber controlled procedure or automatically by the network as a result of a particular condition.

Interrogation of a supplementary service is only applicable for a few supplementary services for which it is useful to get information from the network about the status or relevant data concerning the supplementary service.

4 Supported supplementary services

Table 4.1/~~GSM 02.04~~TS 22.004 gives a list of possible supplementary services implemented in the ~~GSM~~ PLMN, the definitions of which are given in the ~~GSM 02.80 and 02.90 series of~~ specifications [6]-[18].

~~For the recommended provision of services classified as Additional or Essential (A, E1, E2, or E3), see relevant GSM/PCN MoU documents.~~

~~The availability of the detailed technical specifications of the Supplementary Services listed in GSM 02.04, i.e. the possibility of implementing them, is to be found in the GSM Action Plan/Release List.~~

NOTE: All supplementary services in this table are implemented in the PLMN. Subscribers can use these supplementary services for calls within the PLMN, but also in interworking situations with the PSTN (if supported) and the ISDN. In interworking situations with CSPDN and PSPDN these supplementary services can only be used during call set up (e.g. call forwarding services). When a call is established between an MS and a PDN, the MS acts as a data network terminal and can consequently only use the supplementary services that are supported by the relevant PDN. The PDN supplementary services are not described in this Specification; they can be found in the relevant PDN Specifications. However, the interworking situations with PDNs still require further study.

It has been identified as a requirement that the man-machine interface in ~~GSM~~ PLMNs regarding supplementary services should be compatible as much as possible with the man-machine interface in the fixed networks as defined in CEPT groups, e.g. the same use of keypad information or function keys.

Table 4.1/ TS 22.004 ~~GSM 02.04~~ lists the categories for all supported supplementary services. Below the abbreviations used are listed.

Registration:

p = as a result of provision

a = service provider controlled procedure

s = subscriber controlled procedure

- = not applicable

Erasure:

w = as a result of withdrawal

s = subscriber controlled procedure

r = due to new registration

- = not applicable

Activation:

p = as a result of provision

r = as a result of registration

s = subscriber controlled procedure

a = service provider controlled procedure

c = when the conditions in the subscription options are met

- = not applicable

Deactivation:

w = as a result of withdrawal

s = subscriber controlled procedure

a = service provider controlled procedure

e = as a result of erasure

n = when the conditions in the subscr. options are not met

c = at the end of a per call basis activation

- = not applicable

Invocation:

n = automatic invocation by the network as a result of a particular condition

u = user invocation, by means of a control procedure

- = not applicable

Interrogation:

s = status check

dr = data request

- = not applicable

Table 4.1/ TS 22.004~~GSM 02.04~~: Supported Supplementary Services

Supplementary Service							
~~GSM~~ Spec/section		Reg	Eras	Act	Deact	Inv	Int
~~0~~22.067	eMLPP	a/s	w/r	-	-	n	dr
2~~0~~2.072, Call Deflection SS							
	CD	-	-	p	w	u	-
2~~0~~2.081. Number Identif. SS							
	CLIP	-	-	p	w	n	s
	CLIR	-	-	p	w	n	dr
	CoLP	-	-	p	w	n	s
	CoLR	-	-	p	w	n	s
~~0~~22.082. Call Offering SS							
	CFU	a/s	w/r/s	r/s	e/s	n	dr
	CFB	a/s	w/r/s	r/s	e/s	n	dr
	CFNRy	a/s	w/r/s	r/s	e/s	n	dr
	CFNRc	a/s	w/r/s	r/s	e/s	n	dr
~~0~~22.083. Call Completion SS							
	CW	-	-	a/s	a/s	n	s
	HOLD	-	-	p	w	u	-
2~~0~~2.084. Multi Party SS							
	MPTY	-	-	-	-	u	-
2~~0~~2.085. Comm. of Interest SS							
	CUG	-	-	p	w	u/n	-
2~~0~~2.087. User-to-User SS							
	UUS	-	-	s	c	u/n	-
~~0~~22.086. Charging SS							
	AoCI	-	-	p	w	n	-
	AoCC	-	-	p	w	n	-
~~0~~22.088. Call Restriction SS							
	BAOC	a/s	w/r	a/s	s/a	n	dr
	BOIC	a/s	w/r	a/s	s/a	n	dr
	BOIC-exHC	a/s	w/r	a/s	s/a	n	dr
	BAIC	a/s	w/r	a/s	s/a	n	dr
	BAIC-Roam	a/s	w/r	a/s	s/a	n	dr
2~~0~~2.067	eMLPP	a/s	w/r/s	-	-	u/n	s/dr
2~~0~~2.091. Call Transfer SS							
	ECT	-	-	p	w	u	-
2~~0~~2.093. Completion of Calls to Busy Subscribers							
	CCBS SS	-	-	p	w	n	
	CCBS Requests			s	s/a/w		dr
~~02.95. Support of Private Numbering Plan SS~~							
	~~SPNP SS~~	~~-~~	~~-~~	~~p~~	~~w~~	~~n~~	~~dr~~
	~~Numbering plans~~	~~a/s~~	~~w/r~~	~~r/s~~	~~e/c~~	~~-~~	~~-~~
~~0~~22.096 Name Identification SS							
	CNAP	-	-	p	w	n	s

Abbreviations used for the Supplementary Services:

CD	Call Deflection
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CoLP	Connected Line Identification Presentation
CoLR	Connected Line Identification Restriction
CFU	Call Forwarding Unconditional
CFB	Call Forwarding on Mobile Subscriber Busy
CFNRy	Call Forwarding on No Reply
CFNRc	Call Forwarding on Mobile Subscriber Not Reachable
CNAP	Calling Name Presentation - (CNAP)
CW	Call Waiting
HOLD	Call Hold
MPTY	Multi Party Service
CUG	Closed User Group
AoCI	Advice of Charge (Information)
AoCC	Advice of Charge (Charging)
UUS	User-to-user signalling
BAOC	Barring of All Outgoing Calls
BOIC	Barring of Outgoing International Calls
BOIC-exHC	Barring of Outgoing International Calls except those directed to the Home PLMN Country
BAIC	Barring of All Incoming Calls
BIC-Roam	Barring of Incoming Calls when Roaming Outside the Home PLMN Country
ECT	Explicit Call Transfer
eMLPP	enhanced Multi-Level Precedence and Pre-emption
SPNP	Support of Private Numbering Plan - (SPNP)
CCBS	Completion of calls to busy subscribers.- (CCBS)

4.1 Support of Line identity services

A PLMN which supports the ~~GSM~~ CLIP service shall also support the CLIR service. A PLMN which supports CoLP service shall also support the CoLR service.

A PLMN which does not support the ~~GSM~~ CLIR service shall ensure that the line identity of a subscriber shall not be displayed to the called party unless the called party has CLIR override capability. A PLMN which does not support the ~~GSM~~ CoLR service shall ensure that the line identity of a subscriber shall not be displayed to the calling party unless the calling party has CoLR override capability.

4.2 Support of Name identity services

(CNAP) : A PLMN which supports the ~~GSM~~ CNAP service shall also support the CLIR service.

A PLMN which does not support the ~~GSM~~ CLIR service shall ensure that the name identity of a subscriber shall not be displayed to the called party.

5 Use of a password option in relation to supplementary services

5.1 Definition

Some Supplementary Services (e.g. Call Barring) can be offered to a subscriber with the subscription option of using a password to control the service. When this option is selected every action (related to that Supplementary Service), such as registration, erasure, activation or deactivation is performed by the mobile subscriber with the concurrent entry of the password.

5.2 Description

When the subscription option "Control of a Supplementary Service by the subscriber using a password" is provided, password handling is supported by the network.

The password will consist of four digits in the range 0000 to 9999.

5.3 Management - normal procedures and successful outcome

5.3.1 Provision of password option

Each Supplementary Service for which the control by the subscriber usage of a password is relevant may be offered with the subscription option "Control of the Supplementary Service". The values of this option will be:

- by the subscriber using a password;
- by the service provider.

NOTE: A service provider needs not to offer this option to its subscribers. However, the support of the password facility is mandatory in the networks for visiting subscribers.

5.3.2 Withdrawal of the password option

The password option may be withdrawn for administrative reasons or due to subscription modification.

5.3.3 Registration of password

If a mobile subscriber selects at provision time the option of using a password for any given Supplementary Service, the password have to be registered at the same time.

Furthermore, the subscriber can change the password by an appropriate control procedure at any time. The control procedure is described in TS ~~GSM 0~~2.0~~3~~0 [5].

5.3.4 Erasure of password

A password can be erased in two ways:

1) Registration of a new password erases the previous one; or
2) Withdrawal of the password option.

5.3.5 Password checking

If the mobile subscriber in an attempt to control a Supplementary Service requiring a password enters a correct password, the corresponding request is then considered by the network.

5.4 Management - exceptional procedures or unsuccessful outcome

If the mobile subscriber in an attempt to control a Supplementary Service requiring a password, or in an attempt to register a new password, enters an incorrect password, the corresponding request will be rejected by the network and the subscriber will be notified.

If the mobile subscriber enters incorrect password more than three consecutive times, all control procedures related to the use of the password are made impossible until the service provider instructs the network to again accept password-related requests from this subscriber.

6 Not used

7 Processing of supplementary service operations

7.1 Processing of operations containing basic service information

The network shall process a registration/erasure/activation/deactivation request indicating basic service information independent of the previous registration/activation status. As a result the network will process these requests for the indicated basic service information only, whereas other registration/activation status information remains unchanged.

Basic service information received by the network within the above supplementary service operations is in the specifications [6]-[18]~~defined in the GSM 04.80 series~~. According to this definition the network may receive a combined basic service indication, e.g. for all basic services. As a result the combined basic service indication may be dissolved (note 1). This has to be taken into account when an interrogation procedure is performed.

In case the operation contains a combined basic service indication (e.g. for all bearer services) the interactions specified in the specifications [6]-[18] ~~in the GSM 02.80 series~~ have to be checked subsequently for each member of the combined service indication. As a result a supplementary service request may be partly rejected due to the interaction requirements (note 2). This has to be taken into account in the acknowledgement to the supplementary service request from the Mobile Station (MS), i.e. the network shall send a notification to the MS that the SS operation request was only partially successful.

NOTE 1**:** Explanatory example

1. **Operation:**
Registration of CFU for "all basic services" to number 1.

2. **Operation**:
Registration of CFU for "Speech" to number 2.

Result:

Registration status for
"Speech": CFU active to number 2.
All other basic service groups: CFU active to number 1.

NOTE 2: Explanatory example

1. **Operation:**
Registration of CFB for "Speech" to number 1.

2. **Operation:**
Activation of BAOC for "Facsimile services".

3. **Operation:**
Registration of CFU for "all basic services" to number 2.

Result:

Registration status for
"Speech": CFU active to number 2, CFB "quiescent" to number 1.
"Facsimile services": BAOC Active, CFU rejected.
All other basic service groups: CFU active to number 2.

7.2 Processing of operations involving multiple Supplementary Services

Normally, SS operations relate to one single Supplementary Service at a time. The network reaction on such operations are described in the specifications [6]-[18] ~~in the GSM 02.80 series~~ sections x.3 (Normal Procedures), x.4 (Exceptional Procedures) and x.6 (Interaction). Also section 7.1 contains information related to this area.

In addition, some groups of Supplementary Services may be controlled collectively, such as Call Forwarding and Barring services. The information contained in such "global" operation (e.g. Forwarded-to-number, Password, Basic Service group(s)) then applies generally to all SS concerned by the operation.

The reaction of the network when receiving such control requests is generally the same as when receiving a number of subsequent single operations to the corresponding Supplementary Services. However, in some cases the action to be taken by the network may be regarded as "exceptional", and therefore the following clarifies the only allowed operations on groups of Supplementary Services:

- If the group "all Call Forwarding services" is subject for a Registration or an Activation request, CFU shall become Active and Operative whilst the conditional CFs (CFC) will become Active and quiescent for the Basic Service groups concerned by the operation. I.e the network behaviour is the same as if the CFCs were Registered/Activated first, followed by Registration/Activation of CFU.

  The No Reply Timer may be a part of this general operation.

  If the Basic Service information provided in the request is not relevant to one or more of the SS involved, the principles in section 7.1 of apply, i.e. the network ignores these parts of the request.

- If the group "all Conditional Call Forwarding services" is subject for a Registration or an Activation request, all CFCs shall become Active and Operative for the Basic Service groups concerned by the operation.

  The No Reply Timer may be a part of this general operation.

  If the Basic Service information provided in the request is not relevant to one or more of the SS involved, the principles in section 7.1 of apply, i.e. the network ignores these parts of the request.

- If the group "all Call Forwarding services" or the group "all Conditional Call Forwarding services" is subject for a Deactivation or an Erasure request, the network shall act as normal, i.e. as if a number of subsequent Deactivations/Erasures were requested. If the Basic Service information provided in the request is not relevant to one or more of the SS involved, the principles in section 7.1 of this specification apply, i.e. the network ignores these parts of the request.

- If any of the groups "all Barring services", "all Outgoing Barring Services" or "all Incoming Barring Services" is subject to a Deactivation request, the network shall act as normal, i.e. as if a number of subsequent Deactivations were requested.

  If the Basic Service information provided in the request is not relevant to one or more of the SS involved, the principles in section 7.1 of this specification apply, i.e. the network ignores these parts of the request.

- If the user requests Password Registration for any other single or group of Barring Services than "all Barring Services" the request will be denied (as only **one** (common) password for the Barring services per subscriber is allowed).

- Interrogation of groups of Supplementary Services is not supported.

7.3 Compatibility Information and Supplementary Services

Within the Single Numbering Scheme it is possible that an incoming call (e.g. PSTN call) do not have an allocated Bearer Capability Information Element. The network cannot at this stage determine the Basic Service requirement and shall, for Supplementary Service purposes, handle the call based on a "default basic service" for the call. If the subscriber has a subscription to telephony then the network shall use telephony as the "default basic service". If the

subscriber does not have a subscription to telephony the HLR shall choose a Basic Service from the set provisioned to the subscriber as the "default basic service".

When an incoming call is subject to Call Forwarding, no modifications or additions to the original BC-IE information, present or not, received by the PLMN shall be sent with the forwarded call.

8 Format of description

The supplementary services are described according to the following format:

0. GENERAL

x.1 DEFINITION

x.2 DESCRIPTION

- x.2.1 Description
- x.2.2 Applicability to telecommunication services
- x.2.3 Terminology

x.3 NORMAL PROCEDURES WITH SUCCESSFUL OUTCOME

- x.3.1 Provision
- x.3.2 Withdrawal
- x.3.3 Registration
- x.3.4 Erasure
- x.3.5 Activation
- x.3.6 Deactivation
- x.3.7 Invocation
- x.3.8 Normal operation with successful outcome
- x.3.9 Quality of service
- x.3.10 Testing
- x.3.11 Interrogation
- x.3.12 Charging requirements

x.4 EXCEPTIONAL PROCEDURES OR UNSUCCESSFUL OUTCOME

x.4.1 Exceptional operation or unsuccessful outcome

x.4.2 Registration

x.4.3 Erasure

x.4.4 Activation

x.4.5 Deactivation

x.4.6 Invocation

x.4.7 Testing

x.4.8 Interrogation

x.4.9 Charging requirements

x.4.10 Roaming in non-supporting networks

x.5 ALTERNATE PROCEDURES

x.6.y.z INTERACTIONS WITH OTHER SUPPLEMENTARY SERVICES

x.7 INTERWORKING CONSIDERATIONS

x.8 DYNAMIC DESCRIPTION OF SERVICE

x.9 OUTSTANDING ISSUES

The letter "x" denominates the supplementary service described in section "x"of the specifications [6]-[18]~~of the GSM 02.80 series of specifications~~. The letter "y" denominates the specification (e.g. TS 22.0y~~GSM 02.y~~) in which the supplementary service denominated by the letter "z" is described and which interacts with the supplementary service that is described in section "x".

Every supplementary service is described according to this format. If a subheading is not included in the text, it means:

- not applicable (e.g. in cases where "registration", "erasure", "activation", etc., do not apply);
- none identified (e.g. no exceptional procedure for "invocation");
- no interaction (in cases where no interaction appears between two supplementary services in section 6).
-

Annex A (normative): Applicability of Supplementary Services to Telecommunication Services

Table A.1 gives the applicability of ~~GSM~~ Supplementary Services to telecommunication services.

Table A.1/~~GSM 02.04~~TS 22.004: Applicability of SSs to telecommunication services

	Telephony	Emergency Call	SMS PTP		SMS-CB	Fax	cct Data	GPRS	Voice Group Servi	
	TS11	TS12	TS21	TS22	TS 23	TS 6x	BS2x, BS3x	BS 70	TS 91	TS
PP	Yes	Yes[9]				Yes	Yes		Yes	Y
)	Yes					Yes	Yes		Yes[6]	Y
P	Yes					Yes	Yes		Yes	Y
R	Yes					Yes	Yes		Yes	Y
.P	Yes					Yes	Yes		Yes	Y
.R	Yes					Yes	Yes		Yes	Y
J	Yes					Yes	Yes		Yes[6]	Y
B	Yes					Yes	Yes		Yes[6]	Y
Ry	Yes					Yes	Yes		Yes[6]	Y
Rc	Yes					Yes	Yes		Yes[6]	Y
[1]	Yes					Yes	Yes		Yes[6]	Y
D[2]	Yes								Yes[6]	Y
Y	Yes								Yes[6]	Y
G	Yes					Yes	Yes		Yes[6]	Y
I	Yes					Yes	Yes			Y
C	Yes					Yes	Yes			Y
S	Yes					Yes	Yes		[7]	
C	Yes		Yes[3]	Yes		Yes	Yes		Yes[6]	Y
C	Yes		Yes[3]	Yes		Yes	Yes		Yes[6]	Y
xHC	Yes		Yes[3]	Yes		Yes	Yes		Yes[6]	Y
	Yes		Yes	Yes[3]		Yes	Yes		Yes[6]	Y
oam	Yes		Yes	Yes[3]		Yes	Yes		Yes[6]	Y
T	Yes								Yes[6]	Y
BS	Yes					Yes	Yes		Yes[6]	Y
IP	Yes		Yes[5]	Yes[5]		Yes	Yes			
AP	Yes		[8]	[8]					Yes[3]	Y
P	Yes		Yes	Yes		Yes	Yes		Yes	Y

1: The applicability of Call Waiting refers to the telecommunication service of the active call and not of the waiting call. The incoming, waiti may be of any kind.
2: If the served mobile subscriber has a call on hold, she may set up another call using the same or a different telecommunication service.
3: The SS is applicable, but generally will not be invoked.
4: For the purposes of applicability of supplementary services, the Alternate speech/unrestricted data (BS61) and speech followed by data belong to the BS-group of the equivalent data service.
5: Both the SMS service centre and the mobile destination can be reached by PNP numbers.
6: The SS is only applicable for dispatchers. For service subscribers the service is not applicable. More detailed description see ~~GSM 0~~TS and ~~GSM 0~~TS 02.069.
7: The interaction of VBS and VGCS with UUS is not defined yet in the protocol (TS~~GSM 0~~ 24.068 and ~~GSM 0~~ TS 24.069).
8: Applicability of SMS PTP to CNAP is for further study.
9: The network shall apply a specific or the default priority level to emergency calls. There is no possibility to change this priority by the subscriber.
Pre-emption of an on-going emergency call is not possible.

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.011	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122042

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines service access procedures presented to the user within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

~~The technical realization of service accessibility in terms of registration, handover, roaming and system selection is defined in the 03 series of GSM specifications.~~

The purpose of this TS is to describe the service access procedures as presented to the user.

Definitions and procedures are provided in this TS for international roaming, national roaming and regionally provided service. These are mandatory in relation to the technical realization of the Mobile Station (MS).

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TR 21.905: " Vocabulary for 3GPP Specifications". ~~GSM 02.07: "Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS)~~ features".

~~[3] GSM 03.02: "Digital cellular telecommunications system (Phase 2+); Network architecture".~~

~~[4] GSM 03.12: "Digital cellular telecommunications system (Phase 2+); Location registration procedures".~~

[3~~5~~] TS ~~GSM 0~~23.0~~2~~2: "~~Digital cellular telecommunications system (Phase 2+);~~ Functions related to Mobile Station (MS) in idle mode and group receive mode".

~~[6] GSM 04.08: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification".~~

~~[7] GSM 05.08: "Digital cellular telecommunications system (Phase 2+); Radio subsystem link control".~~

~~[8] GSM 11.11: "Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module-Mobile Equipment (SIM - ME) interface".~~

[4~~9~~] ~~CCITT~~ITU-T Recommendation Q.1001: "General aspects of Public Land Mobile Networks".

[5~~10~~] ~~GSM 0~~TS 22.043: "~~Digital cellular telecommunications system (Phase 2+);~~ Support of Localised Service Area (SoLSA). Stage 1 ".

[6] TR 21.905: "Vocabulary for 3GPP Specifications"

1.2 Definitions and abbreviations

In addition to those below, abbreviations used in this TS are listed in GSM 01.04 [1] and TR 21.905 [6].

~~GSM~~ PLMN

A Public Land Mobile Network (PLMN) is a network established and operated by an Administration or RPOA for the specific purpose of providing land mobile communication services to the public. It provides communication possibilities for mobile users. For communications between mobile and fixed users, interworking with a fixed network is necessary.

~~A GSM PLMN is a PLMN which is in accordance with the GSM Specifications.~~ A ~~GSM~~ PLMN may provide service in one, or a combination~~s~~, of ~~the~~ frequency band~~s in the GSM Specifications~~.

As a rule, a ~~GSM~~ PLMN is limited by the borders of a country. Depending on national regulations there may be more than one ~~GSM~~ PLMN per country.

A relationship exists between each subscriber and his home ~~GSM~~ PLMN (HPLMN). If communications are handled over another ~~GSM~~ PLMN, this PLMN is referred to as the visited ~~GSM~~ PLMN (VPLMN).

~~GSM~~ PLMN Area ~~(GPA)~~

The ~~GSM~~ PLMN a~~A~~rea ~~(GPA)~~ is the geographical area in which a ~~GSM~~ PLMN provides communication services according to the ~~GSM~~ specifications to mobile users. In the ~~GPA~~PLMN area, the mobile user can set up calls to a user of a terminating network. The terminating network may be a fixed network, the same ~~GSM~~ PLMN, another ~~GSM~~ PLMN or other types of PLMN.

Terminating network users can also set up calls to the ~~GSM~~ PLMN.

The ~~GPA~~PLMN area is allocated to a ~~GSM~~ PLMN. It is determined by the service and network provider in accordance with any provisions laid down under national law. In general the ~~GPA~~PLMN area is restricted to one country. It can also be determined differently, depending on the different telecommunication services, or type of MS.

If there are several ~~GSM~~ PLMNs in one country, their ~~GPA~~PLMN area~~s~~ may overlap. In border areas, the ~~GPA~~PLMN area~~s~~ ~~of GSM PLMNs~~ of different countries may overlap. Administrations will have to take precautions to ensure that cross border coverage is minimized in adjacent countries unless otherwise agreed.

NOTE 1: ~~CCITT~~ITU-T Recommendation Q.1001 [~~4~~9] does not contain a definition of the PLMN area.

~~GSM~~ System Area ~~(GSA)~~

The ~~GSM~~ System Area is defined as the group of ~~GSM~~ PLMN areas accessible by ~~GSM~~ MSs.

Interworking of several ~~GSM~~ PLMNs and interworking between ~~GSM~~ PLMNs and fixed network(s) permit ~~GSM~~ public land mobile communication services at international level.

NOTE 2: The System Area according to [~~4~~9] Recommendation Q.1001 corresponds to the ~~GSM~~ System Area.

~~GSM~~ Service Area

The ~~GSM~~ Service Area is defined in the same way as the Service Area according to ~~CCITT~~ITU-T Recommendation Q.1001 [~~4~~9]. In contrast to the ~~GPA~~PLMN area it is not based on the coverage of a PLMN. Instead it is based on the area in which a fixed network user can call a mobile user without knowing his location. The Service Area can therefore change when the signalling system is being extended, for example.

Regionally Provided Service

Regionally Provided Service is defined as a service entitlement to only certain geographical part(s) of a PLMN, as controlled by the network operator.

Localised Service Area (LSA)

The localised service area concept shall give the operator a basis to offer subscribers different services (e.g. tariffs or access rights) depending on the location of the subscriber. A LSA consists of a cell or a number of cells within a PLMN. (~~GSM 02~~TS 22.0~~4~~3 [5~~10~~]).

2 Roaming

2.1 General requirements

A MS with a valid IMSI may roam and access service in the area authorized by the entitlement of the subscription.

If a communication has been established, the MS will in principle not suffer an interruption within the ~~GSM~~ PLMN area (provided the entitlement of the subscription allows it). Exceptions are possible if no network resources or radio coverage are available locally.

However, if the MS leaves the ~~GSM~~ PLMN area, an established communication may terminate. If the user then wants to continue, another network providing service has to be selected and a new communication has to be established (see clause 3).

3 Provisions for providing continuity of service

3.1 Location registration

~~GSM~~ PLMNs shall provide a location registration function with the main purpose of providing continuity of service to MSs over the whole ~~GSM~~ system area. The location registration function shall be such as to allow:

- Fixed subscribers to call a MS by only using the directory number of the MS irrespective of where the MS is located in the ~~GSM~~ system area at the time of the call.
- MSs to access the system irrespective of the location of the MS.
- MSs to identify when a change in location area has taken place in order to initiate automatic location updating procedures.

~~The system architecture enabling implementation of the above requirements is defined in GSM 03.02 [3]. The technical realization of location registration is defined in GSM 03.12 [4].~~

~~GSM 03.12 [4] also gives the conditions when a location updating has to take place.~~

3.2 Network selection

3.2.1 General

The MS shall support both manual and automatic network selection mechanisms (modes). The MS shall select the last mode used, as the default mode, at every switch-on.

NOTE: By defaulting to the last mode used, e.g. manual network selection, the undesired automatic selection of an adjacent PLMN instead of the desired HPLMN in border areas, can be avoided at switch-on.

The user shall be given the opportunity to change mode at any time.

Except as defined below, the MMI shall be at the discretion of the MS manufacturer.

The MS shall contain display functions ~~in accordance with GSM 02.07 [2],~~ by which Available PLMNs and the Selected PLMN can be indicated.

3.2.2 Procedures

3.2.2.1 General

In the following procedures the MS selects and attempts registration on PLMNs.

In this ETS, the term "PLMN Selection" defines an MS based procedure, whereby candidate PLMNs are chosen, one at a time, for attempted registration.

If registration on a PLMN is successful, the MS shall indicate this PLMN (the "registered PLMN") and be capable of making and receiving calls on it. The identity of the registered PLMN shall be stored on the SIM. However, if registration is unsuccessful, the MS shall ensure that there is no registered PLMN stored in the SIM.

If a registration is unsuccessful because the IMSI is unknown in the home network, or the MS is illegal, then the MS shall not allow any further registration attempts on any network, until the MS is next powered-up or a SIM is inserted.

If the registration is unsuccessful due to the lack to service entitlement, specific behaviour by the MS may be required, see subclause 3.2.2.4.

To avoid unnecessary registration attempts, lists of forbidden PLMNs and LAs are maintained in the MS, see subclause 3.2.2.4 and ~~GSM 0~~TS 23.022 [3~~5~~].

Registration attempts shall not be made by MSs without a SIM inserted.

An MS/ME which has not successfully registered shall nevertheless be able to make emergency call attempts on an available PLMN, without the need for the user to select a PLMN. An available PLMN is determined by radio characteristics (~~GSM 0~~TS 23.022 [3~~5~~] ~~and GSM 05.08 [7] refers~~).

3.2.2.2 At switch-on or recovery from lack of coverage

If the MS is within coverage (at switch-on) or returns to coverage of the PLMN on which it is already registered (as indicated by the registered PLMN stored in the SIM), the MS shall perform a location update to a new location area if necessary.

If there is no registered PLMN stored in the SIM, or if this PLMN is unavailable, or the attempted registration fails, the MS shall follow one of the following two procedures depending on its network selection mode, automatic or manual:

A) Automatic network selection mode

The MS shall select and attempt registration on other PLMNs, if available and allowable and the location area is not in the list of "forbidden LSs for roaming" (see ~~GSM 0~~TS 23.022 [3~~5~~]), in the following order:

i) HPLMN;

ii) each PLMN in the "PLMN Selector" data field in the SIM (in priority order);

iii) other PLMNs with sufficient received signal level (see ~~GSM 0~~TS 23.022 [3~~5~~]) in random order;

iv) all other PLMNs in order of decreasing signal strength.

An allowable PLMN is one which is not in the "Forbidden PLMN" data field in the SIM . This data field may be extended in the ME memory.(see subclause 3.2.2.4).

If successful registration is achieved, the MS shall indicate the selected PLMN.

If registration cannot be achieved on any PLMN, the MS shall indicate "no service" to the user, wait until a new PLMN is detected, or new location areas of an allowed PLMN are found which are not in the forbidden LA list(s), and then repeat the procedure. When registration cannot be achieved, different (discontinuous) PLMN search schemes may be used in order to minimize the access time while maintaining battery life, e.g. by prioritizing the search in favour of BCCH carriers which have a high probability of belonging to an available and allowable PLMN.

B) Manual network selection mode

The MS shall indicate whether there are any PLMNs, including "Forbidden PLMNs", which are available. If there are none, this shall also be indicated.

Any available PLMN's shall be presented in the following order:

i) HPLMN;

ii) PLMNs contained in the "PLMN Selector" data field in the SIM (in priority order);

iii) other PLMNs with sufficient received signal level (see ~~GSM 0~~TS 23.022 [~~3~~5]) in random order;

iv) all other PLMNs in order of decreasing signal strength.

The user may select his desired PLMN and the MS shall attempt registration on this PLMN. (This may take place at any time during the presentation of PLMNs.)

If the registration cannot be achieved on the selected PLMN, the MS shall indicate "No Service". The user may then select and attempt to register on another or the same PLMN following the above procedure. The MS shall not attempt to register on a PLMN which has not been selected by the user.

If a PLMN is selected but the MS cannot register on it because registration is rejected with the cause "PLMN not allowed", the MS shall not re-attempt to register on that network unless the same PLMN is selected again by the user.

If a PLMN is selected but the MS cannot register on it for other reasons, the MS shall, upon detection of a new LA (not in a forbidden LA list) of the selected PLMN, attempt to register on the PLMN.

If the MS is registered on a PLMN but loses coverage, different (discontinuous) carrier search schemes may be used to minimize the time to find a new valid BCCH carrier and maintain battery life, e.g. by prioritizing the search in favour of BCCH carriers of the registered PLMN.

3.2.2.3 User reselection

At any time, the user may request the MS to initiate reselection and registration onto an alternative available PLMN, according to the following procedures, dependent upon the operating mode.

A) Automatic Network Selection Mode

The MS shall select the HPLMN. If the HPLMN is not available, the MS shall select the PLMNs in the "PLMN Selector" list in order of priority and, if necessary, other available and allowable PLMNs according to the procedure defined in ~~GSM 03~~TS 23.022 [~~3~~5].

B) Manual Network Selection Mode

The procedure of 3.2.2.2 B) is followed.

3.2.2.4 Mobile Station reactions to indications of service restriction from the network

Different types of MS behaviour is required to support, for example, national roaming, regionally provided service and temporary international roaming restrictions. The behaviour to be followed by the MS is indicated by the network.

3.2.2.4.1 "Permanent" PLMN restriction

When a registration attempt by the MS is rejected by a network with an indication of "permanent" PLMN restriction, the PLMN identity shall be written to a list of "Forbidden PLMNs" stored in a data field in the SIM.

~~The structure of this data field is given in GSM 11.11 [8].~~

If a successful registration (whilst in manual mode) is achieved on a PLMN in the "Forbidden PLMN" list, the PLMN shall be deleted from the list.

When in automatic mode, the MS may indicate any PLMNs which will not be selected due to their presence in the "Forbidden PLMN" list.

3.2.2.4.2 "Partial" and "temporary" PLMN restrictions

When a registration attempt by the MS is rejected by a network due to a "partial" or a "temporary" PLMN restriction, the MS shall perform one of the following procedures determined by the indication in the location update reject cause sent by the network (see ~~GSM 0~~TS 23.022 [35]):

i) The MS shall store the location area identity in the list of "forbidden LAs for regional provision of service" and shall enter the limited service state and remain in that state until it moves to a cell in a location area where service is allowed.

ii) The MS shall store the location area identity in the list of "forbidden LAs for roaming" and shall use one of the following procedures according to the PLMN selection Mode:

A) Automatic network selection mode:

The procedure of 3.2.2.2. A).

B) Manual network selection mode:

The procedure of 3.2.2.2.B).

4 Access control

4.1 Purpose

Under certain circumstances, it will be desirable to prevent MS users from making access attempts (including emergency call attempts) or responding to pages in specified areas of a ~~GSM~~ PLMN. Such situations may arise during states of emergency, or where 1 of 2 or more co-located PLMNs has failed.

Broadcast messages should be available on a cell by cell basis indicating the class(es) of subscribers barred from network access.

The use of this facility allows the network operator to prevent overload of the access channel under critical conditions.

It is not intended that access control be used under normal operating conditions.

4.4 Emergency Calls

An additional control bit known as "Access Class 10" is also signalled over the air interface to the MS. This indicates whether or not network access for Emergency Calls is allowed for MSs with access classes 0 to 9 or without an IMSI. For MSs with access classes 11 to 15, Emergency Calls are not allowed if both "Access class 10" and the relevant Access Class (11 to 15) are barred ~~(GSM 04.08 [6] refers)~~. Otherwise, Emergency Calls are allowed.

5 Support of Localised Service Area (SoLSA)

SoLSA consists of a set of service features that give the operator a basis to offer subscribers different services (e.g. tariffs or access rights) depending on the location of the subscriber. (TS~~GSM 0~~22.043 [510]). The following section is only applicable to the support of SoLSA functionality.

5.4 Exclusive access

Access to exclusive access cells is restricted to defined LSA subscribers.

Non-LSA subscriber shall consider exclusive access cells as not suitable, only allowing to camp for emergency calls (limited service state ~~GSM 0~~TS 23.022 [35]).

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.016	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122016

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document defines the principal purpose and use of International Mobile station Equipment Identities (IMEI) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document defines the principal purpose and use of International Mobile station Equipment Identities (IMEI).

~~GSM 0~~TS 23.0~~0~~3 describes the technical manner of numbering, addressing and identification.

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms"

~~[2] GSM 02.17: "Digital cellular telecommunications system (Phase 2+); Subscriber Identity Modules (SIM) Functional characteristics".~~

[2~~3~~] ~~GSM~~ TS 2~~0~~3.0~~0~~3: "~~Digital cellular telecommunications system (Phase 2+);~~ Numbering, addressing and identification".

[3~~4~~] ISO/IEC 7812 (1989): "Identification cards - Numbering system and registration procedure for issuer identifiers".

[4] TR 21.905: "Vocabulary for 3GPP Specifications".

1.2 Definitions and abbreviations

In addition to the following, abbreviations used in the present document are listed in GSM 01.04 [1] and TR 21.905 [4].

International Mobile Station Equipment Identity (IMEI) : An "International Mobile Station Equipment Identity" is a unique number which shall be allocated to each individual mobile station equipment ~~in the GSM system~~ in the PLMN and shall be unconditionally implemented by the MS manufacturer.

2 General

A~~s described in GSM 02.17, a~~n MS can only be operated if a valid "International Mobile Subscriber Identity" (IMSI) is present. An IMSI is primarily intended for obtaining information on the use of the ~~GSM network~~PLMN by subscribers for individual charging purposes.

Besides the IMSI, the implementation of IMEI is found necessary in order to obtain knowledge about the presence of specific mobile station equipment in the network, disregarding whatever subscribers are making use of these equipments.

The main objective is to be able to take measures against the use of stolen equipment or against equipment of which the use in the ~~GSM system~~PLMN can not or no longer be tolerated for technical reasons.

The IMEI is incorporated in an MS module which is contained within the MS equipment and is physically secured.

This implementation of each individual module should be carried out by the manufacturer who is also responsible for ascertaining that each IMEI is unique and keeping detailed records of produced and delivered MS.

3 Composition of IMEI

The composition of the IMEI shall be such that each individual mobile station equipment can be separately identified.

Information is contained in the IMEI by which the ~~GSM~~ PLMN, after requesting it, can immediately decide whether or not to accept calls made by means of this equipment.

Secondly, the IMEI shall directly or indirectly contain all information which is necessary for the network operator to make relations through its administrative system to trace the equipment to its origin of production. ~~GSM 0~~TS 23.003 [2] describes the structure of the IMEI in detail.

The IMEI (14 digits) is complemented by a check digit. The check digit is not part of the digits transmitted at IMEI check occasions, as described below. The Check Digit shall avoid manual transmission errors, e.g. when customers register stolen MEs at the operators customer care desk. The Check Digit is defined according to the Luhn formula, as defined in annex A.

NOTE: The Check Digit is not applied to the Software Version Number.

Annex A (normative): IMEI Check Digit computation

A.1 Representation of IMEI

The International Mobile station Equipment Identity and Software Version Number (IMEISV), as defined in TS ~~GSM 0~~2<u>.0</u>03, is a 16 digit decimal number composed of four distinct elements:

- a 6 digit Type Approval Code (TAC);
- a 2 digit Final Assembly Code (FAC);
- a 6 digit Serial Number (SNR); and
- a 2 digit Software Version Number (SVN).

The IMEISV is formed by concatenating these four elements as illustrated below:

Figure A.1: Composition of the IMEISV

The IMEI is complemented by a check digit as defined in section 3. The Luhn Check Digit (CD) is computed on the 14 most significant digits of the IMEISV, that is on the value obtained by ignoring the SVN digits.

The method for computing the Luhn check is defined in Annex B of the International Standard "Identification cards - Numbering system and registration procedure for issuer identifiers" (ISO/IEC 7812) <u>[3]</u>.

In order to specify precisely how the CD is computed for the IMEI, it is necessary to label the individual digits of the IMEISV, excluding the SVN. This is done as follows:

The (14 most significant) digits of the IMEISV are labelled D14 D13 ... D1, where:

- TAC = D14 D13 ... D9 (with D9 the least significant digit of TAC);
- FAC = D8 D7 (with D7 the least significant digit of FAC); and
- SNR = D6 D5 ... D1 (with D1 the least significant digit of SNR).

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.022	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122022

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.022 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Personalisation of ~~GSM~~ Mobile Equipment (ME); Mobile functionality specification (3G TS 22.022 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document provides functional specifications of five features to personalise Mobile Equipment (ME) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document provides functional specifications of five features to personalise ~~GSM~~ Mobile Equipment (ME). These features are called:

- Network personalisation;
- Network subset personalisation;
- Service Provider (SP) personalisation;
- Corporate personalisation;
- Subscriber Identity Module (SIM) personalisation.

The present document specifies requirements for MEs which provide these personalisation features.

~~These optional personalisation features are stated in GSM 02.07 [2].~~

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

~~[2] GSM 02.07: "Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS) features".~~

[2~~3~~] ~~GSM 0~~TS 22.0~~1~~1: "~~Digital cellular telecommunications system (Phase 2+);~~ Service accessibility".

[3~~4~~] ~~GSM 0~~TS 23.0~~0~~3: "~~Digital cellular telecommunications system (Phase 2+);~~ Numbering, addressing and identification".

[4~~5~~] ~~GSM~~ TS 0~~2~~3.0~~2~~2: "~~Digital cellular telecommunications system (Phase 2+);~~ Functions related to Mobile Station (MS) in idle mode and group receive mode".

[5~~6~~] ~~GSM 03~~TS 23.0~~3~~8: "~~Digital cellular telecommunications system (Phase 2+);~~ Alphabets and language-specific information".

[6~~7~~] ~~GSM 0~~TS 23.0~~4~~0: "~~Digital cellular telecommunications system (Phase 2+);~~ Technical realization of the Short Message Service (SMS); Point-to-Point (PP)".

~~[8] GSM 04.08: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification".~~

[7~~9~~] GSM 11.11: "Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[8~~10~~] GSM 11.14: "Digital cellular telecommunications system (Phase 2+); Specification of the SIM Application Toolkit for the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[9] TR 21.905: "Vocabulary for 3GPP Specifications".

5 Network personalisation

5.1 Network personalisation

Network personalisation allows a ME to be personalised to a particular network, for example to prevent the use of stolen MEs on other networks. The ME may optionally be personalised to more than one network.

The ME is network personalised by storing the code (MCC+MNC) (see TS~~GSM~~ 22~~0~~3.0~~0~~3 [3~~4~~]) of the relevant network(s) in the ME and setting a network personalisation indicator in the ME to "on". Whenever a SIM is inserted, or the MS is powered up with a SIM already in place, the International Mobile Subscriber Identity (IMSI) is read from the SIM and the embedded network code (MCC+MNC) checked against that stored in the ME. If the values differ, the MS shall go into emergency calls only mode as defined in annex A.2.

The network personalisation feature is controlled by a Network Control Key, (NCK) which has to be entered into the ME in order to network de-personalise it.

In order to support the network personalisation feature the ME shall have storage for the network personalisation indicator, the network code(s) and the NCK.

9 Over the air de-personalisation cycle

As an optional ME feature, the ME may be de-personalised over-the-air (OTA) by the network. The network, network subset, SP and corporate categories may be de-personalised in this way. More than one category may be de-personalised at the same time. The process results in the relevant personalisation indicator(s) being set to "off". The ME must be registered on a network.

Two OTA methods are defined both of which use MT SMS-PP messages. With the first method, the IMEI of the ME to be de-personalised and the Control Key(s) of the personalisation categories to be de-personalised are sent directly to the ME. The ME performs checks on both the IMEI and the key values and the outcome of the attempted de-personalisation(s) is acknowledged to the network.

With the second method, the keys of the personalisation categories to be de-personalised are sent to the ME via the SIM. The IMEI is not included and the de-personalisation process only checks the keys. The outcome of the attempted de-personalisation(s) is acknowledged to the network.

The network de-personalises the ME by one of the following methods:

(i) SMS-PP, ME-specific:

a) A point-to-point SMS message is sent by the network to the MS, the message being marked as being destined for the ME only and for the purposes of ME de-personalisation (see ~~GSM~~TS 2~~0~~3.0~~4~~0 [6~~7~~]). The User Data of the SMS contains the de-personalisation key(s) and the IMEI (see annex A.4). If the ME supports the feature, then it shall not display the data on the ME.

b) The ME compares the values of the IMEI and the key(s) sent by the network with the corresponding values stored in the ME. If they are the same, the relevant personalisation indicator(s) is (are) set to "off".

If the IMEI values differ, the personalisation status of all categories shall be left unchanged.

If any key values differ, the corresponding personalisation status shall be left unchanged.

c) The MS sends a SMS acknowledgement to the network indicating the result of the attempted de-personalisation process (see annex A.4).

(ii) SMS-PP SIM Data Download:

a) A SMS message is sent by the network to the SIM updating the EF_{DCK} using the SMS-PP SIM Data Download of the SIM Tool Kit (see GSM 11.14 [8~~10~~]).

b) The SIM causes the ME to send an SMS acknowledgement to the network, as a result of the terminal response to the ENVELOPE command.

c) The SIM shall issue a REFRESH command to instruct the ME to perform an initialisation procedure. During the initialisation procedure the ME reads the de-personalisation key field(s) from EF_{DCK} stored in the SIM after performing all personalisation checks.

d) For each control key in EF_{DCK} which is empty (set to default), the corresponding personalisation status shall be left unchanged.

e) For each control key in the EF_{DCK} which is not the same as the corresponding stored key, the personalisation status shall be left unchanged.

f) For each control key in EF_{DCK} which is the same as the one stored in the ME, the corresponding personalisation indicator is set to "off".

g) All the keys in the EF_{DCK} are reset to the default value by the ME.

Annex A (normative): Technical information

A.1 GID1 and GID2 files

The GID1 and GID2 elementary files on the SIM are specified in GSM 11.11 (ETS 300 977) [79].

For the purposes of this TS, a SIM is said to support one of these two files if it is marked as both allocated and activated in the SIM service table.

The SP and corporate codes are stored in byte 1 of the appropriate files.

If byte 1 contains a hexadecimal value between "00" and "FE" inclusive, then this represents the SP/corporate code in the GID1/GID2 files respectively. For the purpose of these personalisation features, the ME shall ignore the contents of any other bytes of the file.

The value "FF" is the default value to be used in byte 1 when no meaningful SP/corporate code is represented in the GID1/GID2 files respectively. This value shall not be allocated as an SP/corporate code.

Note that network operators would normally allocate SP codes for its service providers and SPs would normally allocate corporate codes for its corporate customers.

A.2 Emergency calls only mode

The expression "emergency calls only mode" is used in this TS to describe the state the MS (combined ME and SIM) enters when a personalisation check fails. In this mode, the state of the MS is equivalent to the "limited service state" (see GSM 0TS 23.022) [45]. Although the personalisation has failed, the ME will be able to access the TMSI and IMSI from the SIM, and therefore any emergency call request shall use these as the MS identity, as defined in GSM 04.08 [8].

Set up of emergency calls remains as usual dependent on the status of Access Class 10 being broadcast in the cell (see GSM 0TS 22.011) [23].

A.3 Co-operative Network List

The Co-operative Network List is specified in GSM 11.11 (ETS 300 977) [79].

For the purposes of this TS, a SIM is said to support this feature if it is marked as both allocated and activated in the SIM service table.

The value "FF" is the default value to be used when no meaningful code is represented. This value shall not be allocated as a code value.

A.4 Over-the-air de-personalisation

a) The ME-specific de-personalisation SMS messages sent by the network to de-personalise the ME shall be coded according to TS ~~GSM 0~~23.040 [6~~7~~] with the TP-UD field coded as follows:

Character	Description
1 - 40	Operator specific text padded with spaces to character 40.
41 - 48	Network control key
49 - 56	Network subset control key
57 - 64	SP control key
65 - 72	Corporate control key
73 - 88	IMEI

For the IMEI and each control key, the most significant digit is coded first in the string, e.g. character 41 is the most significant digit of NCK.

All characters are coded according to the default alphabet described in ~~GSM 0~~TS 23.038 [5~~6~~].

The string "FFFFFFFF" shall be used in place of a key to indicate that de-personalisation of that category is not required.

b) The acknowledgement to the ME De-personalisation Short Message shall be a SMS-DELIVER-REPORT for RP-ACK as described in TS ~~GSM~~ 2~~0~~3.040 [6] with the TP-User-Data coded according to the default alphabet described in TS ~~GSM 0~~23.038 [6~~5~~] as below:

Character	Description
1-16	IMEI of ME
17	Network personalisation status
18	Network subset personalisation status
19	SP personalisation status
20	Corporate personalisation status

Status codes shall indicate the resulting status of each personalisation category as below.

Status code	Description
0	Currently not personalised
1	Permanently not personalised
2	Personalised
3	IMEI mismatch
Other	RFU

If the IMEI of the ME does not match the IMEI included in the De-personalisation Short Message, then the status of all the personalisation categories shall be coded "IMEI mismatch".

c) The format for the control keys stored on the SIM is specified in GSM 11.11 [8~~9~~].

For the purposes of this TS, a SIM is said to support this feature if it is marked as both allocated and activated in the SIM service table.

The value "FF" is the default value to be used when no meaningful value for a key is represented. This value shall not be allocated as a key value.

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.024	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122024

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document describes the overall view of how the supplementary service of Charge Advice Information (CAI) operates within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The charging supplementary service is described in ~~GSM~~ TS ~~0~~2.0~~8~~6 [2]~~ and the relevant charging principles are given in the relevant GSM MoU Association documents~~. These services are designed to supply to a mobile user sufficient information to allow a real-time estimate to be made of the bill which will eventually be levied in the home PLMN on the Mobile Station (MS) subscriber.

In the case of certain MS uses, for example a mobile payphone, this estimate could be subject to further processing (e.g. to present the charges in currency, rather than units, this may include an additional mark up). This additional processing is not described in this ~~EN~~ document in order to avoid constraining the evolution of the MS product in this area.

This ~~EN~~ document gives an overall view of how this supplementary service shall operate both in the PLMN and within the MS. Text given in this document ~~EN~~ is required to define functionality and is not intended to constrain implementation.

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TS~~GSM 0~~ 2.0~~8~~6: "~~Digital cellular telecommunication system (Phase 2+);~~ Advice of Charge (AoC) Supplementary Services - Stage 1".

~~[3] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module-Mobile Equipment (SIM-ME) interface".~~

[3] TR 21.905: "Vocabulary for 3GPP Specifications".

1.2 Definitions and abbreviations

In addition to the following, abbreviations used in the present document are listed in GSM 01.04 [1] and TS 21.905 [3].

Mark up (MU):

An increase over the basic charge e.g. to provide extra revenue or to cover additional costs.

Service Provider (SP):

The organization through which the subscriber obtains ~~GSM telecommunication~~PLMN services. This may be the network operator or possibly a separate body.

Home Units (HU):

The published basic telecommunication unit as published by the HPLMN. This has a published value expressed in the currency of the Home country.

Local PLMN (LPLMN):

The LPLMN is the HPLMN or VPLMN depending on the location of the MS at the time and is the PLMN with which the MS is interworking via the radio interface.

Local Units (LU):

The published basic telecommunication unit as published by the LPLMN. This has a published value expressed in the currency of the local country.

Price per Unit and Currency Table (PUCT):

The PUCT is the value of the Home unit in a currency chosen by the subscriber. The PUCT is stored in the SIM. The value of the PUCT can be set by the subscriber and may exceed the value published by the HPLMN. The PUCT value does not have any impact on the charges raised by the HPLMN.

Current Call Meter (CCM):

The accumulated charge as computed by the MS, expressed in terms of Home units.

Accumulated Call Meter (ACM):

The accumulated charge for both the current call and all preceding calls as computed by the MS, expressed in terms of Home units. The ACM is stored in the SIM/USIM.

ACM Maximum value (ACMmax):

The ACMmax sets the upper limit for the ACM. The ACMmax is stored in the SIM/USIM. The value of the ACMmax can be set by the subscriber.

Charging point (CHP):

The time at which charging commences i.e. at the point when the called party answers or the equivalent.

End of charge point (CEND):

The time at which the calling, or called, party stops charging by the termination of the call or by an equivalent procedure invoked by the network or by failure of the radio path.

Advice of Charge (AOC):

The charge as computed by the MS, expressed in terms of Home Units.

Segment:

A charging element as defined by ~~CCITT~~ITU-T, in octets (up to 64).

4.2.1 The Current Call Meter (CCM)

This is required to accumulate the charging units generated by the current call and is capable of advising:

a) The current charge due for the call(s) in progress.

b) At the end of the call(s), the charge equivalent to the current call record in an itemized bill.

The CCM shall hold the value of the last call AOC, until the initiation of an outgoing call or acceptance of an incoming call, at which point it shall be reset to zero, regardless of the success of the initiation/acceptance attempt. This information is deleted when the MS is switched off or the SIM/USIM is removed.

The CCM is essential for the correct functioning of AOC, see subclauses 4.1 and 4.3, and is a component of the Mobile Equipment. The charging computation shall cease immediately on termination of a call, as indicated by the user or the network, or on failure of the call.

For multiple calls, CCM will advise the total charge of all the calls made and/or received during occupation of a traffic channel.

4.2.2 The Accumulated Call Meter (ACM)

The Accumulated Call Meter accumulates the total units for both the current call and all preceding calls. The ACM is a function contained within the SIM/USIM. It is optional, but is essential for certain applications.

For security reasons, the SIM/USIM only allows the value of the ACM to be incremented, not decremented. Resetting of the ACM shall only be possible after presentation of PIN2.

If the ACMmax (see subclause 4.2.3) is valid, and the ACM becomes equal to or exceeds the value of the ACMmax, then all calls in progress, chargeable to the user (i.e. those calls that have a non-zero AoC associated with them), shall be terminated by the ME once the chargeable interval determined by the CAI has elapsed. The ACM will be updated with the new value, which may be greater than the ACMmax value. The reason why the call has terminated shall be given to the user by means of an appropriate indication given to the user.

If the ACMmax is valid and the ACM is equal to or greater than the value of ACMmax, then no outgoing calls can be placed, except Emergency calls.

If the ACMmax is valid and the ACM is equal to or greater than the value of ACMmax, and an incoming call is received and subsequently a non-zero CAI is received for that call, then the call shall be terminated by the ME with an appropriate indication given to the user.

4.2.3 The ACM Maximum Value (ACMmax)

This is the value that the subscriber can set, to limit the units which may be consumed by a user. The MS may provide for the means to set or update the ACMmax, using PIN2. The ACMmax is not valid if set to zero ~~(see GSM 11.11 [3])~~.

NOTE: The network operator should make clear to the subscriber that the ACMmax must not be set to a value close to the maximum value possible in the encoding of ACMmax ~~(see GSM 11.11 [3])~~. The network operators should provide guidance as to what the maximum value for the ACMmax may be.

4.2.4 The Price per Unit and Currency Table (PUCT)

This is intended to enable the MS to calculate the cost of a call in a currency chosen by the subscriber. The subscriber may set the value of the home unit in the PUCT differently to the value of the unit published by the HPLMN in order to cover extra cost. An indication of the currency in use is part of the PUCT ~~(see also GSM 11.11 [3])~~.

4.3 Special processing

a) If e7 is zero or not sent in the CAI message, e2 applies and e7 is not used.

b) If e2 or e6 are set to zero, the relevant INT function shall handle the singularity by returning zero, thus disabling the relevant unitization process (call or data part).

c) On receipt of a subsequent e4, the MS shall transfer the value of e4*e3 to the CCM, by addition of e4*e3 to the current contents of the CCM.

d) When CDUR reaches e2 (or e7 as appropriate), e1*e3 is added to the CCM and CDUR is reset to zero, except when conditions given in (a) and (b) above, apply.

e) On receipt of new e1, e2 or e7 during a call, these new values are held in abeyance, until the value of the associated MS timer CDUR has reached the current e2 or e7 value as appropriate, and the processing as described in special processing item d) above has been completed. The new e1, e2 and/or e7 are then brought into operation. e7 is applied followed by e2, conditions a) and b) above determining the detailed processing.

Any update of e1, e2 and/or e7 during the time before CDUR is reset, shall supersede any values already held in abeyance.

If CDUR is not actively timing (i.e. due to e2 being zero, e7 being zero or the processing of e7 has been completed), then a new value of e2 and/or e7 is applied immediately as per a normal new call.

f) When SEG reaches e6, e5*e3 is added to the CCM and SEG is reset to zero, except where e6 is zero, where condition (b) above applies.

g) On receipt of a new e5 or e6 during the call, these new elements are held in abeyance, until the value of the associated MS counter SEG has reached the old e6 value, and the processing as described in special processing item (f) above has been completed. The resulting zero SEG and new e5 and e6 are then brought into operation.

Any update of e5 or e6 during the time before SEG is reset, shall supersede any values already held in abeyance.

If the old value of e6 was zero, then the new value of e5 and e6 is applied immediately.

h) The ACM shall be incremented when the CCM is incremented or once every 5 seconds, which ever is the longer period. Although the CCM is maintained with an accuracy of three places of decimals, the ACM shall be incremented and stored as integer units (i.e. no decimal places). The ACM shall be incremented by the difference between the present value of the CCM (rounded up) and the value of the CCM (rounded up) at the previous ACM incrementation.

i) A zero value for any of the CAI elements is valid and dealt with as described above.

j) Free calls should be implemented by sending a CAI message with appropriate zero elements.

k) On receipt of any CAI message from the network, provided the MS supports AoC, the MS it shall confirm receipt of the CAI message. An MS not supporting AoC as defined in ~~GSM~~ TS ~~0~~2.24 and ~~GSM 0~~TS 22.~~0~~86 [2] shall not confirm receipt of the message.

l) During multiple calls the network shall send, and the MS shall receive, CAI elements for each call separately. The CCM shall record the sum of all the charges for the services being used currently.

m) If the MS detects a radio link failure ~~(as defined in GSM 04.08)~~ the MS shall suspend CDUR. If a subsequent call reestablishment is successful, CDUR shall be resumed when call reestablishment is complete.

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)614***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.030	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122030

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.030 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Man-Machine Interface (MMI) of the Mobile Station (MS) (3G TS 22.030 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS specifies the requirements for and gives guidelines on the MMI for calls on the Mobile Station within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

~~Introduction~~

~~The present document includes references to features which are not part of the Phase 2+ Release 96 of the GSM Technical specifications. All subclauses which were changed as a result of these features contain a marker (see table below) relevant to the particular feature.~~

~~The following table lists all features that were introduced after Release 96.~~

~~**Feature**~~	~~**Marker**~~
~~CCBS~~	~~$(CCBS)$~~
~~SPNP~~	~~$(SPNP)$~~
~~CNAP~~	~~$(CNAP)$~~
~~MSP~~	~~(MNP)~~

0 Scope

This TS defines the requirements for and gives guidelines on the MMI for calls on the ~~GSM~~ Mobile Station (MS). This includes the requirements of the user procedures for call control and supplementary service control, the requirements on the physical input media and the output, such as indications and displayed information.

This TS complements specifications GSM 02.07 [3], TS ~~0~~2.0 11 [4], 02.17 [5], 02.40 [7], 03.01[11], TS 2~~0~~3.0 09 [12], TS ~~0~~23.0 12 [13], TS ~~0~~23.0 14 [14], TS ~~0~~24.0 08 [16], 05.08 [18], and 11.10 [20] and deals with MMI items not covered by these specifications.

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~ TS ~~0~~2.0 04: "~~Digital cellular telecommunication system (Phase 2+);~~ General on supplementary services".

[3] GSM 02.07: "Digital cellular telecommunication system (Phase 2+); Mobile Station (MS) features".

[4] ~~GSM~~ TS ~~0~~2.0 11: "~~Digital cellular telecommunication system (Phase 2+);~~ Service accessibility".

[5] GSM 02.17: "Digital cellular telecommunication system (Phase 2+); Subscriber identity modules Functional characteristics".

[6] ~~GSM~~ TS ~~0~~2.0 16: "~~Digital cellular telecommunications system (Phase 2+;~~ International Mobile station Equipment Identities (IMEI)".

[7] GSM 02.40: "Digital cellular telecommunication system (Phase 2+); Procedures for call progress indications".

[8] ~~GSM~~ TS ~~0~~2.0 83: "~~Digital cellular telecommunication system (Phase 2+);~~ Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".

[9] ~~GSM~~ TS ~~0~~2.0 84: "~~Digital cellular telecommunication system (Phase 2+);~~ MultiParty (MPTY) supplementary services - Stage 1".

[10] ~~GSM~~ TS ~~0~~2.0 90: " ~~Digital cellular telecommunication system (Phase 2+); "~~Stage 1 description of Unstructured Supplementary Service Data (USSD)".

[11] GSM 03.01: "Digital cellular telecommunication system (Phase 2+); Network functions".

[12] ~~GSM~~ TS ~~0~~23.0 09: "~~Digital cellular telecommunication system (Phase 2+);~~ Handover procedures".

[13] ~~GSM~~ TS ~~0~~2~~3~~.0~~1~~2: "~~Digital cellular telecommunication system (Phase 2+);~~ Location registration procedures".

[14] ~~GSM~~ TS ~~0~~2~~3~~.0~~1~~4: "~~Digital cellular telecommunication system (Phase 2+);~~ Support of Dual Tone Multi-Frequency ~~signalling~~ (DTMF) signalling~~via the GSM system~~".

[15] ~~GSM~~ TS ~~0~~2~~3~~.0~~3~~8: ~~"Digital cellular telecommunication system (Phase 2+);"~~Alphabets and language~~ specific information~~".

[16] ~~GSM~~ TS ~~0~~2~~4~~.0~~0~~8: "~~Digital cellular telecommunication system (Phase 2+);~~ Mobile radio interface layer 3 specification; Core Network Protocols – Stage 3".

[17] ~~GSM~~ TS ~~0~~2~~4~~.0~~8~~0: "~~Digital cellular telecommunication system (Phase 2+);~~ Mobile radio interface layer 3 supplementary services specification Formats and coding".

[18] GSM 05.08: "Digital cellular telecommunication system (Phase 2+); Radio subsystem link control".

[19] ~~GSM~~ TS ~~0~~2~~9~~.0~~0~~2: "~~Digital cellular telecommunication system (Phase 2+);~~ Mobile Application Part (MAP) ~~specification~~".

[20] GSM 11.10: "Digital cellular telecommunication system (Phase 2+); Mobile Station (MS) conformity specification".

[21] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".

[22] ~~CCITT~~ITU-T Recommendation E.164: "Numbering plan for the ISDN era".

[23] ~~CCITT~~ITU-T Recommendation E.131: "Subscriber control procedures for supplementary telephone services".

[24] ~~CCITT~~ITU-T Recommendation E.121: "Pictograms and symbols to assist users of the telephone service".

[25] TS 22.072: “Call Deflection; Stage 1”

[26] TS 22.091: “Explicit Call Transfer Supplementary Service; Stage 1”

[27] TS 22.093: “Call Completion to Busy Subscriber (CCBS); Stage 1”

[28] TR 21.905: "Vocabulary for 3GPP Specifications"

1 General

1.1 Basic philosophy

The basic idea behind this TS is that it should give a minimum level of requirements, with emphasis on items which are seen as important from a pan-European usage point of view. This means, that the requirements are mainly dealing with standardized control procedures of access to services i.e. call establishment, invocation of supplementary services and so on. This also includes standardized network information to the users such as tones and announcements.

The requirements on the physical layout of input and output features are kept to a minimum to allow for differentiated types of MSs and to ease the introduction of future developments in the area of MMI. The standardized control procedures describe the sequence of real actions to be taken by the users. However, since the requirements on the physical input features are minimal the control procedures may differ between MSs depending on the solution of the manufacturers. The "bridge" between these requirements is however that the same logical actions have to be taken by the user. That is, the user has to provide the same information for the call control and signalling no matter what the method is. This is also valid if an automatic device is used for carrying out the same actions. The logical procedures are therefore defined and standardized in this specification.

The drawback of this approach is that the users of ~~GSM~~ Mobile Stations may face a lot of different types of physical MMI which they have to learn. However, to deal with this problem the specification gives a definition of a basic public MMI. The basic public MMI allows non-experienced, casual users to make and receive a telephony call. This definition is directed to manufacturers of public mobile telephones.

Optionally, the user may set the ME to disable some or all of the MMI functions defined in this specification. This setting shall only apply when the same SIM is in use (see GSM 02.17 [5] for security policy), otherwise the ME shall enable the standard MMI.

2.3 MMI related to MS features

The three first issues are covered in GSM 02.07 [3]:

* Country / PLMN selection:

The method is manufacturer optional.

* International Access Function ("+" key):

and

* Keypad:

The physical means of entering the characters 0-9, +, * and # (i.e. the SELECT function) may be keypad, voice input device, DTE or other, but there must be means to enter this information.

The relationship on the keypad between the numbers and letters (where used) is important when mnemonic dialling may be used. The following relationship is therefore preferred though optional.

1		6	MNO
2	ABC	7	PQRS
3	DEF	8	TUV
4	GHI	9	WXYZ
5	JKL	0	

See also subclause 5.2.1.

* ACCEPT, SEND and END functions:

The physical means to perform these functions may be keypad, voice input device, DTE or other, but there must be means to perform these functions. ACCEPT and SEND may use the same means.

* Setting of called Number Fields (Type of Number), use of the "+" key function:

Users may enter a called number in two formats, called here International or Open. The Type of Number (TON) may be set to other values if required, but the procedure for this is not defined here.

"International format":

This is entered by starting with a "+" followed by country code, even for national calls. This method is preferred for roaming and international calls, and highly desirable for storage of short codes or for call-forwarding.

This sets the TON to "International" - see ~~GSM~~ TS ~~0~~2.0 08 [16~~7~~] ~~table 10.50~~.

"Open format":

This is when the "+" is not entered, and the number is entered in the normal way for that network. The number may require a prefix or escape code as normal, for example for entering the international access code or national access code (often "0").

This sets the TON to "Unknown" - see ~~GSM~~ TS ~~0~~2.0 08 [16~~7~~] ~~table 10.50~~. (This is not the "National" case, which does not permit prefix or escape digits).

Care should be taken with this format, since the dialled number will only be correct in a given network, and may be wrong when roaming. Caution must be applied when using stored numbers or call-forwarding.

* Setting of Called Number Fields (Number Plan Indicator):

The default Number Plan Identification (NPI) shall be ~~CCITT~~ITU-T E.164 [22] if all the digits are in the range 0-9 and the NPI shall be "unknown" if other number information is included. However, if the user selects (or has selected) a particular NPI (procedure not defined) then that NPI shall be used.

* Entry of Bearer Capability Information Elements (BCIE):

This is required in order to indicate information such as whether it is a voice or data call, facsimile, synchronous or asynchronous etc. The method for entering this information is of mobile manufacturer's option. For those Mobile Stations offering only telephony (and emergency calls), the default BCIE shall be for telephony (or emergency call). For Mobile Stations supporting non-voice services, there shall be means to set the BCIE required, by reading the appropriate field in the SIM and possibly otherwise. This field may be associated with or independent of the called number.

2.5 Other input features

No requirements additional to those in other GSM specifications (Reference ~~GSM~~ TS ~~0~~2.0~~0~~14 [14] 11.10 [20]).

3.2 MMI related to MS access

No requirements additional to those in other GSM specifications (ref. ~~GSM~~ TS 2~~0~~3.0~~0~~12 [13], ~~GSM~~ TS ~~0~~2.0~~0~~8 [16], GSM 05.08 [18]).

3.5 Other output features

No requirements additional to those in other GSM specifications (ref. GSM 03.01 [11], TS ~~0~~2.0~~0~~9 [12], TS 2~~0~~3.0~~0~~12 [13], TS ~~0~~2.0~~0~~8 [16] and 05.08 [18]).

4 Procedures

4.1 General

This clause defines the MMI of the service access procedures, and supplementary service control procedures. These procedures are defined as logical procedures and in general no mandatory methods are specified. In order to make the descriptions continuous and clear requirements in GSM 02.07 [3], TS ~~0~~2.0~~0~~11 [4], 02.17 [5] and 02.40 [7] have been included or are referenced. The mapping between the MMI procedures and the call control entity is specified in ~~GSM~~ TS ~~0~~2.0~~0~~8 [16].

4.4.2.2 Emergency calls

With Mobile Stations supporting Telephony, it shall be possible to place an emergency call by entering 112 with GSM 900 and GSM 1800, 911 for GSM 1900 in the U.S.A. and Canada, or 08 for GSM 1900 in Mexico, followed by SEND in the manner specified in subclause 4.4.2.1. When a dual or multi-band terminal supporting GSM 1900 and another band is registered on a GSM 900, GSM 1800 or GSM 1900 network, it shall support the initiation of an emergency call by entry of 112, 911 or 08 unless a data call is requested. It may also be possible for a user to enter a preferred emergency MMI code of up to six digits (such as 999) followed by SEND to invoke an emergency call. In this latter case, the preferred code shall be stored in the SIM and the ME recognizes any dialled instance of this code to set up the emergency call. Additional means to place such a call are also allowed, e.g. provision of a dedicated button.

The MS must support the initiation of an emergency call to "112", “911” for GSM 1900 in the U.S.A. and Canada, or “08” for GSM 1900 in Mexico, without a SIM present in the MS, regardless of the call being accepted or not by the network (national option to require IMSI).

NOTE: In addition to the above procedure, calls to national emergency services may be made in the way standard for the country of the serving PLMN. However, with the exception of code "112", “911” for GSM 1900 for U.S.A. and Canada, or “08” for GSM 1900 for Mexico, these are not treated within the PLMN as "Teleservice Emergency call" unless the ME recognizes the code as an emergency code as described above, and would require a valid IMSI.

4.5 Supplementary Services Control

4.5.1 General

The supplementary services shall be controlled in accordance with the procedures described below. All Mobile Stations with MMI shall be able to be controlled in this way, to minimize the confusion of users using different types of Mobile Station (quite likely, due to the use of the SIM IC card) and to permit the introduction by a PLMN operator of new supplementary services, not defined at the time of the design of a Mobile Station. These procedures are based on those recommended by CEPT/SF and ~~CCITT~~ITU-T Recommendation E.131.

The specified MMI shall be supported by the L3 signalling between the MS and the MSC, see ~~GSM~~ TS ~~0~~2~~4~~.0~~8~~0 [17].

In addition to these specified MMI procedures the MS may be equipped with additional enhanced MMI procedures (e.g. dedicated keys, menu procedures...), left to the discretion of the manufacturer. These procedures shall also be converted in accordance with ~~GSM~~ TS 2~~0~~4.0~~8~~0 [17].

4.5.2 Structure of the MMI

The following sequence of functions shall be used for the control of Supplementary Services:

SELECT: Entry of the procedure information (may be a digit or a sequence of characters).

SEND: Transmission of the information to the network.

INDICATION: See subclause 4.3.

The MS shall support the MMI procedure specified as:

Activation : *SC*SI#

Deactivation : #SC*SI#

Interrogation : *#SC*SI#

Registration : *SC*SI# and **SC*SI#

Erasure : ##SC*SI#

This structure consists of the following parts:

- Service Code, SC((2 or 3 digits);
- Supplementary Information, SI (variable length).

The procedure always starts with *, #, **, ## or *# and is finished by #. Each part within the procedure is separated by *.

The service code uniquely specifies the Supplementary Service, either as a defined ~~GSM~~ Supplementary Service or as a spare service code. All spare service codes shall be reserved for future use.

The MS shall determine from the context whether, an entry of a single *, activation or registration was intended.

For example, a call forwarding request with a single * would be interpreted as registration if containing a forwarded-to number, or an activation if not.

The supplementary information (SI) may comprise e.g. a PIN code or Directory Number. Where a particular service request does not require any SI, "*SI" is not entered, e.g. Activation becomes *SC#SEND. Where further supplementary information is required this is again entered as *SI, e.g. *SC*SIA*SIB#SEND. SIB may be used to specify the tele or bearer service expressed as a Basic Service Group to which this supplementary service request applies, SIC may be used to specify the value of the "No Reply Condition Timer".

Use of SIA, SIB, SIC for a particular procedure is optional. The procedure to be adopted where these are not all used is as follows:

*SI# shall be entered in any of the following formats:

* SIA * SIB * SIC #

* SIA * SIB #

* SIA * * SIC #

* SIA #

* * SIb * SIC #

* * SIB #

* * * SIC #

#

The denotation of the Supplementary Information and the order of entry are specified in annex B. Supplementary Information Codes for the Teleservices and Bearer Services are given in annex C.

The following procedures shall be used for application of supplementary services to the call set-up procedure:

*SCn*SI#DN SEND;

where SC is the service code defined in annex B and *SI is an optional field which may be applicable to service SC. The "n" is a single digit used to indicate the numbering plan, profile, priority, etc. according to the service being applied. For simplicity of presentation, the leading * is shown on the assumption that the action is to activate (switch on) the required service. However, for a deactivation (or switch off), this would become:

#SCn*SI#DN SEND;

It is assumed that the *# (interrogation) will not apply to call set-up.

Where more than one supplementary service is applicable to the call set-up, these shall be concatenated with any applicable supplementary information immediately following the applicable service code.

For example, if SCn and SI refer to one applicable supplementary service and scn and si to another, then the generic procedure becomes:

*SCn*SI#scn*si#DN SEND.

NOTE: The order of entry of SC and sc is a user option, provided that any supplementary information follows immediately after the relevant SC.

Where SI is not applicable according to the definition of the supplementary service, then *SI is omitted. Where its use is optional, but not selected for a particular call set-up, it may be omitted or entered as an extra * if this is necessary to avoid ambiguity of interpretation.

NOTE: By using the # as a separator, most cases are expected to be unambiguous.

4.5.3 Handling of supplementary services

4.5.3.1 Handling of defined ~~GSM~~ supplementary services

The MMI procedure for the defined ~~GSM~~ Supplementary Services shall be converted to the mobile radio interface Layer 3, as specified in ~~GSM~~ TS ~~0~~2~~4~~.0~~8~~0 [17]. An appropriate message should be given/displayed to the user in accordance with the "return result/error" from the network.

The service codes for the defined ~~GSM~~ Supplementary Services are given in annex B.

4.5.3.2 Handling of not-implemented supplementary services

The MS shall act in accordance with figure 4.5.3.2 when digits are entered to the MS to determine whether to interpret these as call set-up requests or supplementary service control procedures etc.. This may involve a mechanism, referred to as Unstructured SS Data, which allows the support of ~~GSM~~ SS services which are not implemented by means of the ~~GSM~~ specified functional signalling. See also ~~GSM~~ TS ~~0~~2~~2~~.0~~9~~0 [10].

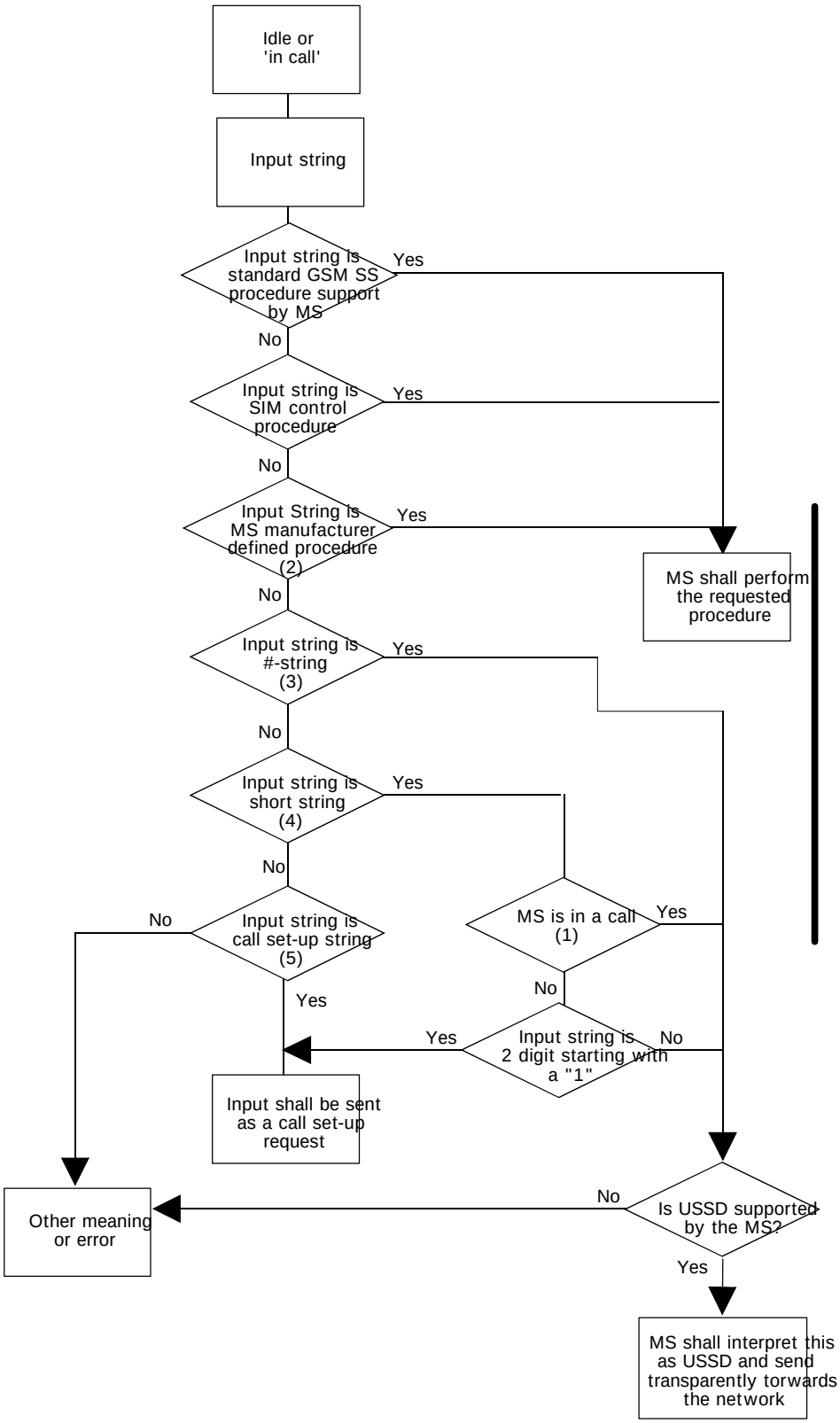


Figure 4.5.3.2

The following definitions are applicable to the interpretation of figure 4.5.3.2:

1) In a call:

   A MS is "in a call" from the time that signalling related to the establishment or attempted establishment of a MO or MT call commences and before the call or call attempt ends, and (if applicable) the ME has

stopped generating tones related to this call to the user.

2) MS manufacturer defined procedure:

The term "MS manufacturer defined procedure" shall not include the following two cases:

(i) input which can be interpreted as being of the following form, whether or not in a call:

CX [string]# followed by SEND;

where

string is any combination of numeric digits, *, #;

and

C comprises 1, 2 or 3 digits from the set (*,#);

and

X comprises 1, 2 or 3 numeric digits or the fourth numeric digit is non-zero;

(ii) input of the following form in a call (as defined above):

"Entry of 1 or 2 characters defined in the ~~GSM~~ TS ~~0~~2.0 38 [15] Default Alphabet followed by SEND".

3) #-string:

Input of the form.

"Entry of any characters defined in the ~~GSM~~ TS ~~0~~2.0 38 [15] Default Alphabet (up to the maximum defined in ~~GSM~~ TS ~~0~~2.0 80 [17]), followed by #SEND".

4) Short string:

"Entry of 1 or 2 characters defined in the ~~GSM~~ TS 2~~0~~.0 38 [15] Default Alphabet followed by SEND".

5) Call setup string:

MMI input in accordance with the call set-up procedures as defined in ~~GSM~~ TS ~~0~~2.0 08 [16] and terminated by SEND.

If the network has initiated an operation which explicitly (in the signalling) requires a response from the user, then the user shall be able to enter a response in the form of any string of characters followed by SEND. The mobile shall also provide an MMI command to terminate the dialogue with a NULL response.

The use of END shall release all calls in progress (see also subclause 4.5.5.2), terminate any outstanding unstructured SS operations, and release any connection used for unstructured SS operations.

4.5.4 Registration of new password

The following procedure permits the user to change the password relating to use of Supplementary Services. The only control procedure supported is Registration of a new password, which replaces any previous password for the same service. The password may not be Erased or Interrogated.

Procedure:

* 03 * ZZ * OLD_PASSWORD * NEW_PASSWORD * NEW_PASSWORD #

The MS shall also support the alternative procedure:

** 03 * ZZ * OLD_PASSWORD * NEW_PASSWORD * NEW_PASSWORD #

where, for Barring Services, ZZ = 330;

for a common password for all appropriate services, delete the ZZ, entering:

* 03 ** OLD_PASSWORD * NEW_PASSWORD * NEW_PASSWORD #

The MS shall also support the alternative procedure:

** 03 ** OLD_PASSWORD * NEW_PASSWORD * NEW_PASSWORD #

the MS will then indicate to the user whether the new password request has been successful or not. If the new password request is rejected (e.g. due to entry of incorrect old password) the old password remains unchanged, until it is successfully changed by correctly repeating the procedure. Refer to ~~GSM~~ TS ~~0~~2.0 04 [2] regarding repeated entry of incorrect password.

NOTE: The procedures shall be followed by SEND as described in subclause 4.5.2.

4.5.5 Handling of supplementary services within a call

4.5.5.1 Call Deflection, Call Waiting, Call Hold, MultiParty Services, Explicit Call Transfer and Completion of Calls to Busy Subscriber general principles

During a call, the following general procedures shall be available, where applicable, for the subscriber to control the operation of

- Call Deflection
- Call Waiting
- Call Hold
- MultiParty Services
- Explicit Call Transfer
- ~~$(CCBS)$:~~ Completion of Calls to Busy Subscriber

including their interactions. It should be noted that not all control procedures described in ~~GSM~~ TS ~~0~~2.0 72 [25], ~~02~~TS 22.0 83 [8], TS ~~0~~2.0 84 [9], ~~0~~2.0 91 [26], and ~~0~~2.0 93 [27]~~-~~ are specified in this subclause.

Procedures:

Entering 0 followed by SEND	-	Releases all held calls or sets User Determined User Busy (UDUB) for a waiting call.
Entering 1 followed by SEND	-	Releases all active calls (if any exist) and accepts the other (held or waiting) call.
Entering 1X followed by SEND	-	Releases a specific active call X.
Entering 2 followed by SEND	-	Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.
Entering 2X followed by SEND	-	Places all active calls on hold except call X with which communication shall be supported.
Entering 3 followed by SEND	-	Adds a held call to the conversation.
Entering 4 followed by SEND	-	Connects the two calls and disconnects the subscriber from both calls (ECT).

Entering 4 * "Directory Number"	-	Redirect an incoming or a waiting call to the specified followed by SEND directory number.
Entering 5 followed by SEND	-	~~$(CCBS)$:~~ Activates the Completion of Calls to Busy Subscriber Request.
Entering "Directory Number"	-	Places all active calls (if any exist) on hold and sets up a followed by SEND new call to the specified Directory Number.
Entering END	-	Releases the subscriber from all calls (except a possible waiting call).

"X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until they are released. New calls take the lowest available number.

Where both a held and a waiting call exist, the above procedures shall apply to the waiting call (i.e. not to the held call) in conflicting situation.

4.5.5.2 Call Waiting (CW)

During a call, provided this service is active for the called party, if a second call attempts to make contact, a "call waiting" indication will be presented to the called party.

To clear the current call and accept the waiting call, enter 1 followed by SEND, within the time out period. Alternatively, either party in the existing, active, call may release that call. The call waiting indication then becomes an "alert", and the call may be accepted as a normal call within the time-out period.

To hold the current call and accept the waiting call, enter 2 followed by SEND, within the time out period.

To ignore the waiting call, take no action.

To set User Determined User Busy (UDUB) for the waiting call, enter 0 followed by SEND, within the time out period.

To redirect the waiting call to another destination, enter 4 * "Directory Number" followed by SEND, within the time out period.

4.5.5.3 Call hold

During a call, the initial call may be held while another call is made by entering the second directory number followed by SEND.

To shuttle between the two calls enter 2 followed by SEND irrespective of whether the second call was acquired using the Call Hold or acceptance of Call Waiting procedures.

If no waiting call exists, by entering 0 followed by SEND the held call is cleared.

To clear an active call and return to the held call enter 1 followed by SEND. This is only possible if no waiting call exists.

4.5.5.8 Completion of calls to busy subscribers ~~- $(CCBS)$~~

In a situation where a calling party A encounters busy of congestion on the B side, the network may offer the possibility to apply the CCBS supplementary service. If subscriber A, after being notified that CCBS is possible and during the period where the retention timer is running (minimum 15 seconds), enters 5 followed by SEND, this shall be interpreted as CCBS activation. Entering of 5 SEND by subscriber A in any other situation as described above shall not be interpreted as CCBS activation.

4.5.6 Other handling of supplementary services

4.5.6.1 Multiple Subscriber Profile ~~- (MSP)~~

4.7 Presentation of IMEI

The following procedure shall instruct the ME to display its IMEI:

*#06#

The procedure shall be accepted and performed with and without an inserted SIM. The ME shall then display the 14 digits of the IMEI (not including the spare digit), the Check Digit and optionally the Software Version Number as defined in ~~GSM~~ TS ~~0~~2.0 16 [6] (as a single string, in that order).

5 The basic public MMI

5.1 General

In order to improve the standardization of the MMI for ~~GSM~~ Mobile Stations intended for general use by the public to access voice services, the following additional specification is provided. Equipment which meets this specification may quote "Approved to ~~0~~2.0 30-Section 5" in its specification.

This procedure is intended for Mobile Stations used by unfamiliar users, where instructions will be limited, for example in fleet cars, hire cars and payphones (cash, credit card, smart card, prepaid card, etc...).

The organization providing the facility may require "Approved to ~~0~~2.0 30-Section 5" as part of its procurement specification.

The use of this clause 5 of the specification is not mandatory.

Use of "Approved to ~~0~~2.0 30 section 5" is restricted to Mobile Stations which pass Type Approval testing in respect to this clause.

A manufacturer who wishes his equipment to be tested to this section for approval must declare his requirement on submission.

This specification covers the basic features of call origination and call termination. It specifies features which are mandatory for the Basic Public MMI. These are additional to the other clauses of ~~GSM 0~~TS 2.0 30 which still apply and provision of additional features and facilities is not precluded unless otherwise stated.

Guidelines for the application and design of pictographic instructions and the use of the symbol for telephone are to be found in ~~CCITT~~ITU-T Recommendation E.121 [24] (Red Book, Vol. II - Fasc. II.2).

5.2.9 Country/PLMN selection

~~(For definition, see GSM 02.07 [3]).~~

PLMN selection shall be in accordance with ~~GSM~~ TS ~~0~~2.0 11 [4], but "automatic" shall be the default mode.

Annex A (normative):
MS access mealy graph

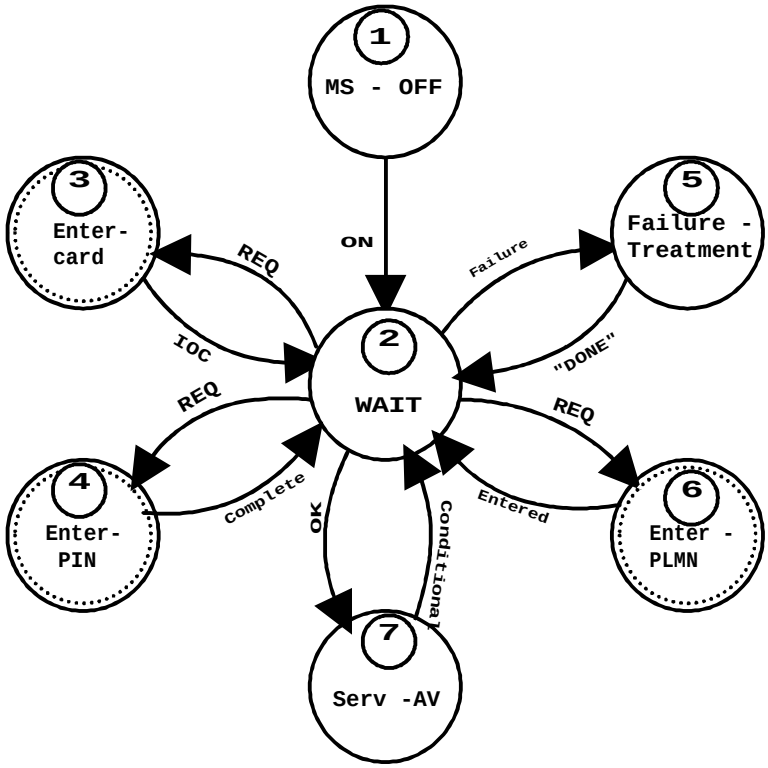


Figure A.1: Mealy-graph for the ms access procedure

Assumptions and requirements:

1) Emergency calls shall be possible in all states, except in state 1.

2) Power-off should cause transition to state 1 from all other states.

3) The actions to be taken in state 5 is not defined.

4) Basic requirements concerning indications and procedures for the different states are given in specifications GSM 02.07 [3], TS ~~0~~2.011 [4], 02.17 [5] and 02.40 [7].

5) Additional indications to those in item 4 above may be given in all states and at all events.

6) Realization of the dotted states (3, 4 and 6) depends upon the network requirements and the type of MS.

Description of the states of the MS access procedure

1) MS-OFF: The MS is in OFF-condition. This means that the equipment is not active as an MS in a ~~GSM~~ PLMN.

2) WAIT: Waiting for the completion of the MS access conditions, which are related to the type of MS and to the ~~GSM~~ PLMN, where in the MS is roaming (e.g. location updating).

3) ENTER CARD: Request for entering of the subscriber card, (e.g. when no built in SIM module is available).

4) ENTER PIN: Request for entering of the correct PIN.

5) FAILURE TREATMENT: Waiting for removal the actual failure condition.

6) ENTER PLMN: Request for selection of PLMN.

7) SERV-AV: The MS is in a ready state. PLMN services are available to the user.

Description of the transitions between MS access states

ON: The equipment becomes active as an MS in a ~~GSM~~ PLMN.

REQ: A request for user activity.

IOC: Insertion of a subscriber card with SIM-module.

COMPLETE: The PIN has been entered.

ENTERED: A PLMN choice has been done.

FAILURE: A failure condition has occurred in any other state during the MS access procedures.

CONDITIONAL: One of the conditions the MS is waiting for in WAIT state has been lost. The MS goes back to the WAIT state.

"DONE": The MS access failure condition has been corrected.

OK: All the conditions the MS is waiting for in the WAIT state are accomplished.

Annex B (normative): Codes for defined Supplementary Services

Table B.1: Input information for handling of defined Supplementary Services

	Supplementary Service	Service Code	SIA	SIB	SIC
~~0~~22.067					
	eMLPP	75 and 75n		where n=0-4	
~~0~~22.072					
	CD	66			
~~0~~22.081					
	CLIP	30	-	-	-
	CLIR	31	-	-	-
	COLP	76	-	-	-
	COLR	77	-	-	-
In temporary mode, to suppress CLIR for a single call, enter: " * 31 # <called number> SEND "					
In temporary mode, to invoke CLIR for a single call enter: " # 31 # <called number> SEND "					
~~0~~22.082					
	CFU	21	DN	BS	-
	CF Busy	67	DN	BS	-
	CF No Reply	61	DN	BS	T
	CF Not Reachable	62	DN	BS	-
all CF		002	DN	BS	T
all conditional CF		004	DN	BS	T
~~0~~22.083					
	WAIT	43 see section 4.5.5	BS	-	-
	HOLD	see section 4.5.5			
~~0~~22.084					
	MPTY	see section 4.5.5			
~~0~~22.087					
	UUS Service 1	361	R	-	-
	UUS Service 2	362	R	-	-
	UUS Service 3	363	R	-	-
	all UUS Services	360	R	-	-
If UUS shall be activated when originating a call, enter: " * 36X * R # <called number> SEND" (X is indicating the requested UUS service)					

Table B.1(concluded): Input information for handling of defined Supplementary Services

Supplementary Service	Service Code	SIA	SIB	SIC
~~0~~2.0.088				
BAOC	33	PW	BS	-
BAOIC	331	PW	BS	-
BAOIC exc home	332	PW	BS	-
BAIC	35	PW	BS	-
BAIC roaming	351	PW	BS	-
all Barring Serv.	330	PW	BS	-
Outg. Barr. Serv.	333	PW	BS	
Inc. Barr. Serv.	353	PW	BS	
~~0~~2.0.091				
ECT	96		see section 4.5.5	
~~$(CCBS)$:~~				
~~0~~2.0.093				
CCBS	37	n where n=1-5	See Section 4.5.5	
~~$(SPNP)$:~~				
~~02.95~~				
~~SPNP~~	~~07n~~		~~where n=0-9~~	
~~$(CNAP)$:~~				
~~0~~2.0.096				
CNAP	**300**	**-**	**-**	**-**
~~(MSP):~~				
~~0~~2.0.097				
MSP	59n	PW	where n=1-4	

DN = Directory Number;
PW = Password (see subclause 4.5.4);
BS = Basic Service Group (if required) - see annex C;
T = No Reply Condition Timer (5-30 seconds);
R = UUS required option.
SI required Y = Yes;
N = No;
- = Not applicable.

"UUS required" option

For the "UUS required" option two values are defined:

R = 0 UUS not required;
R = 1 UUS required.

NOTE: If the "UUS required" option is requested for a call, the call will only be established if the requested UUS capabilities are available.

If the "UUS required" option is not contained in an activation request UUS shall be activated without the UUS required option.

Annex C (normative): Codes for Tele- and bearer services

Tele- and Bearer Service Supplementary Information codes (SIb).

Alternate and speech/data services are included with the equivalent data service.

Basic Service group number (note)	Telecommunication Service	MMI Service Code
1 to 12	All tele and bearer services	no code required
	Teleservices	
1 to 6, 12	All teleservices	10
1	Telephony	11
2 to 6	All data teleservices	12
6	Facsimile services	13
2	Short Message Services	16
1, 3 to 6, 12	All teleservices except SMS	19
12	Voice group services	
	Voice Group Call Service (VGCS)	17
	Voice Broadcast Service (VBS)	18
	Bearer Service	
7 to 11	All bearer services	20
7, 9	All async services	21
8, 10	All sync services	22
8	All data circuit sync	24
7	All data circuit async	25
10	All dedicated packet access	26
9	All dedicated PAD access	27
13	All GPRS bearer services	99

NOTE: See ~~GSM~~ TS 2~~0~~2.0~~0~~4 [2] for definition of Basic Service groups.

The grouping implies that if e.g. code 25 is used, the Supplementary Service procedure concerned applies to all Asynchronous Data Circuit mode Bearer Services subscribed to.

Tele-and Bearer Service Supplementary Information Codes (SIb) for services not defined by GSM

Code as defined in ~~GSM~~ TS ~~0~~2~~9~~.~~0~~02 [19]	Telecommunication Service	MMI Service Code
PLMN specific teleservices:		
11010000	All PLMN specific teleservices	50
11010001	PLMN specific teleservice 1	51
11010010	PLMN specific teleservice 2	52
11010011	PLMN specific teleservice 3	53
11010100	PLMN specific teleservice 4	54
11010101	PLMN specific teleservice 5	55
11010110	PLMN specific teleservice 6	56
11010111	PLMN specific teleservice 7	57
11011000	PLMN specific teleservice 8	58
11011001	PLMN specific teleservice 9	59
11011010	PLMN specific teleservice 10	60
11011011	PLMN specific teleservice 11	61
11011100	PLMN specific teleservice 12	62
11011101	PLMN specific teleservice 13	63
11011110	PLMN specific teleservice 14	64
11011111	PLMN specific teleservice 15	65
PLMN specific bearer services:		
11010000	All PLMN specific bearer services	70
11010001	PLMN specific bearer service 1	71
11010010	PLMN specific bearer service 2	72
11010011	PLMN specific bearer service 3	73
11010100	PLMN specific bearer service 4	74
11010101	PLMN specific bearer service 5	75
11010110	PLMN specific bearer service 6	76
11010111	PLMN specific bearer service 7	77
11011000	PLMN specific bearer service 8	78
11011001	PLMN specific bearer service 9	79
11011010	PLMN specific bearer service 10	80
11011011	PLMN specific bearer service 11	81
11011100	PLMN specific bearer service 12	82
11011101	PLMN specific bearer service 13	83
11011110	PLMN specific bearer service 14	84
11011111	PLMN specific bearer service 15	85

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.034	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: (*at least one should be marked with an X*) USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122034

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.034 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; High Speed Circuit Switched Data (HSCSD) - Stage 1 (3G TS 22.034 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines specifies the Stage 1 description of High Speed Circuit Switched Data (HSCSD) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This Technical Specification (TS) specifies the Stage 1 description of High Speed Circuit Switched Data (HSCSD). HSCSD is a feature that allows users subscribing to the General Bearer Services to access user rates that can be achieved with one or more TCH/F. HSCSD also defines a flexible use of air interface resources which makes efficient and flexible use of higher user rates feasible.

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~ TS 0~~1~~22.00~~1~~2: "~~Digital cellular telecommunications system (Phase 2+);~~ Bearer Services (BS) supported by a ~~GSM~~ Public Land Mobile Network (PLMN)".

[3] ~~GSM~~ TS 0~~1~~22.00~~1~~4: "~~Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

[4] GSM 02.06: "Digital cellular telecommunications system (Phase 2+); Types of Mobile Stations (MS)".

[5] GSM 05.02: "Digital cellular telecommunications system (Phase 2+); Multiplexing and multiple access on the radio path".

[6] TR 21.905: "Vocabulary for 3GPP Specifications"

4.2 Applicability

HSCSD shall provide flexible ways of supporting GSM Phase 2, T and NT data services and new data services at the higher rates possible with one or more TCH/F. Data compression shall be applicable to NT HSCSD. Supplementary Services that are applicable to the General Bearer Services can be used with the HSCSD feature (Reference ~~GSM~~ TS 0~~1~~22.00~~1~~4, [3]).

4.3 General Bearer Services

The General Bearer Services are defined in ~~GSM~~ TS 0~~1~~22.00~~1~~2 [2].

The General Bearer Services consist of two Bearer Services, and they are as follows:

- asynchronous;
- synchronous.

6 Interworking requirements

6.1 Service interworking

6.1.1 Interworking with supplementary services

Supplementary Services that are applicable to the General Bearer Services can be used with the HSCSD feature (Reference ~~GSM~~ TS ~~0~~2.0004, [3]).

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.041	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122041

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.041 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Operator Determined Barring (ODB) (3G TS 22.041 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document defines the network feature Operator Determined Barring (ODB) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document describes the network feature Operator Determined Barring (ODB).

This allows the network operator or service provider to regulate, by means of an exceptional procedure, access by the subscribers to ~~GSM~~ services, by the barring of certain categories of outgoing or incoming calls or of roaming. ODB shall take effect immediately and shall terminate ongoing calls and bar future calls.

The purpose of this network feature is to be able to limit the service provider's financial exposure to new subscribers, or to those who have not promptly paid their bills. It may only be applied to the service provider's own subscribers.

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~ TS ~~0~~2.0~~8~~8: "~~Digital cellular telecommunications system (Phase 2+);~~ Call Barring (CB) supplementary services - Stage 1".

[3] ~~CCITT~~ITU-T Recommendation E.164 ~~(1991)~~: "Numbering plan for the ISDN era".

[4] ~~GSM~~ TS ~~0~~2.0~~8~~2: "~~Digital cellular telecommunication system (Phase 2+);~~ Call Forwarding (CF) supplementary services - Stage 1".

[5] TR 21.905: "Vocabulary for 3GPP Specifications"

1.2 Definitions and abbreviations

In addition to the following definitions, abbreviations used in the present document are listed in GSM 01.04 [1] and TR 21.905 [5].

premium rate call: A telecommunications network, possibly but not necessarily a PLMN, may make available certain services, for which the tariff is comparable to, or may exceed, International Call rates. Examples of such premium rate services might be information and entertainment services. The exact definition of what constitutes a premium rate call is the responsibility of the VPLMN operator, possibly subject to inter-operator agreements.

5 Normal procedure

As described in the following categories, the Service Provider may at any time activate this feature and this shall terminate any relevant calls in progress, including forwarded calls, and bar future calls covered by the barring category:

Independently, one of:

1.1 Barring outgoing calls;

or: 1.2 Barring outgoing international calls;

or: 1.3 Barring outgoing international calls except those directed to the home PLMN country;

or: 1.4 Barring of outgoing calls when roaming outside the home PLMN country;

or: 1.5 Barring of outgoing inter-zonal calls;

or: 1.6 Barring of outgoing inter-zonal calls except those directed to the home PLMN country;

or: 1.7 Barring of outgoing international calls except those directed to the home PLMN country AND barring of outgoing inter-zonal calls.

and/or one of:

2.1 Barring incoming calls;

or: 2.2 Barring incoming calls when roaming outside the home PLMN country;

or: 2.3 Barring incoming calls when roaming outside the zone of the home PLMN country.

and/or one of:

3.1 Barring of Roaming outside the home PLMN;

or: 3.2 Barring of Roaming outside the home PLMN country.

and/or one or both of:

4.1 Barring of outgoing Premium Rate Calls (Information);

4.2 Barring of outgoing Premium Rate Calls (Entertainment).

and/or one or more of:

5.1 When registered in the HPLMN, Operator Specific Barring (Type 1);

or: 5.2 When registered in the HPLMN, Operator Specific Barring (Type 2);

or: 5.3 When registered in the HPLMN, Operator Specific Barring (Type 3);

or: 5.4 When registered in the HPLMN, Operator Specific Barring (Type 4).

and/or

6.1 Barring of Supplementary Services Management, which prevents user control of any supplementary service (registration, erasure, activation, deactivation, user invocation, interrogation, password registration and mobile initiated USSD). However, this does not prevent invocation by other action - e.g. an existing call forwarding or barring state will remain.

and/or one of:

7.1 Barring of registration of any call forwarded-to number;

or: 7.2 Barring of registration of any international call forwarded-to number;

or: 7.3 Barring or registration of any international call forwarded-to number except to a number within the HPLMN country;

or: 7.4 Barring of registration of any inter-zone call forwarded-to number.

or: 7.5 Barring of registration of any inter-zone call forwarded-to number except to a number within the HPLMN country;

NOTE: The definition of an international call is based on the equivalent definition of an international call in ~~GSM~~ TS ~~0~~2.0~~8~~8 [2]. The principles for deciding whether a forwarded-to number is international or inter-zonal are the same as those given in ~~GSM~~ TS ~~0~~2.0~~8~~2 [4] to determine the interactions between call forwarding and call barring.

and/or one of:

8.1 Barring of invocation of call transfer;

or: 8.2 Barring of invocation of call transfer where at least one of the two calls is a call charged to the served subscriber; i.e. the call is either an outgoing call or an incoming call when the served subscriber roams outside the HPLMN;

or: 8.3 Barring of invocation of call transfer where at least one of the two calls is a call charged to the served subscriber at international rates, i.e. the call is either an outgoing international call or an incoming call when the served subscriber roams outside the HPLMN country;

or: 8.4 Barring of invocation of call transfer where at least one of the two calls is a call charged to the served subscriber at inter-zonal rates, i.e. the call is either an outgoing inter-zonal call or an incoming call when the served subscriber roams to a VPLMN in a different zone from the HPLMN.

and/or:

9 Barring of invocation of call transfer where both calls are calls charged to the served subscriber, i.e. both calls are either outgoing calls or incoming calls when the served subscriber roams outside the HPLMN;

and/or:

10 Barring of further invocation of call transfer if there is already one ongoing transferred call for the served subscriber in the serving MSC/VLR.

"User invocation", as it relates to ODB, consists of the following action:

- invocation of the call hold supplementary service.

"Zone" is as defined in ~~CCITT~~ITU-T Recommendation E.164 [3].

NOTE: For the purposes of this TS, zone 3 and zone 4 are treated as one zone.

NOTE: If control of Supplementary Services Management is barred, then the control of call forward will be barred as a consequence, so explicit barring of call forward activation is not necessary.

If a mobile subscriber attempts to use a mobile initiated service which is barred as described above (categories 1, 4, 5, 6, 7, 8, 9, and 10), an appropriate message shall be returned to the Mobile Station or alternatively (categories 1, 4, and 5), if located in the HPLMN, the mobile subscriber can be automatically connected to a destination address determined by the HPLMN operator. It is necessary for the message to indicate that the barring is due to Operator Determined Barring. It is not necessary to indicate the categories which are barred. For ongoing, or transferred calls, that are terminated due to ODB, the network operator may give an appropriate indication to the barred party.

A notification (announcement or ~~CCITT~~ITU-T#7 cause value) may be returned to callers attempting to call a mobile subscriber who is appropriately barred incoming calls. It is not necessary to indicate to the called mobile station that an incoming call has been barred.

Only the HPLMN Operator can activate, change or deactivate application of this network feature.

In order to provide this feature securely when a subscriber roams to another network, the visited network needs to support the feature to ensure that the roaming subscriber cannot use a service which has been barred to him.

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.042	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122042

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.042 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Network Identity and Timezone (NITZ);
Service description, Stage 1
(3G TS 22.042 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes the feature Network Identity and Timezone (NITZ) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

~~[2] GSM 02.07: "Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS) features".~~

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

~~[3] GSM 04.08: "Digital cellular telecommunication system (Phase 2+); Mobile radio interface layer 3 specification".~~

[3] TS 24.008: "Mobile radio interface layer 3 specification; Core Network Protocols - Stage 3".

[4] TS 23.038: "Alphabets and Languages".

3 Definitions and abbreviations

In addition to the following definitions, abbreviations used in the present document are listed in GSM 01.04 [1] and TR 21.905 [2].

NITZ The feature Network Identity and Timezone as described in the present document.
UCS2 Universal Character Set 2
UT Universal Time
LTZ Local Time Zone, the offset from UT applying in that locality, including any adjustments for summer time, etc.

DST Daylight Saving Time. Adjustment for summer time.

4 Description

The feature Network Identities and Timezone shall make it possible for a serving PLMN to transfer its current identity, universal time, DST and LTZ to MSs, and for the MS to store and use this information. Each one of these elements is optional. The feature significantly enhances roaming as itenables the accurate indication of network identities that are either newer than the ME or have changed their name since the ME was manufactured or sold. Additionally time and timezone information can be utilised by MEs as desired.

When using the default ~~GSM~~ character set (see TS 23.038 [4]), the serving PLMN shall make both a "short" and a "long" name available to the MS. As an alternative or, in addition, to the default ~~GSM~~ character set, the serving PLMN can make a name available in UCS2. The MS shall be free to choose one of these names depending upon its own characteristics and/or limitations, such as those of its display.

NOTE: Guidance is sought, particularly from non-European operators, as to whether long and short name is required in UCS2 format.

The Network Operator may change the network identity at any time. However the change of network identity need not force immediate transfer of information to the MS.

As a network option, it shall be possible to send universal time (UT) by the network. Time information shall include: Year, Month, Day, Hour, Minute, Second, Timezone and DST. The expected accuracy of the time information is in the order of minutes.

NOTE: Universal time indicates the time at which this information element (see ~~GSM 04.08 [3]~~TS 24.008 [3]) may have been sent by the network. Thus it can be assumed that the accuracy of the time information when it arrives at the MS is usually within a couple minutes.

The serving PLMN shall make Local Time Zone (LTZ) available to the MS as an offset from Universal Time in units of 15 minutes.

When the LTZ is compensated for DST (summertime), the serving PLMN shall provide a DST parameter to indicate this. The adjustment for DST can be +1h or +2h.

For PLMNs which cover more than one timezone, it is assumed that the Network Operator will arrange for boundaries between subsets of the PLMN service area to be approximately aligned with timezone boundaries. When an MS changes Local Time Zone the PLMN is not required to immediately transfer new time zone information. Similarly the PLMN will transfer the LTZ changes arising from summer/winter adjustments when convenient to the network operator.

The MS will implement the new time zone information at an appropriate time following receipt.

The information passed to MSs supporting the NITZ feature is controlled by the serving PLMN Operator through administrative interaction. The interface necessary to support this administrative interaction is outside the scope of the present document.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)618***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.043	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 (*list TSG meeting no. here* ↑)

for approval [X] (*only one box should be marked with an X*)

for information [ ]

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: (*at least one should be marked with an X*) USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122043

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

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.043 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Support of Localised Service Area (SoLSA); Service description; Stage 1 (3G TS 22.043 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document specifies a mechanism, which can be used as a platform for providing special tariffs and/or special set of service features for certain subscribers within a regionally restricted area or areas within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This technical specification, specifies a mechanism, which can be used as a platform for providing special tariffs and/or special set of service features for certain subscribers within a regionally restricted area or areas.

The motivation for this concept is to create means for network operators to build new service and tariff packages, which take into account subscriber groups and their needs.

The localised service area is both an optional network feature and an optional MS feature. Usage and implementation of the different SoLSA service features may vary according to operator's service packages.

This feature is not intended to replace the existing method of cell selection, cell indication and handover.

“Support of Localised service area (SoLSA)” is renamed Phase 2+ item “Support of Home Area Priority”

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

2.1 Normative references

[1] GSM 02.06: "Digital cellular telecommunications system (Phase 2+); Types of Mobile Stations (MS)".

[2] GSM 02.07: "Digital cellular telecommunications system (Phase 2+); Mobile Stations (MS) features".

[3] ~~GSM 02.11~~TS 22.011: "~~Digital cellular telecommunications system (Phase 2+);~~ Service accessibility ".

2.2 Informative references

~~[4] GSM 10.43: "Digital cellular telecommunications system (Phase 2+); SoLSA, Work item status".~~

[4] TR 21.905: "Vocabulary for 3GPP Specifications".

[5] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

LSA Localised Service Area

Further ~~GSM related~~ abbreviations may be found in TR 21.905 [4] and GSM 01.04 [5].

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)619***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.057	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 for approval **X** *(only one box should*

list TSG meeting no. here ↑ for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122057

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.057 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Mobile Station Application Execution Environment (MExE); Service description, Stage 1 (3G TS 22.057 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS details the stage 1 aspects (overall service description) for the support of a Mobile Station Application Execution Environment (MExE) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04 ~~(ETR 350)~~: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

~~[2] GSM 10.57: "Digital cellular telecommunications system (Phase 2+); Project scheduling and open issues; Mobile Station Execution Environment (MExE)".~~

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS the following definitions apply:

applet: a small programme that is intended not to be run on its own, but rather to be embedded inside another application

application: MExE information in the form of software, scripts, applications, associated resources (e.g. libraries) and/or data

content: data and/or information associated with, or independent of, a particular application which may be presented to or collected from a user

MExE Classmark: a MExE Classmark identifies a category of MExE MS supporting MExE functionality with a minimum level of processing, memory, display and interactive capabilities. Several MExE Classmarks may be defined to differentiate between the functionalities offered by different MExE MSs. A MExE application or applet defined as being of a specific MExE Classmark indicates that it is supportable by a MExE MS of that Classmark.

MExE server: a node supporting MExE services in the MExE service environment

MExE service: a service enhanced (or made possible) by MExE technology

MExE service environment: Depending on the configuration of the PLMN, the operator may be able to offer support to MExE services in various ways. Examples of possible sources are from traditional GSM nodes, IN nodes, operator-specific nodes, operator-franchised nodes and services provider nodes, together with access to nodes external (i.e. vendor-specific) to the PLMN depending on the nature of the MExE service. These nodes are considered to constitute the MExE service environment. The MExE service environment shall support direct MExE MS to MExE MS interaction of MExE services.

MExE service provider: an organisation which delivers MExE services to the subscriber. This is normally the PLMN operator, but could be an organisation with MExE responsibility (which may have been delegated by the PLMN operator).

MExE subscriber: the owner of a subscription ~~(GSM or other)~~ who has entered into an agreement with a MExE service provider for MExE services. Access to MExE services though other types of networks is out of scope of this specification.

subscriber: the term subscriber in the context of this TS refers to a MExE subscriber

user: the user of an MExE MS , who may or may not be the subscriber.

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply:

API	Application Programming Interface
CS	Circuit Switched
FFS	For Further Study
IN	Intelligent Network
ME	Mobile Equipment
MExE	Mobile Station (Application) Execution Environment
MMI	Man Machine Interface
MS	Mobile Station
NO	Network Operator
PLMN	Public Land Mobile Network
SIM	Subscriber Identity Module
USIM	Universal Subscriber Identity Module
SP	Service Provider

Further ~~GSM~~ related abbreviations are given in GSM 01.04 [1] and TR 21.905 [2].

4 Description

MExE provides a standardised execution environment in an MS, and an ability to negotiate its supported capabilities with a MExE service provider, allowing applications to be developed independently of any MS platform. The MS (consisting of the ME and SIM/USIM) can then be targetted at a range of implementations for MExE from small devices with low bandwidth, limited displays, low processor speeds, limited memory, MMI etc., to sophisticated with a complete MExE execution environment.

The introduction of MExE execution environment into MSs is a significant step forward in their evolution. The ability of MSs to support MExE applications represents an extension of MSs' capabilities. In order to allow current and future technologies to exploit and benefit from this, a standardised means of negotiating the MSs' and network's capabilities is supported. This negotiation will permit the mutual exchange of capabilities between the MS and the MExE server, and possibly include the service profile of the user and capabilities of the network. The negotiation may take place at service initiation, or on a dynamic basis.

A network can be a transport bearer for the negotiation, interaction and transferring of applications, applets and content with the MS, however it need not necessarily be the provider of the MExE services with which the MS's execution environment is interacting with. The network may also be the intermediary between two MSs which are engaged in a MExE service with each other, with the network effectively supplying the "pipe" and not playing a MExE rôle in the connection.

Network nodes, nodes external to the network, or even MSs may be the entities which interacts with the MS's execution environment.

5 Compatibility of MExE MS's and applications

5.1 MExE classmarks

Given the wide ranging hardware capabilities of MExE MSs, together with the development of MExE applications and applets, a MExE classification shall be supported to determine their respective capability and compatibility. The MExE classification shall apply both to MSs and applications and applets.

The objective is to:

- classify the capabilities of a MExE MS to support MExE applications and applets; and
- identify the class of MExE MS on which a MExE application and applet may be supported.

The concept of a MExE Classmark is introduced to manage the MExE MS and MExE application and applet classification and compatibility. The MExE Classmark is distinct and unrelated to the existing ~~GSM~~ MS Classmark. The use of MExE Classmarks shall be supported during the capability negotiation between the MExE service provider and the MExE MS.

6 General MExE requirements

6.1 High level MExE requirements

The high level requirements of MExE are as follows:

- the means for MExE service provider specific services to be supported by all mobiles of a particular class (i.e. the need for a common set of APIs and development tools), and accessible across a range of networks;
- provide the user with a more sophisticated user interfaces (e.g. browser-like) with a rich variety of MMI concepts to control and invoke services (i.e. softkeys, icons, voice recognition etc.);
- the user's and MExE service providers capability to control the "look and feel" of applications and applets;
- the ability of the user to personalise the user interface;
- the ability of the user to personalise services;
- provide support of a wide variety of applications and applets;
- provide the means for MExE service providers to authenticate MExE subscribers;
- provide the user access to Internet and Intranet based applications and applets (via both standard Internet and Wireless optimised protocols);
- the means to transfer applications, applets and content automatically or on demand to a MExE MS from a MExE service provider, and upgrade existing applications across the network;
- the means to support direct MExE MS to MExE MS interaction of MExE services;
- the need for an inherent security architecture such that both the MExE MS and MExE server sides of a connection are authenticated (possibly by a brokerage server), and have access to a range of encryption and security functions in order to maintain the security and integrity of the network. The MExE service provider shall maintain security of subscribers personal data and ~~GSM~~ network data, with all aspects relating to network security being centred on the SIM/USIM;
- the ability for the MExE service provider to charge subscribers for MExE service provider provided MExE services, at connect time, when downloading, or on usage;

- the means for MExE service provider specific applications and applets on the MExE MS to communicate with applications in the MExE service environment using industry standard protocols (e.g. a MExE server etc);

- the ability to provide information to MExE service providers (e.g. location information of MS' for use with location dependent services);

- the means for MExE service providers and their applications and applets to determine MExE MS capabilities (i.e. MExE Classmark, technology, supported bearers according to network capabilities and network subscription etc.). (This shall be used by MExE servers to adapt application and applet transfer to MExE MS capabilities, and shall be used by applications and applets whilst running to adapt their behaviour to the MS's capabilities.);

- the opportunity for MExE service providers to apply expertise and software developed for other platforms;

- provision of APIs and tools to develop MExE services which are applicable for MExE MS';

- the means for the user to manage (i.e. identify version, delete, modify, save etc.) the applications, applets and content on the MExE MS;

- the means for the user to control acceptance (i.e. by Security Level, level of trust etc.) of applications, applets and content transferred to the MExE MS. (It shall be possible for the user to finely control a trusted application or applet's access rights on the MExE MS, such as reading/writing/deletion of files stored on the MExE MS);

- the means for MExE applications to perform some AT command functionality without compromise to security of MExE as defined in clause 8;

- the means for authentication certificates associated with applications to be managed and stored in the SIM/USIM;

- the ability for a MExE application to negotiate the QoS, and the ability to indicate to a MExE application changes in the QoS;

- the ability of MExE applications to be notified that handover is about to occur, is occuring or has occurred;

- the means for MExE MS manufacturers to download and upgrade their existing codec in a MExE MS. A generic mechanism to download other proprietary software into the execution environment of the MS shall be available to the manufacturer. The downloading of platform independent MExE applications, such as streaming audio, that support multimedia capabilities shall also be possible;

- the means for data to be synchronised between the MExE MS and the MExE service environment.

Some of the above requirements are subsequently elaborated.

6.2.1 User interface configuration management

User interface configuration management refers to the behaviour of the MExE MS, and the ability of the user to modify the MExE MS to behave in the manner he is accustomed to, or wishes the MExE MS to, present itself to the user. It does not refer to the services which interact with the network, but the way in which the MExE MS interacts with the user.

Users expect MExE MSs to offer an increasing range of capabilities which need not be ubiquitously present on each MExE MS, depending on the technological limitations of the MExE MS. The user shall be able to manage the user interface configuration of the MExE MS. For example, some user's may require a voice-controlled MMI, whilst others may have the need for a specialised presentation on the MExE MS display or preset function keys regardless of the application or applet which is running. Management of the user interface configuration will permit a user to move from MExE MS to MExE MS and exploit the technological capabilities of each class of MExE MS, with the use of varying services downloaded from the network, as required.

The user shall be able to identify (either directly or indirectly) the user interface configuration he wishes to add, modify or delete on his MExE MS, and shall be offered the means of doing this. This management may be performed, for example, by a configuration capability profile.

In taking this action, it shall be possible to determine whether the user interface configuration is already resident on the ME, or whether it requires to be obtained from the SIM/USIM or the network. The modifications which may be requested by the user could result in, for example, differing display characteristics being employed, redefinition of keys, modification of the "look and feel" of the user interface, touch screen facility, extensions to existing functions or the capability to automate some functions.

The control of the "look and feel" of MExE applications and applets to customise their level of functionality and appearance may be possible by the MExE service provider, network operator (where the MExE service provider is not the network operator) and the user. The aspects of the application or applet which may be customisable are determined by the MExE service provider as an integral part of the MExE application or applet.

The user interface configuration management which is specific to the ME shall be stored on the ME, and user interface configuration management which is generic to ME's may be stored in the network or on the SIM/USIM.

The definition of the user interface configuration management which may be offered to the user is outside the scope of this service description.

9.1 MS platform independence

In order to support the objectives of MExE, the ME and SIM/USIM is required to have an architecture capable of supporting applications, applets and content in a standardised execution environment, independently of the MExE MS manufacturer.

As this specification is not required to propose a specific technology, it identifies the common platform requirements from the service subscriber's and user's standpoint.

The limitations of small devices may result in the provision of the full application execution environment only being available in sophisticated devices.

The high level execution environment requirements are identified in the subsequent subclauses.

9.2 Document mark-up language and other coding formats

In order to cater for a wide variety of ME's with different display and input capabilities, support for both the standard Internet mark-up language and a content description language optimised for small display devices of low bandwith bearers shall be defined with the MExE specifications. Both languages may be implemented on any MExE MS. Standardised ways of coding content (i.e. images, phonebook, calendar etc.) shall be defined, however the support of such standardised content coding is optional.

In order to facilitate global use of MExE services, a standardised range of character sets for MExE services requires to be defined, and the capabilities of the user and applications to use them.

9.3 MExE APIs

MExE APIs may be defined covering aspects (e.g. Network APIs, Non-network API's, Terminal APIs etc.) within a given MExE Classmark of MExE MS (ME an/or SIM/USIM), and the MExE MS shall support a core API to support the execution of MExE applications and applets. The core API is a the minimal set of API that is present on all MExE MS's, providing the MExE execution environment in which applications and applets can execute, and is known as the Core MExE API. The Core MExE API consists of generic and GSM/UMTS specific aspects.

Applications and applets which have been designed to execute in this Core MExE API environment (and the optional ~~GSM~~ MExE APIs subsequently identified), will provide additional functions to the MExE MS.

In addition to the Core MExE API on an MExE MS, standardised MExE API extensions such as Network API (e.g. access to call control services, SMS etc.), Non-network GSM/UMTS-defined services API (e.g. security aspects, SIM/USIM phonebook etc.), Terminal API (e.g. power management, access to alerting function, phonebook, MMI, smartcard access etc.),shall be subsequently defined and may be supported by the MExE MS in order to further exploit ~~GSM's~~ the system capabilities.

The standardised MExE API extensions shall include access to mobility information.

11.1 Security Principles

The ME and the data therein are the property of the user. The user is also responsible for the payment of chargeable events involving her MS, and will be seen as the party responsible for any events (whether chargeable or not) involving her MS. Therefore the user shall have full control over all chargeable and non-chargeable events initiated by her MS ("event" includes responses made by the MS to external events, e.g. the acceptance by the MS of an incoming call). This control can be exercised either by the giving of explicit permission at the time of the event or by the giving of implicit permission to the events by the agreement to an event schedule listed clearly in a user profile.

The user shall be able to request the logging of specific network events initiated by MExE MS applications/applets.

The privacy of user data in the MS is of paramount importance.

The SIM/USIM and operator controlled areas within the terminal are the property of the network operator. The network operator shall therefore have full control over access to the SIM/USIM and operator controlled area The operator shall also have full control over data, excluding personal user data, transmitted to or from the SIM/USIM and the operator controlled terminal area and all events initiated by the SIM/USIM or operator controlled area ("event" includes responses made to external events, e.g. the response to a command sent from the ME).

As the user cannot know the capabilities of any MExE executables transferred from a MExE service environment before transfer, the MS MExE environment shall ensure that transferred MExE executables cannot compromise the above principles.

11.2 Security Requirements

For MExE executables of security operator, manufacturer and user trusted domains , as defined in clause 11.3, it shall be possible to authenticate the identity of the body that authorised the application, applet or content.

There shall be a secure, unforgable means for assigning the security domains defined in section 11.3 to the MExE executables transferable from the MExE service environment.

The certification of authorisation associated with MExE executables transferable from the MExE service environment shall be transferred with the certified material.

The MExE MS shall be able to verify the security domain, as defined in section 11.3, of MExE executables transferred from the MExE service environment.

The verification process in the MS itself shall not compromise the security of the functionality and content in the MS

Transferred material that fails verification shall not be installed and shall be deleted by the terminal as soon as possible.

MExE executables that cannot be verified due to the absence of required verification information in the MS, shall be considered as untrusted material, as defined in section 11.3.

The events that MExE executables are given permission by the user to initiate shall be securely recorded in the user profile.

There shall be mechanisms within the MExE MS for ensuring that applications cannot have access to MS functionality and content beyond that allowed by their security domain, as defined in section 11.3.

It shall be possible to for the user to downgrade MExE executables of operator, manufacturer or user trusted domain status to untrusted status, at installation or at any other time.

The MExE MS shall be able to detect if MExE executables transferred from the MExE service environment have been modified since they were assigned a security level.

MExE executables shall not be transferred to a MExE MS without the explicit permission of the MS user immediately prior to transfer or implicit permission via the user profile.

Applications and applets transferred to a MExE MS shall not be able to initiate events without the explicit permission of the MS user immediately prior to event initiation or implicit permission via the user profile.

The user profile data for transfer and event initiation cannot be changed without the explicit agreement of the user.

The user shall be able to abort or suspend any on-going call that has been set up automatically by an application.

The integrity of the SIM or USIM and ~~existing GSM~~ other security mechanisms shall not be compromised by the introduction of MExE services.

The user shall be able to request the logging of specific network events initiated by MExE MS applications/applets.

MExE MS applications/applets shall not be able to send command RUN GSM ALGORITHM to the SIM.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)620***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.060	**CR**	**004**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 for approval **X** *(only one box should*

list TSG meeting no. here ↑ for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122060

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.060 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
General Packet Radio Service (GPRS);
Service description, Stage 1
(3G TS 22.060 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS details the stage 1 aspects (overall service description) for the General Packet Radio Service (GPRS) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This TS defines the stage one description of the General Packet Radio Service (GPRS). ~~on Global System for Mobile communications (GSM) networks.~~ Stage one is an overall service description, primarily from the service subscriber's and user's points of view, but does not deal with the details of the human interface itself. This TS includes information applicable to network operators, service providers and terminal, switch and data base manufacturers.

This TS contains the core requirements for the GPRS and EGPRS ~~on GSM,~~ which are sufficient to provide a complete service.

This TS also documents some additional requirements which may be implemented (but do not have to be implemented).

In addition, additional functionality's not documented in this TS may be implemented. The requirements of which are considered outside the scope of this TS and consequently outside the scope of the corresponding stage 2 and stage 3 TSs. This additional functionality may be on a network-wide basis, or particular to one or a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

The interface between the Mobile Station (MS) and any external applications are outside the scope of this TS.

Charging principles are outside the scope of this TS, unless specific service requirements are stated. These requirements deal with the allocation of certain call charges to particular users.

A later phase of GPRS may include interworking with circuit switched networks (e.g. PSTN, ISDN) and may emulate certain circuit switched services. These aspects are outside the scope of this version of this TS.

Note: The present document covers description for GSM only. The document needs to be updated to make it applicable to 3GPP.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".

[2] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".

[3] ITU-T Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".

[4] ISO 8208: "Information processing systems - data communications - X.25 packet level protocol for data terminal equipment".

[5] ISO 8348: "Information processing systems - data communications - network service definition".

[6] ISO 8473: "Information technology - protocol for providing the connectionless mode network service".

[7] ISO 8878: "Information processing systems - data communications - use of X.25 to provide the OSI connection-mode network service".

[8] Internet STD 5:RFC 791: Internet protocol, RFC 950: "Internet standard subnetting procedure", RFC 919: "Broadcasting internet datagrams", RFC 922: "Broadcasting internet datagrams in the presence of subnets", RFC 792: "Internet control message protocol", RFC 1112: "Host extensions for IP multicasting" RFC 1122:" Requirements for Internet hosts - communication layers". RFC 1920:" Internet official protocol standards", RFC 1458: "Requirements for multicast protocols", RFC 1301: "Multicast transport protocol".

[9] ITU-T Recommendation X.3: "Packet Assembly/Disassembly facility (PAD) in a public data network".

[10] ITU-T Recommendation X.28: "DTE/DCE interface for a start-stop mode Data Terminal Equipment accessing the Packet Assembly/Disassembly facility (PAD) in a public data network situated in the same country".
X.28 Add. 1 (7/94) Addendum 1 to Recommendation X.28 to enable MAP support in accordance with Recommendation X.8.

[11] ITU-T Recommendation X.29: "Procedures for the exchange of control information and user data between a Packet Assembly/Disassembly (PAD) facility and a packet mode DTE or another PAD".

[12] ITU-T Recommendation X.75: "Packet-switched signalling system between public networks providing data transmission services".

[13] Bellcore GR-000301 Issue 2, 1997: "Public Packet Switched Network Generic Requirements (PPSNGR)".

[14] ITU-T Recommendation X.121: "International numbering plan for public data networks".

[15] ITU-T Recommendation X.136: "Accuracy and dependability performance values for public data networks when providing international packet-switched services".

[16] ITU-T Recommendation X.137: "Availability performance values for public data networks when providing international packet-switched services".

[17] ~~GSM~~ TS ~~0~~2.0~~6~~8 (ETS 300 925): "~~Digital cellular telecommunications system (Phase 2+);~~ Voice Group Call Service (VGCS) - Stage 1".

[18] GSM 02.06 (ETS 300 919): "Digital cellular telecommunications system; Types of Mobile Stations (MS)".

[19] ~~GSM~~ TS~~0~~2.0~~0~~4 (ETS 300 918): "~~Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

[20] ~~GSM~~ TS~~0~~2.0~~3~~0 (ETS 300 907): "~~Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[21] GSM 02.17 (ETS 300 922): "Digital cellular telecommunications system; Subscriber Identity Modules (SIM) Functional characteristics".

[22] ~~GSM~~ TS~~0~~2.0~~3~~.0~~6~~8 (ETS 300 933): "~~Digital cellular telecommunications system (Phase 2+);~~ Voice Group Call Service (VGCS) - Stage 2".

[23] ~~GSM~~ TS~~0~~2.0~~4~~.0~~6~~8 (ETS 300 948): "~~Digital cellular telecommunications system (Phase 2+);~~ Group Call Control (GCC) protocol".

[24] TR 22.905: "Vocabulary for 3GPP Specifications"

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS the following definitions apply:

A

access delay: The value of elapsed time between an access request and a successful access (source: ITU-T X.140).

access protocol: a defined set of procedures that is adopted at an interface at a specified reference point between a user and a network to enable the user to employ the services and/or facilities of that network (source: ITU-T I.112).

accuracy: A performance criterion that describes the degree of correctness with which a function is performed. (The function may or may not be performed with the desired speed.) (source: ITU-T I.350).

B

basic service: The telecommunication services excluding the supplementary services (source: GSM 01.04).

bearer service: A type of telecommunication service that provides the capability for the transmission of signals between user-network interfaces (source: GSM 01.04, ITU-T I.112).

best effort service: A service model which provides minimal performance guarantees, allowing an unspecified variance in the measured performance criteria.

broadcast: A value of the service attribute "communication configuration", which denotes unidirectional distribution to all users (source: ITU-T I.113).

C

calling user: Entity which originates a call to the General Packet Radio Service (GPRS).

closed group: A group with a pre-defined set of members. Only defined members may participate in a closed group.

connectionless service: A service which allows the transfer of information among service users without the need for end-to-end call establishment procedures (source: ITU-T I.113).

connectionless-mode transfer:

> "The terms 'message', 'datagram', ‘transaction mode' and 'connection-free' have been used in the literature to describe variations on the same basic theme: the transmission of a unit of data in a single, self-contained operation without establishing, maintaining, and releasing a connection."
>
> "(Connectionless-mode transmission) is the transmission of a single unit of data from a source service-access-point to one or more destination service-access-point(s) without establishing a connection. A connectionless-mode service allows an entity to initiate such a transmission by the performance of a single service access.
>
> In contrast to a connection, an instance of the use of a connectionless-mode service does not have a clearly distinguishable lifetime. In addition, the connectionless-mode service, unless otherwise explicitly determined, has the following fundamental characteristics:
>
> a) no dynamic peer-to-peer agreement is involved in an instance of the service;
>
> b) all of the information required to deliver a unit of data (destination address, quality of service selection, options, etc.) is presented to the layer providing the connectionless-mode service, together with the user data to be transmitted, in a single service access. The layer providing the connectionless-mode service is not required to relate this access to any other service access.
>
> As a result of these fundamental characteristics it may also be true that
>
> c) each unit of data transmitted is entirely self-contained and can be routed independently;

d) copies of a unit of data can be transmitted to a number of destination addresses."

NOTE: **Connectionless-mode transfer** normally implies that the service a) does not provide confirmed delivery of SDUs, b) does not guarantee delivery of SDUs, c) does not guarantee maintenance of SDU sequencing and d) does not guarantee elimination of SDUs.

connection-mode transfer:

"A connection is an association established for the transfer of data between two or more peer-entities. This association is established between the peer-entities themselves and between each entity and the next lower layer. The ability to establish a connection and to transfer data over it is provided to the entities in a given layer by the next lower layer as a connection-mode service. An instance of the use of a connection-mode service by peer-entities proceeds through three distinct phases of operation:

a) connection establishment;

b) data transfer; and

c) connection release."

NOTE: **Connection-mode transfer** normally implies that the service a) provides confirmed delivery of SDUs, b) provides ordered, in-sequence delivery of SDUs and c) will not duplicate SDUs.

conversational service: An interactive service which provides for bi-directional communication by means of real-time (no store-and-forward) end-to-end information transfer from user to user (source: ITU-T I.113).

D

demand service: A type of telecommunication service in which the communication path is established almost immediately, in response to a user request effected by means of user-network signalling (source: GSM 01.04, ITU-T I.112).

dependability: A performance criterion that describes the degree of certainty (or surety) with which a function is performed regardless of speed or accuracy, but within a given observational interval (source: ITU-T I.350).

destination user: Entity to which calls to the General Packet Radio Service (GPRS) are directed.

distribution service: Service characterised by the unidirectional flow of information from a given point in the network to other (multiple) locations (source: ITU-T I.113).

E

extra SDU delivery probability: The ratio of total (unrequested) extra service data units (SDUs) to total service data units received by a destination user in a specified sample (source: ITU-T X.140).

NOTE: the term "user information unit" has been replaced by the term "service data unit".

F

functional group: A set of functions that may be performed by a single equipment (source: ITU-T I.112).

G

geographical routing: The conversion of the PDU’s geographical area definition, which specifies the area in which the PDU will be broadcast, into an equivalent radio coverage map.

group: A set of members allowed to participate in the group call service. The group is defined by a set of rules that identifies a collection of members implicitly or explicitly. These rules may associate members for the purpose of participating in a group call, or may associate members who do not participate in data transfer but do participate in management, security, control, or accounting for the group.

group call: The relationship that exists between the members of a group for the purpose of transferring data. More than one group call may exist in a group. A group call establishes an active group.

group call initiator: A member (or third party) authorised to initiate a group call. More than one member may initiate group calls.

group call participant: A member of a group participating in a particular group call at a given time.

group call server: A logical entity that provides the group call service to the members.

group call service: A PTM service in which a relationship exists between participants of the group, and in which a single data unit transmitted by a source participant is received by multiple destination participants; it is a one-in, many-out service.

group controller: The member (or third party) responsible for the group creation and membership control.

guaranteed service: A service model which provides highly reliable performance, with little or no variance in the measured performance criteria.

I

interactive service: A service which provides the means for bi-directional exchange of information between users. Interactive services are divided into three classes of services: conversational services, messaging services and retrieval services (source: ITU-T I.113).

interface: The common boundary between two associated systems (source: GSM 01.04, ITU-T I.112).

M

mean bit rate: A measure of throughput. The average (mean) bit rate available to the user for the given period of time (source: ITU-T I.210).

mean transit delay: The average transit delay experienced by a (typically) large sample of PDUs within the same service category.

messaging service: An interactive service which offers user-to-user communication between individual users via storage units with store-and-forward, mailbox and/or message handling, (e.g., information editing, processing and conversion) functions (source: ITU-T I.113).

mobile station: Equipment intended to access a set of ~~GSM~~ PLMN telecommunication services. Services may be accessed while the equipment capable of surface movement within the ~~GSM~~ system area is in motion or during halts at unspecified points ~~(source: GSM 01.04)~~.

mobile termination: The part of the mobile station which terminates the radio transmission to and from the network and adapts terminal equipment capabilities to those of the radio transmission (source GSM 01.04).

multicast service: A unidirectional PTM service in which a message is transmitted from a single source entity to all subscribers currently located within a geographical area. The message contains a group identifier indicating whether the message is of interest to all subscribers or to only the subset of subscribers belonging to a specific multicast group.

multipoint: A value of the service attribute "communication configuration", which denotes that the communication involves more than two network terminations (source: ITU-T I.113).

N

network connection: An association established by a network layer between two users for the transfer of data, which provides explicit identification of a set of network data transmissions and agreement concerning the services to be provided by the set (source: ITU-T X.213 / ISO-IEC 8348).

network operator: Entity which provides the network operating elements and resources for the execution of the General Packet Radio Service (GPRS).

network service data unit (NSDU): A unit of data passed between the user and the GPRS network across a Network Service Access Point (NSAP).

network termination: A functional group on the network side of a user-network interface (source: ITU-T I.112).

O

open group: A group that does not have a pre-defined set of members. Any user may participate in an open group.

P

packet: An information unit identified by a label at layer 3 of the OSI reference model (source: ITU-T I.113). A network protocol data unit (NPDU).

packet data protocol (PDP): Any protocol which transmits data as discrete units known as packets, e.g., IP, or X.25.

packet transfer mode: Also known as packet mode. A transfer mode in which the transmission and switching functions are achieved by packet oriented techniques, so as to dynamically share network transmission and switching resources between a multiplicity of connections (source: ITU-T I.113).

peak bit rate: A measure of throughput. The maximum bit rate offered to the user for a given time period (to be defined) for the transfer of a bursty signal (source: ITU-T I.210). (The maximum user information transfer rate achievable by a user for a single service data unit transfer.)

PLMN Operator: Public Land Mobile Network operator. The entity which offers a GPRS.

point-to-multipoint (PTM) service: A service type in which data is sent to ”all service subscribers or a pre-defined subset of all subscribers” within an area defined by the Service Requester.

point-to-point (PTP): A value of the service attribute "communication configuration", which denotes that the communication involves only two network terminations.

point-to-point (PTP) service: A service type in which data is sent from a single network termination to another network termination.

predictive service: A service model which provides reliable performance, but allowing a specified variance in the measured performance criteria.

protocol: A formal set of procedures that are adopted to ensure communication between two or more functions within the within the same layer of a hierarchy of functions (source: ITU-T I.112).

protocol data unit (PDU): In the reference model for OSI, a unit of data specified in an (N)-protocol layer and consisting of (N)-protocol control information and possibly (N)-user data (source: ITU-T X.200 / ISO-IEC 7498-1).

Q

quality of service: The collective effect of service performances which determine the degree of satisfaction of a user of the service (ITU-T E.800). The set of performance parameters that can be directly observed and measured at the point at which the service is accessed by the user. There are three criteria by which performance is measured: speed, accuracy and dependability (source: ITU-T I.350).

R

reference configuration: A combination of functional groups and reference points that shows possible network arrangements (source: GSM 01.04, ITU-T I.112).

reference point: A conceptual point at the conjunction of two non-overlapping functional groups (source: GSM 01.04, ITU-T I.112).

residual error rate: A parameter describing service accuracy. The frequency of lost SDUs, and of corrupted or duplicated network SDUs delivered at the user-network interface.

retrieval service: An interactive service which provides the capability of accessing information stored in data base centres. The information will be sent to the user on demand only. The information is retrieved on an individual basis, i.e., the time at which an information sequence is to start is under the control of the user (source ITU-T I.113).

S

SDU error probability: The ratio of total incorrect service data units (SDUs) to total successfully transferred service data units plus incorrect service data units in a specified sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU loss probability: The ratio of total lost service data units (SDUs) to total transmitted service data units in a specified sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU misdelivery probability: The ratio of total misdelivered service data units (SDUs) to total service data units transferred between a specified source and destination user in a specified sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU transfer delay: The value of elapsed time between the start of transfer and successful transfer of a specified service data unit (SDU) (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

SDU transfer rate: The total number of successfully transferred service data units (SDUs) in a transfer sample divided by the input/output time for that sample. The input/output time is the larger of the input time or the output time for the sample (source: ITU-T X.140).

NOTE: the source document term "user information unit" has been replaced by the term "service data unit".

service access point (SAP): In the reference model for OSI, the points through which services are offered to an adjacent higher layer (source: GSM 01.04, ITU-T X.200 / ISO-IEC 7498-1).

service attribute: A specified characteristic of a telecommunication service (source: ITU-T I.112).

NOTE: the value(s) assigned to one or more service attributes may be used to distinguish that telecommunications service from others.

service bit rate: The bit rate that is available to a user for the transfer of user information (source: ITU-T I.113).

service category or **service class:** A service offered to the users described by a set of performance parameters and their specified values, limits or ranges. The set of parameters provides a comprehensive description of the service capability.

service data unit (SDU): In the reference model for OSI, an amount of information whose identity is preserved when transferred between peer (N+1)-layer entities and which is not interpreted by the supporting (N)-layer entities (source: ITU-T X.200 / ISO-IEC 7498-1).

service delay: The time elapsed from the invocation of the service request, to the corresponding service request indication at the Service Receiver, indicating the arrival of application data.

service model: A general characterisation of services based upon a QoS paradigm, without specifying the actual performance targets.

service provider: Entity which offers the General Packet Radio Service (GPRS) for subscription. The network operator may be the service provider.

service receiver: The entity which receives the service request indication primitive, containing the SDU.

service request: This is defined as being one invocation of the service through a service request primitive.

service requester: The entity which requests the initiation of a GPRS operation, through a service request.

service subscriber: Entity which subscribes to the General Packet Radio Service (GPRS) service.

signalling: The exchange of information specifically concerned with the establishment and control of connections, and with management, in a telecommunications network (source: ITU-T I.112).

simultaneous use of services: The concurrent use of a ~~GSM~~ circuit-mode service (voice or data) and ~~GSM~~ packet-mode services (GPRS) by a single mobile station.

speed: A performance criterion that describes the time interval required to perform a function or the rate at which the function is performed. (The function may or may not be performed with the desired accuracy.) (source: ITU-T I.350).

supplementary service: A service that modifies or supplements a basic telecommunication service (as defined in GSM 01.04). It cannot be offered to a customer as a stand-alone service. It must be offered together or in association with a basic telecommunication service (bearer or teleservice). The same supplementary service may be common to a number of telecommunication services (source: ITU-T I.210).

T

teleaction service: A type of telecommunication service that uses short messages, requiring a low transmission rate, between the user and the network (source: ITU-T I.112).

telecommunication service: That which is offered by a PLMN operator or service provider to its customers in order to satisfy a specific telecommunication requirement. (source: GSM 01.04, ITU-T I.112). Telecommunication services are divided into two broad families: bearer services and teleservices (source: ITU-T I.210).

teleservice: A type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to protocols established by agreement between Administrations (source: GSM 01.04, ITU-T I.112).

terminal equipment: Equipment that provides the functions necessary for the operation of the access protocols by the user (source: GSM 01.04). A functional group on the user side of a user-network interface (source: ITU-T I.112).

throughput: A parameter describing service speed. The number of data bits successfully transferred in one direction between specified reference points per unit time (source: ITU-T I.113).

transit delay: A parameter describing service speed. The time difference between the instant at which the first bit of a protocol data unit (PDU) crosses one designated boundary (reference point), and the instant at which the last bit of the PDU crosses a second designated boundary (source: ITU-T I.113).

U

user access or **user network access:** The means by which a user is connected to a telecommunication network in order to use the services and/or facilities of that network (source: GSM 01.04, ITU-T I.112).

user-network interface: The interface between the terminal equipment and a network termination at which interface the access protocols apply (source: ITU-T I.112).

user-user protocol: A protocol that is adopted between two or more users in order to ensure communication between them (source: ITU-T I.112).

V

variable bit rate service: A type of telecommunication service characterised by a service bit rate specified by statistically expressed parameters which allow the bit rate to vary within defined limits (source: ITU-T I.113).

3.2 Abbreviations

For the purposes of this TS the following definitions apply:

BOC	Bell Operating Company
CLNP	Connectionless network protocol
CLNS	Connectionless network service
CONS	Connection-oriented network service
EGPRS	Enhanced GPRS
FFS	For further study
GPRS	General packet radio service
GSN	GPRS support node

LATA	Local Access and Transport Area
IMGI	International mobile group identity
IP	Internet protocol
IP-M	Internet protocol multicast
NSDU	Network service data unit
PDP	Packet data protocol
PDU	Protocol data unit
PLMN	Public land mobile network
PTM	Point to multipoint
PTM-M	Point to multipoint – multicast
PTM-G	Point to multipoint – group call
PTP	Point to point
QoS	Quality of service
SAP	Service access point
SVC	Switched virtual circuit
SDU	Service data unit
TBD	To be defined
TLLI	Temporary link level identity

~~Additional GSM related abbreviations can be found in GSM 01.04 (ETR 350) [1].~~

4 Applicability

The GPRS is a set of ~~new GSM~~ bearer services that provides packet mode transmission within the PLMN and interworks with external networks. ~~It is not a requirement that the GPRS be an extension of or an emulation of one or any of these non-GSM services or networks.~~

The GPRS shall not prevent the user's operation of other GSM services.

5.2 GPRS service description

There are two categories of GPRS services:

- Point to Point (PTP) services,
- Point to Multipoint (PTM) services.

The PTP service provides a transmission of one or more packets between two users, initiated by a service requester and received by a receiver.

There are two PTP services:

- PTP Connectionless Network Service (PTP-CLNS);
- PTP Connection Orientated Network Service (PTP-CONS).

The PTM service provides a transmission of packets between a service requester and a receiver group.

There are three PTM services:

- PTM Multicast (PTM-M);
- PTM Group Call (PTM-G);
- IP Multicast (IP-M).

For PTM-M and PTM-G the data transmission is restricted to the members of a receiver group currently located within a geographical area. Both the receiver group and the geographical area are specified by the service requester.

The geographical area addressing mechanism is not applicable to IP-M.

An invocation of the service request by a service requester is possible from the fixed and mobile access points. Invocation and operation procedures (i.e., parallel sessions) are described in subclause 6.9.

Table 1 presents the relationship between service requests and the Service Requester/Receiver.

Table 1: Relationship of service request and service requester/receiver

Service requester/receiver AP = Access Point (see note 1)	**Types of service request**			
	PTP-CONS and PTP-CLNS	**PTM-M**	**PTM-G**	**IP-M**
From fixed AP to mobile AP	Supported	Supported	Supported	Supported
From mobile AP to mobile AP (see note 3)	Supported	Supported	Supported	Supported
From mobile AP to fixed AP	Supported	Not applicable	Supported (limited, see note 2)	Supported
NOTE 1: Mobile bearer services access points are 2 and 4 from figure 2. Fixed bearer service access points are 7 and 8. NOTE 2: All PTM-G features may not be supported for fixed AP, e.g., paging. NOTE 3: It shall be possible to transfer data between two mobiles of the same operator without the use of ~~non-GSM~~ external data networks.				

5.4.2.1 QoS parameter definitions

The defined QoS parameter values, assume the user is at a location with acceptable ~~GSM-/GPRS~~-coverage and refer to and are valid for normal network operating conditions or, as in the case of the service precedence parameter, regulate how the network shall handle abnormal conditions.

5.4.3 Security services

The use of radio communications for transmission to/from subscribers in mobile networks makes them particularly sensitive to:

1) misuse of their resources by unauthorized persons using manipulated MSs;

2) eavesdropping on the information being exchanged on the radio path.

Therefore, to protect the system in the two cases mentioned above, the following security features are provided for GPRS:

- MS authentication; i.e., the confirmation by the land-based part of the system that the subscriber identity, transferred by the MS within the identification procedure on the radio path, is the one claimed. The purpose of this authentication is to protect the network against unauthorized use. It also enables the protection of GPRS subscribers by denying intruders the ability to impersonate authorized users;

- access control; i.e., the network can support restrictions on access by or to different GPRS subscribers, such as restrictions by location, screening lists, and so on;

- user identity confidentiality; i.e., the property that the user identity on the radio link is not made available or disclosed to unauthorized individuals, entities or processes. The purpose is to provide privacy of identities of the subscribers who are using GPRS radio resources. It allows for the improvement of other security features, e.g., user information confidentiality, and also provides for the protection against tracing the location of a mobile subscriber by listening to the signalling exchanges on the radio path;

- user information confidentiality; i.e., the property that the user information is not made available or disclosed to unauthorized individuals, entities or processes. The purpose is to provide for confidentiality of user data, i.e., protection of the message part pertaining to layers 3 and above, that passes over the radio path.

Both user identity and user data shall be protected as shown in table 6:

Table 6: Protection of user identity and user data

Service	User Identity Protection	User Data Protection
PTP	Yes	Yes
PTM-Multicast (receiver)	Yes [a)]	No[b)]
PTM-Group Call	Yes	Yes

a) The individual identities of the group members that actually receive the PTM-M traffic, are not transferred on the radio path and furthermore are also not known to the network. This is an important aspect for those applications where it is imperative that the location of the user cannot under any circumstances be traced. However, the group identity and the identity of the service requester are sent unciphered on the radio path.

b) This does not preclude end-to-end ciphering of user data by the PTM-M application, this however, is outside the scope of this specification.

Security mechanisms available for existing teleservices and bearer services should be used if possible.

An optional requirement is that an MS can anonymously initiate a mobile originated, PTP communication to a specific subscriber or server that is registered within the PLMN. This necessitates that all charges shall be made to the called party. For the access to the network the MS shall not send its IMSI or IMEI thus guaranteeing a high level of anonymity. However, in the case of fraud or misuse of the service, the MS shall transfer its IMEI and/or IMSI upon request by the operator. Authentication and ciphering procedures are not required. Such procedures may reside inside or outside the ~~GSM~~ network.

NOTE: An example for such an anonymous service is a toll road system whereby a user can pay the road-toll anonymously using a pre-paid card instead of a normal SIM card. The road-toll application server receives and is charged for all messages of the anonymous service. However, the server has its own means to charge the user (e.g. using electronic money on the anonymous pre-paid card).

5.4.4 Packet size

Both PTP and PTM services shall allow the transfer of variable length Network Service Data Units (NSDU).

5.4.9 Format Of Message User Data

The user data is to be presented as an octet string between GPRS's access points, and is not interpreted by the ~~GSM~~ PLMN.

5.4.10 Charging aspects

The charging information that the GPRS network collects for each MS shall be ~~standardized~~standardised. The information that the operator uses to generate a bill to a subscriber is operator specific. Billing aspects, e.g. a regular fee for a fixed period, are outside the scope of this specification.

The ~~GSM~~ HPLMN Operator/Service Provider may be able to charge the GPRS subscriber for all costs incurred including those costs incurred in an external network be it a ~~GSM~~ VPLMN or a ~~non-GSM~~ data network.

6 Normal procedures with successful outcome

6.1 Provision

The GPRS services shall be provided to the subscriber after prior arrangement with the service provider. The provision of each of the following GPRS services independently or any combination thereof shall be possible:

1) Point To Point - Connectionless Network Service (PTP-CLNS);

2) Point To Point - Connection Orientated Network Service (PTP-CONS);

3) Point To Multipoint Multicast (PTM-M);

4) Point To Multipoint Group Call (PTM-G).

It shall be possible to subscribe to GPRS services with or without subscription to other GSM services. When a subscriber has subscribed to the Multiple Subscriber Profile (MSP) ~~GSM~~ supplementary service, it shall be possible to assign GPRS services to each of the individual MSPs.

It shall be possible for the network operator to offer GPRS to the Service Provider(s) who may then offer GPRS-based services to the end-user.

GPRS services can be offered to a subscriber with the subscription option of using a password to control the services. A single GPRS-password per subscriber is supported by the network for all GPRS services.

As a subscription option modification of the subscriber's service profile (e.g., registration, erasure) shall be possible only in conjunction with the GPRS-password.

The following Quality of Service (QoS) parameters shall be assigned to the subscriber profile upon provision of the GPRS service(s). These parameters may be negotiated or set to default values:

- service precedence (priority),
- reliability,
- delay,
- user data throughput.
- scheduled repeated transmission.

6.2 Withdrawal

The service(s) shall be withdrawn at the subscriber's request or for administrative reasons. Withdrawal shall de-activate the service.

6.3 GPRS-Attach, GPRS-Detach

GPRS-Attach is performed when the MS indicates its presence to the PLMN for the purpose of using the GPRS PTP or PTM-G services. This can be immediately after the MS has been switched on or later as the user decides to use the GPRS services. The MS identifies itself with its ~~GSM~~ identity (IMSI, TLLI). A GPRS-Attach shall be successfully performed only if the subscriber has a valid GPRS subscription. It is assumed that the user will not, under normal circumstances, initiate a GPRS Attach without first ensuring that the data handling capability necessary in the terminating equipment has been activated.

GPRS-Detach is performed when the MS indicates to the PLMN that the MS will no longer be using the GPRS services. The MS identifies itself with its ~~GSM~~ identity (IMSI, TLLI).

6.4 Registration

Registration of the service parameters shall enable the subscriber to optimize the actual (dynamic) service profile to the subscriber's present, actual requirements within the limitations of the (static) subscription profile (see subclause 6.1). The result of the registration shall be indicated (i.e. accepted/registered or rejected/not registered). The registered service profile is valid for all GPRS transactions until modified by re-registration or erasure or changes to the subscription profile.

As a subscription option registration of the service parameters shall be possible only in conjunction with a GPRS-password.

Table 7 defines which service parameters shall be able to be registered for the different GPRS services. The range of values for the service parameters is specified in subclause 5.4 and subclause 5.4.1.1.

Table 7: Registration of service parameters

Service Parameter	PTP-CLNS PTP-CONS PTM-G	IP-M	PTM-M
Service precedence (priority)	2,3,4	2,3,4	2,3,4
Reliability	2,4	2,4	2,4
Throughput	2, 3, 4	2, 3, 4	4
Simultaneous use class	2	2	2
Delay	2, 4	2, 4	N/A
Security management / encryption	1	1	N/A
Interworking profile (a)	2	2	2
Password Active / De-active	2	2	2
Geographical area Address (b)	N/A	N/A	2, 3

Note: Service parameter for the PTM-G service are the same as for PTP and need not be registered.

Legend: 1 Network determined.

2 User determined per subscription and registration.

3 User determined per request.

4 Negotiable.

N/A Not applicable.

a) This is the set of subscription attributes (including a user-ID and/or address valid in the external data network if necessary) adopted by the subscriber when utilizing a particular destination network. A set of subscription attributes is required for each destination network. Multiple user-IDs and/or addresses for each destination network are allowed. See subclause 11.1 for address management.

   Registration of an identity other than the IMSI ~~non-GSM identity~~ (i.e. a user-ID/address in an external data network, e.g. Internet, X.25 etc.) is performed to couple this ~~the non-GSM~~ identity to the ~~GSM identity (~~IMSI~~)~~ for the purpose of accessing (MO and/or MT) the ~~non-GSM~~ external data network. Registration of an identity other than the IMSI ~~non-GSM identity~~ is subject to valid subscription agreements with the network operator. This also provides an effective operator determined barring of access to external data networks.

   Each of the registered interworking profiles can be individually activated and de-activated.

   Screening parameters can be assigned to a particular interworking profile as a user protection against unwanted costs and/or data.

b) Optionally a logical geographical name describing the registered, defined geographical area can be registered (see subclause 5.2.1.4).

6.10 PIN and Password Management

GPRS-Attach shall only be possible after correct subscriber identification has been confirmed by entry of the current GSM PIN if this option is active. Thus only one PIN is required to gain access to either the GSM-Circuit Switched Services/SMS or the GSM-GPRS Services or both.

GPRS services can be offered to a subscriber with the subscription option of using a password to control the services. One password per subscriber is supported by the network for all GPRS services. The GPRS password shall be the ~~GSM~~ specified password for supplementary services according to ~~the GSM specifications~~ TS~~0~~2.0~~0~~4 [1~~9~~8] and TS~~0~~2.0~~3~~0 [~~19~~20].

When this option is selected the following actions shall only be performed with the concurrent entry of the password:

- registration, de-registration/erasure;
- barring of use of an interworking profile(s).

7.9 PIN and Password management

PIN and password exceptional procedures are as defined in ~~GSM specifications~~ 02.17 [2~~1~~0] and ~~0~~2.0~~0~~4 [1~~9~~8].

8 Addressing

8.1 Point to Point services

A GPRS-PTP subscription is identified by an IMSI.

8.2 Point to Multipoint services

For mobile terminated PTM Multicast an International Mobile Group Identity IMGI is used by the service requester, to address the receiver group. For mobile terminated PTM Group Call Services the network may identify the receiver by the IMSI thus allowing PTM-G messages to be delivered to the receiver as point to point messages. Two categories of IMGIs shall be supported:

- IMGI can be used in the HPLMN only;
- IMGI can be used in PLMNs including the HPLMN.

NOTE: The latter category enables a common IMGI to be used for international applications e.g. road congestion information or weather information.

The structure of the IMGI should correspond to the group ID specified for the Voice Group Call Services (VGCS) (reference ~~GSM specifications~~ TS~~0~~2.0~~6~~8 [1~~7~~6], TS~~0~~2.0~~6~~8 [2~~2~~1] and TS~~0~~2.0~~6~~8 [2~~3~~2]), if possible.

For mobile originated PTM communications the IMSI shall be the basis for the access to the network. Additionally, a group identity IMGI shall be sent to be able to address the receivers.

10.1 Interworking with other data networks and other PLMNs

GPRS shall provide means to interwork with external data networks. The GPRS operator may provide an appropriate address to the external data network for the subscriber as part of the GPRS subscription. That address can be either dynamic (e.g. the user's IP address is allocated from a pool of unused IP addresses every time the subscriber activates the access to an IP network) or static (e.g. a certain IP address is permanently allocated to a particular subscriber). When connected with some external data networks, the routeing protocols of these networks may limit the data network addresses that can be allocated. For example, when interworking with IP networks, the IP address for the

GPRS subscriber shall belong to that GPRS operator's IP subnetwork that allocates the address. In the case of a simple point to point connection, a GPRS subscriber need not have an associated network address.

The type of interworking between a PLMN and data networks is determined by the network operator.

Interworking with the following types of data networks shall be defined:

- X.25 networks; (via X.75 [12]or X.75' interfaces). Note: In the US, X.75' interface is used for interworking with BOC's data networks for intra-LATA packet data calls.
- IP networks;

other PLMNs, directly or via a transit network;

- other fixed networks (e.g. PSTN, ISDN);

The MS should interwork with the X.25 network using standardized X.3 [9], X.28 [10] and X.29 [11] mechanisms for asynchronous access and X.25 mechanisms for synchronous access.

10.3 Addressing and routeing requirements

10.3.1 PTP network layer services

A GPRS subscriber identified by an IMSI, may have a network layer address(es) temporarily and/or permanently associated with it that conforms to the standard addressing scheme of the respective network layer service used, e.g.:

- E.164 number;
- X.121 address [14] for X.25 CONS;

IP Version 4 and 6 addresses for Internet CLNS.

In the case of a simple point to point connection, a GPRS subscriber need not have an associated network layer address.11.3.2 PTM services

Routeing Information for Multipoint services is a combination of geographical area information and either IMSI or IMGI.

TSG-SA Working Group 1 (Services) meeting #5
Bernried, Starnberger, Germany 27th Sept – 1st Oct 1999

TSG S1 (99)665
Agenda Item: 6.2.6

ETSI STC SMG1 meeting #64 (99/2)
Quebec City, Quebec, Canada 5th-6th July

SMG1 (99) 352
Agenda item 6.6

CHANGE REQUEST No : **005** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification GSM / UMTS: 22.060 Version 3.0.0

Submitted to SMG *list plenary meeting or STC here ↑* | for approval **X** | for information | without presentation ("non-strategic") **X** | With presentation ("strategic")

PT SMG CR cover form. Filename: crf26_3.doc

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

Work item: GPRS

Source: S1 **Date:** 7 July, 1999

Subject: GPRS Stage 1 rel 99 Editorial corrections

Category: *(one category and one release Only 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	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
UMTS	

Reason for change: GPRS does not have 9.6kbit/s channel coding, which was referred as an example. Example was removed. Miscellaneous editorial corrections.

Clauses affected:

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:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

5.3 Transfer Characteristics

The packet multiplexing mechanisms developed for GPRS shall be independent of a given channel type. It shall be possible to operate GPRS over low and high capacity channels. These may be existing and/or future channels whose capacities are as yet unspecified (e.g., a signalling channel, or two time-slots or an entire 200 kHz carrier). Table 3 is only applicable to the GPRS part of the connection.

Table 3: Transfer Characteristics

Attributes		Supported capabilities
Information Transfer Capability		Unrestricted digital information
Information Transfer Mode	Connection mode	Connection orientated, connectionless
	Traffic type (a)	Variable bit rate and variable delay
	Timing end-to-end (b)	Asynchronous
Information Transfer Rate (c)		Maximum bit rate. ~~Values from one TCH (e.g. 9.6 kbit/s) up to eight TCH (e.g. 8x9.6 kbit/s) inclusive~~.
Information Structure		- Service data unit integrity - Data sequence integrity
Communication Configuration		- Point to point - Point to multipoint multicast - Point to multipoint group call
Establishment of Communication (d)		Demand mobile originated or mobile terminated
Negotiation		- Out of band - In band
Symmetry		- Bi-directional - Unidirectional
Radio Channel assignment		Shared, multi-user

a) Traffic type: describing data streams with constant bit rate or variable bit rate characteristics.

b) Timing end-to-end: describing the timing relation between the source and destination of signals.

c) Flexible channels with a maximum bit rate that depends on the type of channel and the number of time slots that are used. This capability defines the maximum capability associated with the channel(s). The actual bit rate for a particular user may be any value up to this maximum value.

d) Establishment of communication: may be on demand, reserved or permanent.

5.4 Service characteristics

5.4.1 Subscriber profile

The subscriber profile holds subscription information about services and other parameters that have been assigned for an agreed contractual period. It includes the following information:

- subscribed services (PTP-CLNS, PTP-CONS, PTM-M, PTM-G);

- subscribed QoS profile (service precedence(priority), reliability, delay, throughput).

An invocation of a service by any user with the appropriate subscription profile shall be possible.

A subscription is required to allow a subscriber to initiate a PTM-M data transfer operation. No subscription is required to receive PTM-M messages.

It shall be possible to validate a service request against a service subscriber's subscription profile.

6.9 Invocation and operation

The GPRS service is invoked upon transmission or reception of GPRS data.

It shall be possible for a MS to be a GPRS service requester and a service receiver. This allows generation and origination of GPRS messages from the mobile termination itself as a standalone GPRS data source. It also allows the mobile termination to provide DCE capabilities for user applications based in terminal equipment outside the mobile termination.

It shall be possible for a subscriber to set-up multiple GPRS PTP-CONS communication sessions and maintain these over prolonged periods (e.g. several hours). It shall be possible to establish these connections via more than one external data network. This enables more than one logical data channel to exist to a single mobile termination.

PTP-CONS, PTP-CLNS, IP-M, PTM-M and/or PTM-G communications in any combination shall be possible in parallel. In the case of X.25 the concept of switched virtual circuits shall be maintained between the GPRS environment and the X.25 fixed network.

6.10 PIN and Password Management

GPRS-Attach shall only be possible after correct subscriber identification has been confirmed by entry of the current GSM PIN if this option is active. Thus only one PIN is required to gain access to either the GSM-Circuit Switched Services/SMS or the GSM-GPRS Services or both.

GPRS services can be offered to a subscriber with the subscription option of using a password to control the services. One password per subscriber is supported by the network for all GPRS services. The GPRS password shall be the GSM specified password for supplementary services according to the GSM specifications 02.04 [18] and 02.30 [19].

When this option is selected the following actions shall only be performed with the concurrent entry of the password:

- registration, de-registration/erasure;
- ~~barring of use of an interworking profile(s).~~

7 Exceptional procedures

7.1 Provision

None.

7.2 Withdrawal

None.

7.3 Registration

An attempt to register a service or service parameter not available to that subscriber shall result in an indication to the user. The reason shall be indicated:

- the service or service parameter is not supported by the PLMN;
- the subscriber’s present (static) subscription profile prohibits the use of this service or service parameter;
- parameter is network determined;
- the entered parameter value is outside the range of that supported by the PLMN.

8.3 Overview

How the identities are used within the different services is described in table 8.

Table 8: Services and Identities

Services	mobile originated		mobile terminated
	calling party	called party	
GPRS PTP	IMSI	Address (note 1)	IMSI
GPRS PTP-anonymous originator. (note 2)	-	IMGI-Server ID	not applicable
GPRS PTM-M	IMSI	IMGI	IMGI
GPRS PTM-G	IMSI	Address (note 1)	IMSI or IMGI
IP-M	IMSI	Address (note 1)	IMSI
NOTE 1: The IMSI or in the case of network interworking refer to subclause 10~~1~~.3.1. NOTE 2: The subscriber and user identities of a PTP-anonymous-originator message are hidden from the operator.			

9 Service interworking

It shall be possible for the GPRS PTP services to be utilized as a bearer service for the SMS-MO and SMS-MT services.

10 Network interworking

Network interworking is required whenever a PLMN and a non-PLMN are involved in the execution of a GPRS Service request.

In general the mobile user of a GPRS network will receive and experience all the services provided by an external data network. In this case the external data network refers to the network that the GPRS PLMN interworks with as determined by the network operator. With this in mind it can be said that a user :-

1) will require a universal identity(ies) of the form compatible with the interworked with network(s);

2) and experience access to and provision of all services as offered by the interworked with networks (some reduction of capability may result from unavoidable restrictions due to the complexity of implementation).

10.1 Interworking with other data networks and other PLMNs

GPRS shall provide means to interwork with external data networks. The GPRS operator may provide an appropriate address to the external data network for the subscriber as part of the GPRS subscription. That address can be either dynamic (e.g. the user's IP address is allocated from a pool of unused IP addresses every time the subscriber activates the access to an IP network) or static (e.g. a certain IP address is permanently allocated to a particular subscriber). When connected with some external data networks, the routeing protocols of these networks may limit the data network addresses that can be allocated. For example, when interworking with IP networks, the IP address for the GPRS subscriber shall belong to that GPRS operator's IP subnetwork that allocates the address. In the case of a simple point to point connection, a GPRS subscriber need not have an associated network address.

The type of interworking between a PLMN and data networks is determined by the network operator.

Interworking with the following types of data networks shall be defined:

- X.25 networks; (via X.75 or X.75' interfaces). Note: In the US, X.75' interface is used for interworking with BOC's data networks for intra-LATA packet data calls.

- IP networks;

other PLMNs, directly or via a transit network;

- other fixed networks (e.g. PSTN, ISDN);

The MS should interwork with the X.25 network using standardized X.3, X.28 and X.29 mechanisms for asynchronous access and X.25 mechanisms for synchronous access.

10.1.1 QoS when Interworking

GPRS shall satisfy, within the constraints introduced by the mobile radio environment, the QoS requirements of the interworked-with network.

10.2 GPRS Numbering Plan

It is required that GPRS MS addresses conform to the numbering plan already defined for GSM.

10.3 Addressing and routeing requirements

10.3.1 PTP network layer services

A GPRS subscriber identified by an IMSI, may have a network layer address(es) temporarily and/or permanently associated with it that conforms to the standard addressing scheme of the respective network layer service used, e.g.:

- E.164 number;

- X.121 address for X.25 CONS;

IP Version 4 and 6 addresses for Internet CLNS.

In the case of a simple point to point connection, a GPRS subscriber need not have an associated network layer address.10~~1~~.3.2 PTM services

Routeing Information for Multipoint services is a combination of geographical area information and either IMSI or IMGI.

10.4 Interworking for subscriber roaming

Interworking between different GPRS PLMNs is required in order to support subscriber roaming.

It shall be possible for the VPLMN to provide access to the external data network when the external non-GSM data network address is dynamically assigned by the VPLMN.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)621***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.066	**CR**	**005**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 for approval **X** *(only one box should*

list TSG meeting no. here ↑ for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122066

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.066 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Support of Mobile Number Portability (MNP);
Service description - Stage 1
(3G TS 22.066 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines the stage one description of the Support of Mobile Number Portability between networks in the same country within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This TS defines the stage one description of the Support of Mobile Number Portability between networks in the same country. Stage one is an overall service description, primarily from the service subscriber's and user's points of view, but does not deal with the details of the human interface itself.

~~This TS is in response to a study mandate agreed between the European Commission and ETSI under order voucher ESTI/97/M 251.~~

Mobile Number Portability (MNP) is applicable only to those telecommunication services identified by an MSISDN.

This specification includes information applicable to network operators, service providers and terminal, switch and database manufacturers.

This specification contains the core requirements for the Support of Mobile Number Portability between ~~GSM~~ network operators in the same country which are sufficient to provide a complete service.

Cross-sector portability (e.g. number portability between fixed and mobile networks) is outside the scope of this technical specification. It is highly desirable however, that technical solutions for MNP should be sufficiently flexible to allow for possible enhancements, e.g. cross-sector number portability, and MNP between analogue and digital mobile networks. Additional functionalities not documented in this specification may implement requirements which are considered outside the scope of this specification. This additional functionality may be on a network-wide basis, nation-wide basis or particular to a group of users. Such additional functionality shall not compromise conformance to the core requirements of the service.

Porting between Service Providers (i.e. service provider portability) which does not involve a change of Network Operator is outside the scope of this specification.

The relationship between Service Providers and Network Operators is outside the scope of this specification.

The relationship between a Service Provider and subscriber is outside the scope of this specification. The interface between the Mobile Station (MS) and any external applications are outside the scope of this specification. Charging principles are outside the scope of this specification except where explicitly stated in the text.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04 (ETR 350): “Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms”.

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this specification the following definitions apply:

number range owner network: The network to which the number range containing the ported number has been allocated.

donor network: The subscription network from which a number is ported in the porting process. This may or may not be the number range owner network.

mobile number portability: The ability for a mobile subscriber to change ~~GSM~~ subscription network within the same country whilst retaining their original MSISDN(s).

network operator: A ~~GSM~~ PLMN operator.

originating network: the network where the calling party is located.

ported number: Is a MSISDN that has undergone the porting process.

ported subscriber: The subscriber of a ported number.

porting process: A description of the transfer of a number between network operators.

recipient network: The network which receives the number in the porting process. This network becomes the subscription network when the porting process is complete.

service provider: An entity which offers service subscriptions to individual subscribers and contracts with a network operator to implement services for a specific MSISDN. A service provider may contract with more than one network operator.

service provider portability: The transfer of numbers between two unique Service Providers.

subscription network: The network with which the customer's Service Provider has a contract to implement the customer's services for a specific MSISDN.

NOTE: The term "recipient network" is used during the porting process. The recipient network becomes the "subscription network" after the completion of the porting process.

3.2 Abbreviations

For the purposes of this specification the following abbreviations apply:

MMI	Man Machine Interface
MNP	Mobile Number Portability
MSISDN	Mobile Station ISDN number
PLMN	Public Land Mobile Network
SIM	Subscriber Identity Module
USIM	Universal Subscriber Identity Module

Further ~~GSM~~ related abbreviations are given in GSM 01.04 [1] and TR 21.905 [2].

4 Applicability

Mobile Number Portability cannot be offered to a subscriber as a stand alone service. Mobile Number Portability is applicable to all ~~GSM~~ teleservices (e.g. SMS, voice, fax) and bearer services (e.g. data), except for TS12 (emergency call).

The implementation of MNP shall be flexible enough to apply to each MSISDN of a subscriber separately. Where the MSISDNs used in the donor network are ported to different recipient networks then a new IMSI (and SIM/USIM) will be required for each recipient network. The basic and supplementary services provisioned in the recipient network shall not be dependent on those that were provisioned in the donor network.

5 Description

Mobile Number Portability (MNP) is the ability for a mobile subscriber to change ~~GSM~~ subscription network within the same country whilst retaining her original MSISDN or MSISDNs.

The IMSI shall not be ported, hence the recipient network of the porting process will issue a new IMSI for the ported subscription. The porting process may, but need not, include a change in service provider.

The ported subscriber can use exactly the same services as non-ported customers in the same subscription network. That is: whether the MSISDN of a subscriber belongs to a subscription network or is ported to the subscription network shall have no influence on the services offered to the customer by that subscription network.

The services offered by the number range owner network and/or the donor network have no influence on the services offered by the subscription network. When a subscriber ports a MSISDN to a new network then the donor network no longer provides support for the services of the ported number (this includes supplementary and value added services).

NOTE: This also implies that if a service supported in the donor network is not available on the recipient network then number portability mechanisms need not provide that service for the ported subscriber.

A network can be a donor of numbers and a recipient of numbers. A MSISDN can be ported more than once; a ported number can be ported back to its number range owner network. Even after multiple portings, the technical solution shall involve only the number range owner network and recipient network.

The solution for MNP shall have a minimal adverse effect upon the quality of service offered to ported and non-ported subscribers. It may be the case that the quality of service for ported and non-ported subscribers differs slightly (e.g. due to additional call set-up delay).

Any additional delay in call set-up to ported numbers shall be minimised.

The process of porting a number may involve a disruption in service to the customer. The time that no service is available shall be minimised.

The technical implementation of the support of MNP in a network should not impede number availability and efficient use of numbers.

The technical implementation for the support of MNP shall not involve loss of functionality in the number range owner, donor or subscription network.

The technical implementation of MNP shall support optimisation of the use of network and inter-network resources so as to minimise costs associated with transport of traffic and/or appropriate signalling and/or processing activities (e.g. optimal routing).

In addition, for the porting process an efficient and effective way is needed to exchange porting information between all types of ~~GSM~~ network operators.

6 Normal procedures with successful outcome

Mobile Number Portability is offered to all subscribers of ~~GSM~~ services subject to regulatory requirements.

A porting process is initiated at a subscriber's request on their selected MSISDN(s) with the relevant networks. Initiation of the porting process is an off-line administrative process and cannot be invoked via a specific MMI on the hand-set.

After successful porting the subscriber, is able to use the provisioned ~~GSM~~ services and network specific services of the subscription network as offered to non-ported subscribers on that network. Porting will effectively initiate a new subscription

As part of the porting process, the donor, number range owner and recipient networks shall update their relevant network elements in order to perform the porting. After the porting process is complete, the subscription details related to the ported MSISDN on the donor network shall not be required and can be deleted. Therefore, only the number range owner network and the recipient network are involved in the MNP solution for support of service to the ported subscriber.

The originating network may not be aware of the ported nature of the number; therefore the technical solution shall work even if networks other than the number range owner and recipient have no knowledge of the ported nature of the number.

NOTE: Other networks may be involved to increase the efficiency of call-set-up to ported numbers.

When a ported subscriber takes an additional MSISDN at her subscription network that additional MSISDN should not have to come from the number range owner network(s) of the subscriber's ported numbers.

Where number ranges are assigned to network operators, the number range owner network shall receive the ported number back from the recipient network when the subscriber relinquishes the ported number, i.e. when the ported number ceases to be an active service number.

Annex A (Informative): List of informative documents

The following documents are listed for information and as such do not count as normative references:

[1] European Commission DG XIII "Equal access & interconnection" Final Report.

[2] Study Mandate to ETSI Concerning the Introduction of Number Portability in the GSM System Family.

[3] TR NA 010063 Version: Issue 1: "Number Portability Task Force: High Level Description of NP".

[4] MNPTG-CP(97)22 Version 10: "Technical Feasibility Study UK Mobile Number Portability".

[5] MNPTG-CP(97)0 Version4: "High Level Service Description UK Mobile Number Portability",

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)622***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.067	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122067

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.067 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1 (3G TS 22.067 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document specifies the stage 1 description of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document specifies the stage 1 description of the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP). This service has two parts: precedence and pre-emption. Precedence involves assigning a priority level to a call in combination with fast call set-up. Pre-emption involves the seizing of resources, which are in use by a call of a lower precedence, by a higher level precedence call in the absence of idle resources. Pre-emption can also involve the disconnection of an on-going call of lower precedence to accept an incoming call of higher precedence.

The eMLPP service is provided as a network operator's option to a domain of a network. The domain can be the whole network or a subset of the network. The eMLPP service applies to all network resources in the domain that is in common use. The eMLPP service is applicable to all mobile stations in the domain with all or some mobile stations having a respective subscription assigning precedence according to the eMLPP service.

eMLPP is a supplementary service and shall be provided to a subscriber for all basic services subscribed to and for which eMLPP applies.

NOTE: It is under study whether normal GSM Phase 2 Mobile Stations will be able to be used for this service.

The service is described from the service subscriber's and user's point of view, in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other ~~GSM~~ services and features.

The present document does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate ~~Global System for Mobile communications (GSM)~~ specifications.

The present document is applicable to teleservices 1x and 6x and to all bearer services used in a mobile network ~~according to the digital cellular telecommunications system GSM~~ if eMLPP is provided. Any interaction with other services and/or networks not dealt with in clauses 8 or 9 are outside the scope of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM 02.04~~TS 22.004: "~~Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

[3] ~~GSM 02.24~~TS 22.024: "~~Digital cellular telecommunications system (Phase 2+);~~ Description of Charge Advice Information (CAI)".

[4] GSM 02.40: "Digital cellular telecommunications system (Phase 2+); Procedures for call progress indications".

[5] ~~GSM 02.68~~TS 22.068: "~~Digital cellular telecommunications system (Phase 2+);~~ Voice Group Call Service (VGCS) - Stage 1".

[6] ~~GSM 02.69~~TS 22.069: "~~Digital cellular telecommunications system (Phase 2+);~~ Voice Broadcast Service (VBS) - Stage 1".

[7] GSM 03.05: "Digital cellular telecommunications system (Phase 2+); Technical performance objectives".

[8] ~~GSM 03.68~~TS 23.068: "~~Digital cellular telecommunications system (Phase 2+);~~ Voice Group Call Service (VGCS) - Stage 2".

[9] ~~GSM 03.69~~TS 23.069: "~~Digital cellular telecommunications system (Phase 2+);~~ Voice Broadcast Service (VBS) - Stage 2".

[10] ITU-T Recommendation I.255.3: "ISDN Multi-Level Precedence and Pre-emption (MLPP) stage 1".

[11] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

calling subscriber: Service subscriber which invokes the eMLPP service.

network operator: Entity which provides the network operating elements and resources for the execution of the enhanced Multi-Level Precedence and Pre-emption service (eMLPP).

precedence: Precedence is the priority associated with a call.

service provider: Entity which offers the eMLPP service for subscription. The network operator may be the service provider.

service subscriber: Mobile subscriber which subscribes to the eMLPP service. In principle, if a network provides eMLPP service, all users are able to subscribe to this service.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply, in addition to those listed in GSM 01.04 and TR 21.905 [11]:

eMLPP enhanced Multi-Level Precedence and Pre-emption

4.1 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM 02.04~~ TS 22.004.

The effects of the eMLPP service are applicable, potentially, to all subscribers in a network, should a precedence call set-up or handover occur and pre-emption be necessary.

5.8 Invocation

The eMLPP shall be invoked automatically by the network at call set-up.

The precedence level may be selected by the user on a per call basis. The user may select any precedence level up to and including her maximum authorized precedence level. The maximum authorized precedence level shall be stored on the SIM/USIM and the mobile station shall check that only an authorized level is used for set-up. In addition, it shall be possible to verify in the network the level used at set-up against the maximum authorized level.

If the user has not selected a precedence level at set-up, the network shall apply the subscriber specific default precedence level.

If the user has selected a precedence level higher than the maximum authorized level, the maximum authorized precedence level shall be applied for the call.

6 Exceptional procedures or unsuccessful outcome

When a service subscriber makes a call, he expects the network to automatically invoke the eMLPP service according to her subscription. If the network cannot provide the service for some reason an indication shall be provided to the service subscriber to notify her of the absence or modification of the priority handling.

Exceptional procedures for voice group call and voice broadcast call establishment durations exceeding the specified times are given in ~~GSM 02.68~~ TS 22.068 and ~~GSM 02.69~~ TS 22.069, respectively.

8.5 Call Forwarding Unconditional (CFU)

The CFU service takes precedence over the eMLPP service. The precedence level of calls shall be preserved during the forwarding process.

No interaction except for voice broadcast and voice group calls (see the respective stage 1 descriptions TS 22.069 ~~GSM 02.69~~ and TS 22.068 ~~GSM 02.68~~).

8.13 Advice of Charge (AoC)

No interactions.

NOTE: Different charge metres for different priorities can be obtained e.g. by variation of the e1 or e2 parameters of the charge advice information according to ~~GSM 02.24~~ TS 22.024.

TSG-SA Working Group 1 meeting #5 **TSG S1** ***(99)623***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.068	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122068

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.068 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Voice Group Call Service (VGCS) - Stage 1 (3G TS 22.068 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS specifies the stage one description of the Voice Group Call Service (VGCS) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This TS specifies the stage one description of the Voice Group Call Service (VGCS) which allows speech conversation of a predefined group of service subscribers in half duplex mode on the radio link taking into account multiple mobile service subscribers involved in the VGCS call per cell.

The VGCS is applicable to all mobile stations in a certain network and area which have the technical capability and the corresponding subscription, respectively, to participate in a VGCS call.

NOTE: It is not considered as requirement that normal GSM phase 2 mobile stations will be able to be used for this service.

The service is described from the service subscriber's and user's point of view; in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other ~~GSM~~ services and features.

This teleservice can only be provided via a GSM BSS.

This TS does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate ~~Global System for Mobile Communications (GSM)~~ specifications.

~~This TS defines a teleservice of the digital cellular telecommunications system GSM.~~ Any interaction with other services and/or networks not dealt with in clauses 7 or 8 are outside the scope of this TS.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM 02.67~~TS 22.067: "~~Digital cellular telecommunications system (Phase 2+);~~ enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".

[3] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS, the following definitions apply:

network operator: Entity which provides the network operating elements and resources for the execution of the VGCS.

service provider: Entity which offers the VGCS for subscription. The network operator may be the service provider.

voice group call: An instance of the VGCS initiated by a subscriber. This term is used synonymously with the term "VGCS call".

service subscriber: Mobile subscriber which subscribes to the VGCS.

group identification (group ID): A numerical classification. The maximum number of group IDs which can be defined in one PLMN depends on the maximum number of group call areas defined in this PLMN. The maximum number of group IDs and group call areas combined is 10^8, Service subscriber shall be provided with one or up to 50 group IDs.

dispatcher: Particular fixed line or mobile users are identified within the network as dispatchers. Dispatchers shall receive all voice group calls to a certain group ID in a group call area (this shall be done automatically by the network). In addition they can initiate voice group calls to a group ID in a group call area.

Dispatchers shall be connected to a voice group call by means of standard links via radio or via an ISDN. They shall be called by their ISDN or MSISDN number, respectively. When dispatchers initiate voice group calls, they shall call a particular MSISDN number which is related to a group ID and group call area. Dispatchers using the ~~GSM~~ network can be located outside of this group call area.

The identities of the dispatchers are exclusively predefined in the network by the service provider. There will be none or up to five dispatchers involved in a particular voice group call.

destination subscriber: Service subscriber or dispatcher to which the VGCS call is directed.

calling subscriber: Service subscriber or dispatcher which originates the VGCS call.

group call area: Predefined area composed of one or a cluster of cells to which a particular VGCS call is distributed. The maximum number of group call area IDs which can be defined in one PLMN depends on the maximum number of group IDs defined in this PLMN. The maximum number of group IDs and group call areas combined is 10^8, The composition of a group call area is predefined in the network by the service provider. Changing of cell allocation in the network due to operational reasons will need an adaptation of the group call area definition. The group call area may include more then one MSC area and cells of more than one PLMN.

group call member: Any service subscriber or dispatcher participating in an on going voice group call.

3.2 Abbreviations

Abbreviations used in this TS are listed in GSM 01.04 [1] and TR 21.905 [3].

4 Description

The VGCS is defined in the following. Figure 1 gives an explanation of the logical concept of the VGCS.

a) The VGCS enables a calling subscriber to establish a voice group call to destination subscribers belonging to a predefined group call area and group ID.

NOTE 1: The service is provided by use of half duplex transmission mode.

Applications for voice group call services typically involve multiple group members in a small group call area, for which the VGCS should provide spectrum efficient solutions.

b) The calling subscriber as well as the destination subscribers may be any service subscriber which has subscribed to the related group ID or any dispatcher who is entitled to it by his identity which shall be registered in the network.

c) Destination subscribers are all service subscribers or a group of service subscribers identified by the called group ID which have their present location in the group call area, and pre-registered dispatchers. Destination

service subscribers shall be notified with the group ID, not by paging the subscriber individually. Dispatchers shall be called individually with their identity.

Service subscribers may become late destination subscribers when entering the group call area within 500 ms after reception of the first notification message related to the VGCS call. Service subscribers which leave the corresponding group call area during an on going VGCS call of which they are member cease to be destination subscribers.

d) The voice group call shall be established in a group call area which is comprised of one or a cluster of cells. Group call areas shall be predefined in the network by the service provider, co-ordinated by the network operator.

In case of a service subscriber initiating a VGCS, the group call area is uniquely identified by the actual cell in which the service subscriber resides at the moment of VGCS call initialization and by the group ID they issue.

A dispatcher initiating a VGCS call will be connected to a related predefined group call area. The entitlement of the dispatcher is checked by the network element responsible for the voice group call management by verification of the calling identity. Since a dispatcher may be registered to more than one group call area and group ID an indication of the wanted group call area and group ID has to be given in form of a dedicated address called by the dispatcher.

e) The service shall permit only one talking service subscriber at any moment; additionally up to five dispatcher can be talking simultaneously at one time. Dispatchers should hear all combinations of voices other than their own. Listening service subscribers shall hear the combination of all voices. The talking service subscriber shall gain some audible indication if any dispatchers are talking simultaneously.

Dispatchers shall be able to talk at any moment without any need to signal the wish to talk. Service subscribers who wish to talk shall indicate this. They shall only be able to become talking subscribers if there is no other talking service subscriber. The right to be a talking service subscriber is allocated on a first come first served basis without queuing. Once a service subscriber has become a talking subscriber they shall eventually indicate their wish to become a listening subscriber, or the network may detect that they are no longer a talking subscriber due to time-out or other mechanisms.

SMS, CW and procedures for supplementary service management are not possible for a service subscriber.

f) The calling subscriber shall be informed by the network with a suitable indication about the successful establishment of the voice group call so that he can start to speak.

NOTE 2: A successful establishment means that all voice group call downlink channels are allocated, with the restrictions mentioned in clause 6, whether somebody is listening or not, and the related dispatchers are alerted.

The system provides that for an established voice group call the uplink assignment to a service subscriber who wishes to talk is performed under normal conditions in <300 ms after a request to talk is made.

The mobile station of the talking service subscriber shall be requested to send its IMSI to the network in order so that the talker's IMSI be stored in the event records.

g) Authentication is mandatory at ~~GSM~~ call set up. To allow fast call set up in VGCS authentification of calling subscribers at invocation may optionally be delayed. Similarly authentication of the talking service subscriber may optionally be delayed to allow fast access.

Confidentiality on the radio path is optional.

h) Different levels of priority and pre-emption shall be applied as defined in the stage 1 description on the enhanced Multi-Level Precedence and Pre-emption Service (eMLPP) in ~~GSM 02.67~~ TS 22.067 [2].

i) A number of voice group calls may exist simultaneously intended for different groups of destination users in the same group call area.

Parallel voice group calls are possible to the same group of destination subscribers in different, possibly overlapping, group call areas.

j) A voice group call shall be released on demand of the calling subscriber or by a dispatcher or by the network.

NOTE 3: The release by the calling subscriber is only possible if the uplink is assigned to the calling subscriber.

Automatic release of a voice group call after a selectable time of no voice activity is required.

j1) If the mobile station having the uplink assigned leaves the group call area, it shall also leave the voice group call. However, the voice group call shall be maintained by the network.

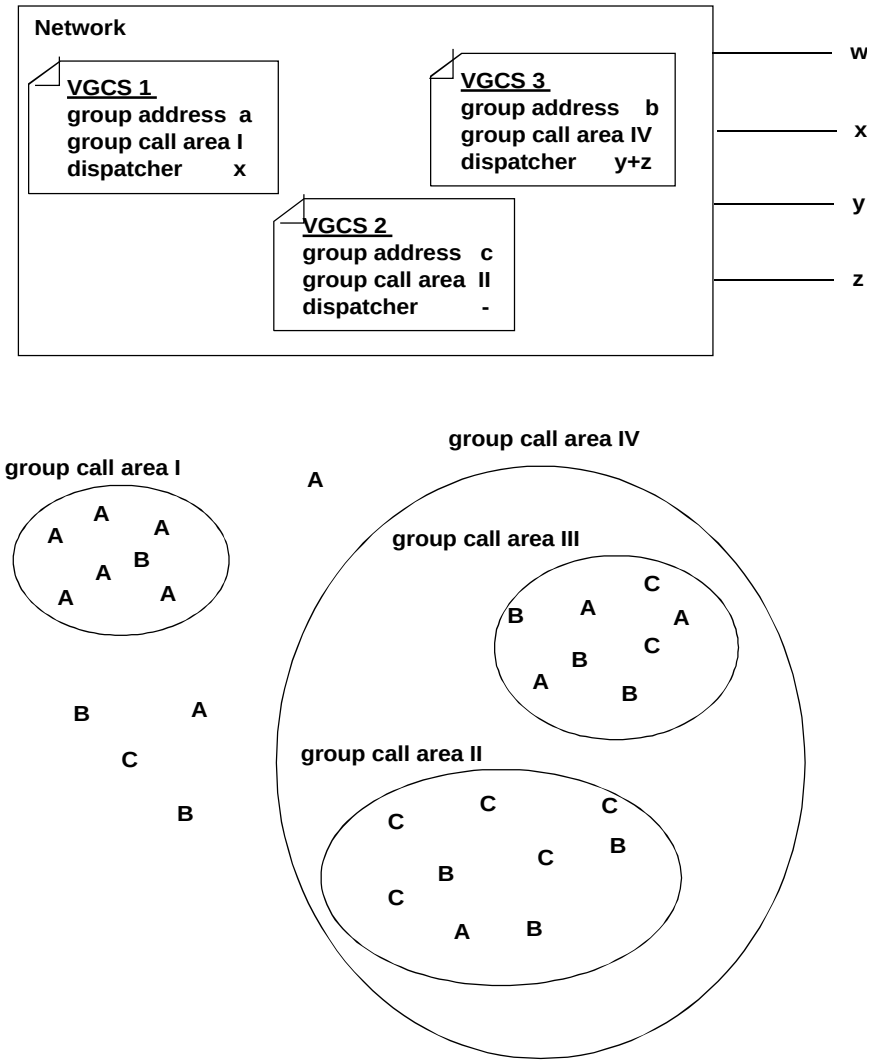
This behaviour shall also apply if the mobile station is the calling subscriber.

k) VGCS shall also be provided in case of roaming. For this, certain group IDs shall be defined as supra-PLMN group IDs which have to be co-ordinated between the network operators and which shall be known in the networks and in the SIM. A service subscriber which is entitled by his subscription to establish voice group calls while roaming shall only be able to use supra-PLMN group IDs in case of roaming.

l) For certain levels of priorities an acknowledgement of receipt of a voice group call can be required as an application option (e.g. for railways emergency calls) from all or from nominated destination subscribers (nomination is recorded on the SIM). The acknowledgement itself shall be performed at the end of the voice group call. The acknowledgement shall indicate the time the reception started and the time the reception terminated. The acknowledgement has to be given to a predefined recipient.

m) It shall be possible for a service subscriber to activate or deactivate the voice group call reception for different group IDs. The selection list is stored on the SIM corresponding to the subscribed group IDs. It shall be possible to prohibit the deactivation of group IDs used for high priority calls.

Dispatcher which are registered for a certain voice group call and which have also a subscription for VGCS with the same group ID as the voice group call for which they are dispatcher shall deactivate this group ID when they are located in the corresponding group call area in order to avoid conflicts between paging for the dispatcher and notifications for the group ID.



NOTE: VGCS1, VGCS2, VGCS3 = particular voice group calls with the attributes pre-registered in the network.
A, B, C, D = service subscriber with group ID a, b, c or d, respectively.
I. II, III, IV = group call areas.
w, x, y, z = dispatchers connected via normal ~~GSM~~ links or external networks.

Figure 1: Logical concept of the VGCS

5.5 Charging requirements

Event data may be recorded as a network option ~~as defined in GSM 12.05~~ for all VGCS calls to one group ID in a specific group call area. In addition otherl data to be passed to the anchor MSC for charging purposes are the identities of the talking subscribers, the time in which they were active and the resources (i.e. cell identities) used during a call.

6 Exceptional procedures or unsuccessful outcome

If a service subscriber wants to establish a voice group call while not subscribed to the service or the network cannot provide the service for some reason, an indication will be provided to the calling subscriber to notify him of the reason of failure.

If a dispatcher wants to establish a voice group call while not entitled to do it or the network cannot provide the service for some reason, the call shall be rejected. The network shall give an appropriate indication to dispatchers who are ~~GSM~~ subscribers.

If a voice group call cannot be established to all cells and dispatchers in a pre-set time, the call will be considered established provided that at least the originating cell in case of a service subscriber originated voice group call or any one cell within the group call area in case of a dispatcher originated voice group call has been included within this specified time.

If a cell is excluded from the group call area because of pre-emption, the voice group call shall be maintained.

7 Interaction with other ~~GSM~~ services

7.1 Calling Line Identification Presentation (CLIP)

If CLIP is applied, the group call reference - including the group call area ID and the group ID - shall be presented to the dispatchers. In addition the subaddress field of the calling party may be used to identify the calling subscriber to the dispatchers.

The receiving mobile stations of the destination service subscribers shall display the paged group ID regardless the destination service subscribers have a subscription to CLIP.

7.20 Enhanced Multi-Level Precedence and Pre-emption service (eMLPP)

Different priorities with corresponding set-up procedures are applicable as defined in the stage 1 description of eMLPP in TS 22.067 [2] ~~GSM 02.67~~.

7.21 Short Message Service (SMS)

Sending or reception of short messages is not possible for service subscribers involved in a voice group call.

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.069	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122069

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.069 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Voice Broadcast Service (VBS) - Stage 1 (3G TS 22.069 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS specifies the stage one description of the Voice Broadcast Service (VBS) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This TS specifies the stage one description of the Voice Broadcast Service (VBS) which allows the distribution of speech (or other signals which can be transmitted via the speech codec), generated by a service subscriber, into a predefined geographical area to all or a group of service subscribers located in this area.

The Voice Broadcast Service (VBS) is applicable to all mobile stations in a certain network and area which have the technical capability and the respective subscription to receive a VBS call.

NOTE: It is not considered as requirement that normal GSM Phase 2 mobile stations will be able to be used for this service.

The service is described from the service subscriber's and user's point of view; in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other ~~GSM~~ services and features.

This teleservice can only be provided via a GSM BSS.

This TS does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate ~~Global System for Mobile communications (GSM)~~ specifications.

~~This TS defines a teleservice of the digital cellular telecommunication system GSM.~~ Any interaction with other services and/or networks not dealt within clauses 8 or 9 are outside the scope of this TS.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM 02.67~~TS 22.067: "~~Digital cellular telecommunications system (Phase 2+);~~ enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".

[3] GSM 12.05: "Digital cellular telecommunications system (Phase 2+); Subscriber related event and call data".

[4] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS, the following definitions apply:

network operator: Entity which provides the network operating elements and resources for the execution of the VBS.

service provider: Entity which offers the VBS for subscription. The network operator may be the service provider.

service subscriber: Mobile subscriber which subscribes to the VBS.

voice broadcast call: An instance of the VBS initiated by a VBS subscriber. This term is used synonymously with the term "VBS call".

group identification (group ID): A numerical classification. The maximum number of group IDs which can be defined in one PLMN depends on the maximum number of group call areas defined in this PLMN. The maximum number of group IDs and group call areas shall be 10^8, Service subscriber shall be provided with one or up to 50 group IDs.

dispatcher: Particular fixed line or mobile users are identified within the network as dispatchers. Dispatchers shall receive all voice broadcast calls to a certain group ID in a group call area (this shall be done automatically by the network). In addition they can initiate voice broadcast calls to a group ID in a group call area.

Dispatchers shall be connected to a voice broadcast call by means of standard links via radio or via an ISDN. They shall be called by their ISDN or MSISDN number, respectively. When dispatchers initiate voice broadcast calls, they shall call a particular MSISDN number which is related to a group ID and group call area. Dispatchers using the ~~GSM~~ network can be located outside of this group call area.

The identities of the dispatchers are exclusively predefined in the network by the service provider. There will be none or up to five dispatchers involved in a particular voice broadcast call.

destination subscriber: Service subscriber or dispatcher to which the VBS call is directed.

calling subscriber: Service subscriber or dispatcher which invokes the VBS call.

group call area: Predefined area composed of one or a cluster of cells, to which a particular VBS call is distributed. The maximum number of group call area IDs which can be defined in one PLMN depends on the maximum number of group IDs defined in this PLMN. The maximum number of group IDs and group call areas combined shall be 10^8, The composition of a group call area is predefined in the network by the service provider. Changing of cell allocations in the network due to operational reasons will need an adaptation of the group call area definition. The group call area may include cells of more then one MSC area and cells of more than one PLMN.

3.2 Abbreviations

Abbreviations used in this TS are listed in GSM 01.04 and TR 21.905.

4 Description

The VBS is defined in the following. Figure 1 gives an explanation of the logical concept of the VBS.

a) The VBS enables a calling subscriber to send speech unidirectional and simultaneously to all entitled dispatchers and to destination subscribers belonging to a predefined group call area who have a subscription to the applicable group ID.

b) The calling subscriber may be any service subscriber which has subscribed to the related group ID and is entitled to establish a voice broadcast call by his subscription or any dispatcher who is entitled for it by his identity which shall be registered in the network.

   The destination subscriber may be any service subscriber which has subscribed to the related group ID or any dispatcher who is entitled for it by his identity which is registered in the network.

c) The broadcast call shall be established in a group call area which is comprised of one or a cluster of cells. Group call areas shall be predefined in the network by the service provider, co-ordinated by the network operator.

In case of a service subscriber initiating a VBS call, the group call area is uniquely identified by the actual cell in which the service subscriber resides at the moment of VBS call initialization and by the called group ID.

A dispatcher initiating a VBS call will be connected to a related predefined group call area. The entitlement of the dispatcher is checked by the network element responsible for the voice broadcast call management by verification of the calling identity. Since a dispatcher may be registered to more than one group call area and group ID an indication of the wanted group call area and group ID has to be given in form of a dedicated address called by the dispatcher.

d) Destination subscribers are all service subscribers or a group of service subscribers identified by the called group ID which have their present location in the group call area, and preregistered dispatchers. Destination service subscribers shall be notified with the group ID, not by paging the service subscriber individually. Dispatchers shall be called individually with their identity.

Service subscribers which leave the group call area during an on going VBS call cease to be destination subscribers. Service subscribers which enter the group call area during an on going VBS call shall become destination subscribers within 500 ms after reception of the first notification message related to the VBS call.

e) The calling subscriber shall remain within the voice broadcast call until she terminates the call, loses contact with the network or leaves the group call area. The latter case does not apply to calling subscribers who are dispatchers. The VBS call shall be terminated by the network as soon as the network has determined that the calling subscriber has left the VBS call area.

f) The calling subscriber shall be informed by the network with a suitable indication about the successful establishment of the voice broadcast call so that he can start to speak .

NOTE: A successful establishment means that all broadcast downlink channels are allocated, with the restrictions mentioned in clause 6, whether somebody is listening or not, and the related dispatchers are alerted.

g) Authentication is mandatory at ~~GSM~~ call set up. To allow fast call set up in VBS authentification of the calling subscriber at invocation may optionally be delayed.

Authentication of the destination subscriber, who have no uplink connection, s is not required.

Confidentiality on the radio path is optional.

h) Different levels of priority and pre-emption shall be applied as defined in the corresponding stage 1 description on the enhanced Multi-Level Precedence and Pre-emption service (eMLPP), ~~GSM 02.67~~ TS 22.067.

i) A number of voice broadcast calls may exist simultaneously intended for different groups of destination subscribers in the same group call area.

Parallel voice broadcast calls are possible to the same group of destination subscribers in different, possibly overlapping group call areas.

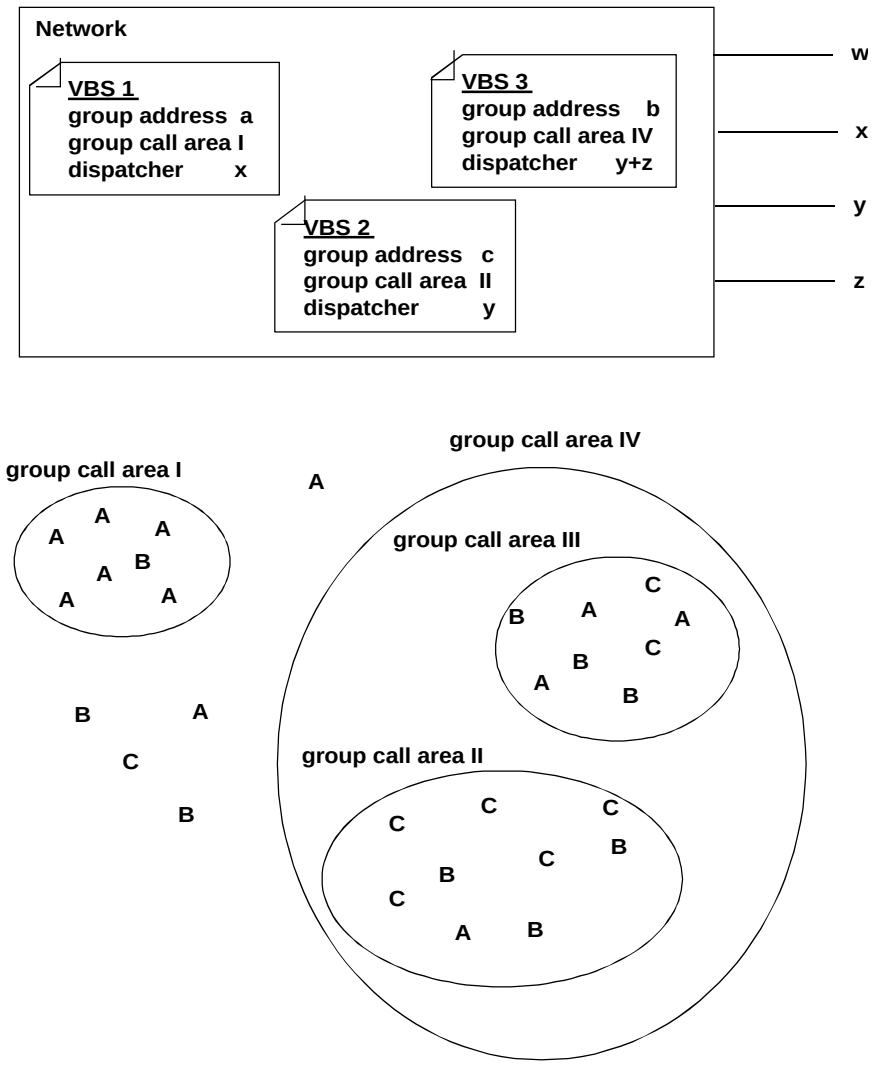
j) VBS shall also be provided in case of roaming. For this, certain group IDs shall be defined as supra-PLMN group IDs which have to be co-ordinated between the network operators and which shall be known in the networks and in the SIM. A service subscriber which is entitled by his subscription to establish voice broadcast calls while roaming shall only be able to use supra-PLMN group IDs in case of roaming.

k) For certain levels of priorities an acknowledgement of receipt of a voice broadcast call can be required as an application option (e.g. for railway emergency calls) from all or from nominated destination subscribers (the nomination is recorded on the SIM). The acknowledgement itself shall be performed at the end of the voice broadcast call. The acknowledgement shall indicate the time the reception started and the time the reception terminated. The acknowledgement has to be given to a predefined recipient.

l) It shall be possible for a service subscriber to activate or deactivate the voice broadcast reception for different group IDs. The selection list is stored on the SIM corresponding to the subscribed group IDs. It shall be possible to prohibit the deactivation of group IDs used for high priority voice broadcast calls.

Dispatcher which are registered for a certain voice broadcast call and which have also a subscription for VBS with the same group ID as the voice broadcast call for which they are dispatcher shall deactivate this group ID

when they are located in the corresponding group call area in order to avoid conflicts between paging for the dispatcher and notifications for the group ID.



NOTE: VBS1, VBS2, VBS3 = particular voice broadcast calls with the attributes preregistered in the network. A, B, C, D = service subscriber with group ID a, b, c or d, respectively.

I. II, III, IV = group call areas.

w, x, y, z = dispatchers connected via normal ~~GSM~~ links or external networks.

Figure 1: Logical concept of the VBS

6 Exceptional procedures or unsuccessful outcome

If a service subscriber wants to establish a voice broadcast call while not subscribed to the service or the network cannot provide the service for some reason, an indication shall be provided to the calling subscriber to notify him with the reason of failure.

If a dispatcher wants to establish a voice broadcast call while not entitled to do it or the network cannot provide the service for some reason, the call shall be rejected. The network shall give an appropriate indication to dispatchers who are ~~GSM~~ subscribers.

If a voice broadcast call cannot be established to all cells and dispatchers in a pre-set time, the call shall be considered established provided that at least the originated cell in case of a service subscriber originated broadcast call or any one cell within the group call area in case of a dispatcher originated broadcast call has been included within this time.

If a cell is excluded from the group call area because of pre-emption, the voice broadcast call is maintained as long as the calling subscriber is not pre-empted.

7 Interaction with ~~GSM~~ services and features

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

Different priorities with corresponding set-up procedures are applicable as defined in the stage 1 description on eMLPP in ~~GSM 02.67~~ TS 22.067.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)625***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.071	**CR**	**004**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122071

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.071 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Location Services (LCS);
Service description, Stage 1
(3G TS 22.071 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document defines the stage 1 Service Aspects of Location Services (LCS) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document provides the Stage One description of Location Services (LCS) ~~on Global System for Mobile communications (GSM) networks~~. A Stage One description provides an overall service description, primarily from the service subscriber's and user's points of view, but not dealing with the details of the Man Machine Interface (MMI). This ~~G~~TS includes information applicable to network operators, service providers and terminal, base station system, switch and data base manufacturers.

NOTE: Location Services may be considered as a network provided enabling technology consisting of standardized service capabilities which enables the provision of location applications. This application may be service provider specific. The description of the numerous and varied possible location applications which are enabled by this technology are outside the scope of this specification. However, clarifying examples of how the functionality being specified may be used to provide specific location services is included in various sections of the specification.

The present document contains the core requirements for the LCS ~~on GSM~~ to an extent sufficient to derive a complete definition of the LCS at the service level. However, the present document also documents some additional requirements which may suggest in a non-normative manner certain ways the system may be implemented to support the LCS feature.

LCS can be offered without subscription to basic telecommunication services. LCS is available to the following categories of LCS clients:

Value Added Services LCS Clients – use LCS to support various value added services. These clients can include ~~GSM~~ MS subscribers as well as non-subscribers to other ~~GSM~~ services.

PLMN Operator LCS Clients – use LCS to enhance or support certain O&M related tasks, supplementary services, IN related services and ~~GSM~~ bearer services and teleservices.

Emergency Services LCS Clients – use LCS to enhance support for emergency calls from ~~GSM~~ subscribers.

Lawful Intercept LCS Clients – use LCS to support various legally required or sanctioned services.

LCS is applicable to any target MS whether or not the MS supports LCS, but with restrictions on choice of positioning method or notification of a location request to the MS user when LCS or individual positioning methods, respectively, are not supported by the MS.

~~NOTE: It is envisioned that the specification of Location Services will be accomplished in a series of phased releases. These phases are described in GSM 10.71 [2]~~

LCS will be developed in phases. Phase 1 includes provision of the following:

LCS Phase 1. This is the initial default phase of LCS. It provides a generic flexible architecture capable of supporting all positioning methods. Specific support is provided for Time Of Arrival (TOA) based positioning methods. Support is provided for emergency services, value added services and PLMN operator services.

2. References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04 ~~(ETR 350)~~: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

~~[2] GSM 10.71: "Digital cellular telecommunications system (Phase 2+); Project scheduling and open issues; Location services (LCS)"~~

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Abbreviations

For the purposes of the present document, in addition to GSM 01.04 [1] and TR 21.905 [2], the following abbreviations apply:

LCS	Location Service
NA-ESRD	North American Emergency Services Routing Digits
NA-ESRK	North American Emergency Services Routing Key
NANP	North American Numbering Plan

NOTE: In the present document, acronyms are used in the text as if they are read either in their fully expanded form or in their alphabet names with no consistent principle.

4.5 Privacy

Unless required by local regulatory requirements, or overridden by the target MS User, the target MS may be positioned only if allowed in the MS subscription profile.

For Value Added Services, the following is applicable:

The Target MS Subscriber shall be able to restrict access to the location information (permanently or on a per attempt basis). The LCS Client access shall be restricted unless otherwise stated in the Target MS Subscription Profile. The home network shall have the capability of defining the default circumstances in which the Target MS's location is allowed to be provided - as required by various administrations and/or network requirements.

If indicated in the subscription profile, where a target MS supports the LCS, the target MS user shall be notified of each location request for which there is no restriction in the MS subscription profile and be enabled to accept or reject it. The default treatment, in the absence of an indication from the MS user, is to accept.

The target MS subscriber may also subscribe to notification for each location request that is restricted in the MS subscription profile and be enabled to accept or reject it – the default treatment in the absence of an indication from the MS user being to reject. Where a target MS does not support LCS, a location request for which there is no restriction in the MS subscription profile shall be denied where required by local regulatory requirements and allowed otherwise. In the latter case, the LCS server may maintain a record of each location request including the result and the identity of the LCS client.

For PLMN operator services, the target MS subscriber may be able to restrict access to location information used to enhance or support particular types of service. The LCS client access shall be restricted unless stated otherwise in the Target MS subscription profile. The target MS user shall not be notified of any authorized location attempt.

For Emergency Services (where required by local regulatory requirements) Target MSs making an emergency call may be positioned regardless of the privacy attribute value of the ~~GSM~~ subscriber associated with the Target MS (or ME) making the call.

For Lawful Interception Services (where required by local regulatory requirements), target MSs may be positioned under all circumstances required by local regulatory requirements. The target MS user shall not be notified of any location attempt.

4.7 Support for all MSs

For value added services, and PLMN operator services, the LCS feature may be supported for all MSs.

For Emergency Services (where required by local regulatory requirements), positioning shall be supported for all ~~GSM~~ MSs (i.e. including legacy MSs) where coverage is provided, and also MSs without a SIM.

4.8 Support for Unauthorized MSs

For value added services, support of unauthorized MSs may be provided by the PLMN.

For PLMN operator services, positioning of unauthorized MSs may be provided by the PLMN as required by local regulatory requirements.

For Emergency Services (where required by local regulatory requirements), the PLMN shall support positioning for unauthorized MSs (i.e. including stolen MSs and MSs without a SIM).

NOTE: A GSM subscriber is in general identified as an MS containing in it the SIM associated with the subscriber. In some exceptional cases (e.g., an E-911 call), an MS without a valid GSM subscription recognized in the PLMN can become a Target MS. In such a case, the subscriber may be identified by the identity associated with the Mobile Equipment (ME) involved in the call.

6.3 LCS Client Subscription

It shall be possible for an LCS Client to subscribe to the LCS feature for third-party location with or without subscription to other ~~GSM~~ services. A LCS Client may subscribe to one or more service providers' LCS feature in one or more PLMNs. The LCS Client Subscription Profile of a client may contain the range of QoS and subscriptions that the LCS Client is allowed to request.

For certain authorized LCS Clients internal to the PLMN, a subscription profile may be unnecessary. For these LCS Clients subscription to LCS feature is given implicitly as a result of subscription to an authorized PLMN service (e.g. supplementary services). These LCS Clients are empowered to access the LCS Server and request location information for a Target MS.

For emergency services, the subscription requirements to the LCS feature may not be needed.

8 Interactions with Bearer and Teleservices and Other ~~GSM~~ Services

LCS shall support location of any Target MS that is idle or has established a voice call.

Location of a Target MS that has a call using any other teleservice or any bearer service is for further study.

Location of a GPRS terminal or an MS using SMS is for further study.

Provision of location services to assist ~~GSM~~ supplementary services and CAMEL is outside the scope of this specification. The operation of location services shall be independent of other ~~GSM~~ services - including Number Portability, private numbering, CAMEL, supplementary services, teleservices, and bearer services.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)626***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.072	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122072

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.072 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Call Deflection Service description - Stage 1 (3G TS 22.072 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines the stage 1 of Call Deflection (CD) which enables the served mobile subscriber to respond to an incoming call offered by the network by requesting redirection of this call to another number specified in the response within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

Call Deflection (CD) enables the served mobile subscriber to respond to an incoming call offered by the network by requesting redirection of this call to another number specified in the response. The CD supplementary service can only be invoked before the connection is established by the served mobile subscriber, i.e. in response to the offered call, or during the period that the served subscriber is being informed of the call. The served subscriber's ability to originate calls is unaffected by the CD supplementary service.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM 02.04~~TS 22.004: "~~Digital cellular telecommunication system (Phase 2+);~~ General on supplementary services".

[3] ~~GSM 02.30~~TS 22.030: "~~Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[4] ~~GSM 02.85~~TS 22.085: "~~Digital cellular telecommunications system (Phase 2+);~~ Closed User Group (CUG) Supplementary Services - Stage 1

[5] TR 21.905: "Vocabulary for 3GPP Specifications".

[6] TS 22.078: "CAMEL Phase 3; Stage 1".

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply, in addition, abbreviations used in this TS are listed in GSM 01.04 [1] and TR 21.905 [5].

CD Call Deflection

4.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM 02.04~~ TS 22.004 [2].

5.7 Invocation

The CD supplementary service shall be invoked by the served mobile subscriber by use of a control procedure as described in ~~GSM 02.30~~ TS 22.030 [3].

7.13 Closed User Group (CUG)

Same as the interaction between CUG and the call forwarding supplementary services as defined in ~~GSM 02.85~~TS 22.085 [4].

8 Interactions with Customized Applications for Mobile network Enhanced Logic (CAMEL);

The CD supplementary service shall, if invoked, take affect after the invocation of any terminating CAMEL based service. Any deflected call may cause invocation of any mobile originated CAMEL based services.

If the served subscriber is provided with a Translation Information Flag (TIF-CSI, see ~~GSM 02.78~~TS 22.078 [6]) and the VPLMN supports CAMEL phase 2, then when the CD supplementary service is invoked the network shall not check the validity of the deflected-to number and shall not apply the CD interactions with Barring of all Outgoing International Calls (BOIC) and Barring of all Outgoing International Calls except those direct to the Home PLMN Country (BOIC-exHC).

NOTE: This behaviour may be used to deflect a call to a destination violating the BOIC or BOIC-exHC supplementary service. The HPLMN operator should take care to avoid problems that may arise because of this interaction.

Annex A (informative): Deviations to the ISDN service Call Deflection

1) If the call deflection request of a served subscriber is accepted and CD is invoked ISDN gives two network options:

   a) The call to the served user is retained until the network receives an indication that the deflected-to user is informed of the call.

   b) First the call is removed from the served subscriber and then the connection to the deflected-to subscriber is established.

   ~~GSM networks~~ PLMNs only provide network option b.

2) The ~~GSM~~ service CD does not provide the subscription option "the served user's ISDN number can be presented to the deflected-to user" to the served subscriber.

3) The interaction between CD and CCBS in ~~GSM~~the PLMN is different from the interaction between CD and CCBS in ISDN. The activation of the CCBS supplementary service will not be offered to the calling subscriber if the original call is deflected to a busy user. In ISDN the CCBS request applies to the original called party.

4) The handling of notifications to subscriber A in case of multiple diversion is not described in the way as ISDN this has been done. It is the intention of this service description to retain the same handling as it is used in present call forwarding implementations.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)627***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.079	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG	SA#5	for approval	X	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: *(at least one should be marked with an X)*	USIM	ME	UTRAN	Core Network

Source:	SA WG1	**Date:**	
Subject:	Editorial update of references for GSM/3GPP use.		
3G Work item:	3TS/SA-0122079		

Category:			
	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	X

Reason for change:	The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.
Clauses affected:	All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.079 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Support of Optimal Routeing (SOR); Service definition - Stage 1 (3G TS 22.079 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document specifies the stage 1 description of the first phase of Support of Optimal Routing (SOR) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This Stage 1 description of the first phase of Support of Optimal Routing (SOR):

- compiles the basic service requirements for SOR;
- describes the interactions for Supplementary Services (SS) in order to cater for SOR;
- refers to modifications to network features required by SOR.

This specification does not address the following:

- There is no need for optimisation of the routing of calls originally directed to a fixed network subscriber, because the physical address of a fixed network terminating line cannot differ from its logical address.
- SOR in non-~~GSM mobile networks~~PLMNs is not a subject of this TS, but might be possible by bilateral arrangement between ~~GSM network~~ PLMN operators and those non-~~GSM mobile network~~PLMN operators.

The purpose of SOR is to reduce the number of unnecessary inter-PLMN call legs.

The first phase of SOR applies to:

- OR for the benefit of the B party i.e. Mobile terminated calls with late call forwarding to the home or visited country (scenarios 1 and 2),

and optionally;

- OR for the benefit of the A party, e.g. Mobile to mobile calls where both mobile subscribers are in the same country (scenarios 3 to 10).

The complete set of scenarios included in the phase 1 of OR is presented in the paragraph for normal procedures. All other scenarios are excluded from Phase 1 of OR.

Note that Optimal Routing is applicable to national roaming situations, that is to calls directed to a mobile subscriber roaming in her home country, but registered in a PLMN different from her HPLMN.

All further call scenarios, including multiple call forwarding, are left to subsequent phases of SOR. Subsequent phases of SOR shall be backwards compatible with this first phase.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

Administrative PLMN: The complete set of all functional entities normally regarded as a single PLMN.

Basic OR : Routeing of a call by the direct route when no forwarding occurs.

Direct route: A call uses the direct route if it is routed from the serving network of the original calling party to the serving network of the ultimate called party without any intermediate PLMN.

HPLMN route: A call uses the HPLMN route if the destination is deduced from the MSISDN of the called party. This forces the call to be routed via the HPLMN of the called party.

HPLMN leg: The HPLMN leg is that part of the HPLMN route from the IPLMN to the HPLMN of the called party.

IPLMN: An IPLMN is a PLMN which interrogates the HPLMN of a called party in order to determine the whereabouts of that party.

Early Call Forwarding : Early Call Forwarding is Call Forwarding performed from the IPLMN before the call has been extended to the VPLMN of the forwarding subscriber (i.e. Call Forwarding Unconditional and Conditional Call Forwarding on Not Reachable known at the IPLMN before extension of the call)

Functional PLMN: For the purposes of this description the Administrative PLMN is divided into functional PLMNs that represent different aspects of the Optimal Routeing functionality.

Late Call Forwarding: Late Call Forwarding is Call Forwarding performed after the call has been extended to the VPLMN of the forwarding subscriber (i.e. Conditional Call Forwarding on Busy, Conditional Call Forwarding on No Reply and Conditional Call Forwarding on Not Reachable detected in the VPLMN of the forwarding subscriber). Late Call Forwarding may be invoked in the IPLMN or in the VPLMN of the forwarding subscriber.

Special mobile network number: For the purposes of this description special mobile network numbers are numbers belonging logically to a PLMN but not to a mobile subscriber. Examples are the customer service number or value added service numbers.

Abbreviations are given in GSM 01.04 ~~(ETR 350)~~ [1] and TR 21.905 [2].

4 Description of Optimal Routing

Support of Optimal Routing (SOR) is a network feature which enables the calls directed to a mobile subscriber to be routed directly to the mobile subscriber's actual location, or to her forwarded-to destination (instead of via the HPLMN or in the case of Late Call Forwarding via the VPLMN).

The IPLMN handling the call shall decide whether or not to optimise the routing of the call taking into account information provided by the called mobile subscriber's HPLMN. For given subscribers, as a network option, the HPLMN may permit or deny OR on a per call basis.

~~NOTE: References to the provision of Data Privacy supplementary services in case of OR have been deleted from GSM MoU reference documents.~~

5 Functional requirements

5.2 Normal operation

In the first phase of SOR, the routes of calls will be optimised for the cases of OR being performed within a country or towards the country where the call would have been routed normally.

Under all other circumstances, the ~~GSM~~ basic call routing is applied:

- If the IPLMN detects that basic OR cannot be applied, the IPLMN routes the call according to the dialled number.
- If the IPLMN detects that OR for Late Call Forwarding cannot be applied, the Call Forwarding will be performed in the VPLMN of the forwarding subscriber.

If the serving network of the ultimate destination supports SOR, the serving network of the caller shall be able to indicate to the network visited by the ultimate destination that the call has been optimally routed and to indicate the originating PLMN of the optimally routed leg.

The complete set of scenarios included in phase 1 of SOR is described below.

The notation used for the scenario diagrams is defined in figure 1.

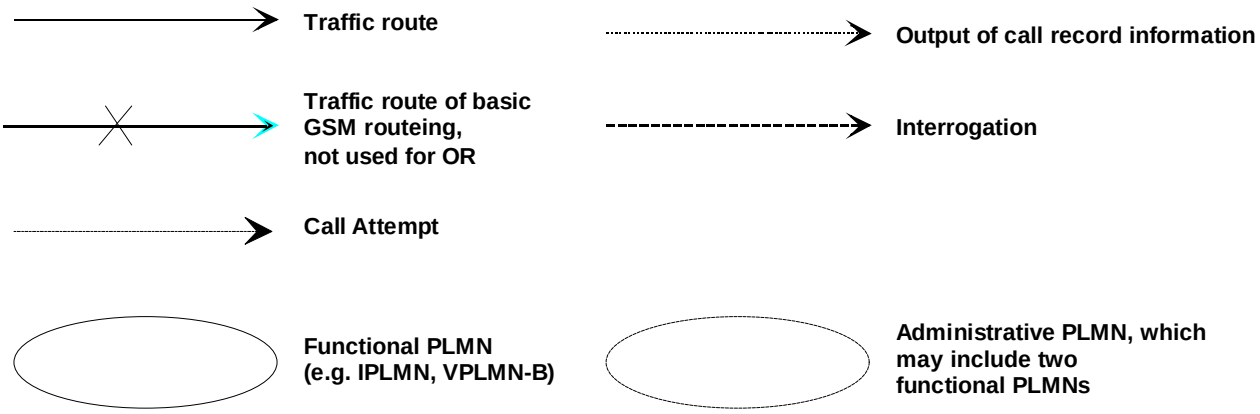


Figure 1: Notation used in scenario diagrams

If one of those scenarios occurs, SOR shall be invoked.

The assumptions taken are the following :

- A subscriber A sets up a call to a mobile subscriber B, who may have forwarded her calls to a subscriber C.
- The C subscriber may be either a fixed subscriber or a mobile subscriber.

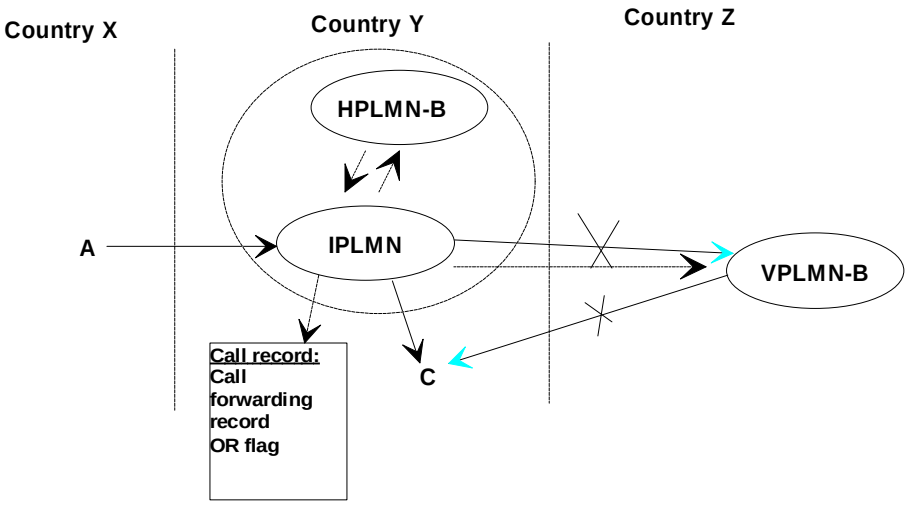
If C is a mobile subscriber, the location of C taken into account in the following paragraphs is the location of HPLMN-C.

5.2.1 A is a fixed subscriber or a mobile subscriber who may not benefit from OR

As the originating network does not have the ability to interrogate the HPLMN of the B subscriber, the normal ~~GSM~~ call handling is applied.

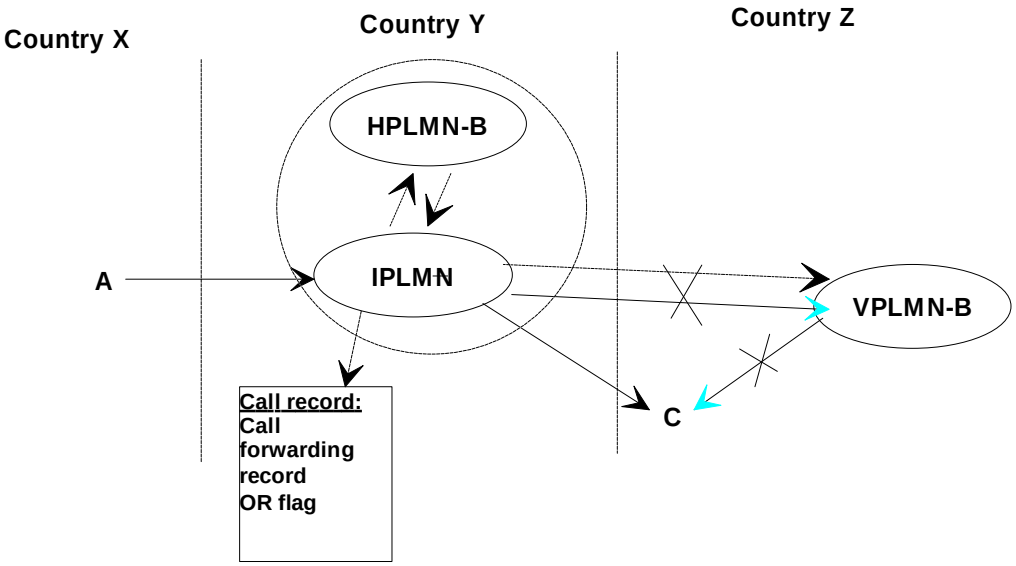
Once the HPLMN of the B subscriber has the control of the call, the call may be optimised in the case of a forwarded call towards a party located in the Home Country of the B subscriber or in the country visited by the B subscriber.

NOTE: - A may be in any country.
- In the two following cases, the IPLMN is HPLMN-B.



Scenario 1: OR for Late Call Forwarding, C is in the same country as HPLMN-B

NOTE: Call records shown in the figure are only for information



Scenario 2: OR for Late Call Forwarding, C is in the same country as VPLMN-B

NOTE: Call records shown in the figure are only for information

TSG-SA Working Group 1 meeting #5 **TSG S1** ***(99)628***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.081	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122081

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.081 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Line identification Supplementary Services;
Stage 1
(3G TS 22.081 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~The present document describes line identification Supplementary Services (stage 1) within the digital cellular telecommunications system and the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The present document describes the Supplementary Services belonging to the group Line Identification Supplementary Services.

The general aspects, including definitions and recommended provision, of the description of the ~~GSM~~ Supplementary Services are given in ~~GSM~~3GPP TS ~~0~~2.0~~0~~4.

The group of Line Identification Supplementary Services is divided into the following four Supplementary Services:

CLIP - Calling line identification presentation (clause 1);

CLIR - Calling line identification restriction (clause 2);

COLP - Connected line identification presentation (clause 3);

COLR - Connected line identification restriction (clause 4).

Definition of line identity: The line identity is made up of a number of information units:

- the subscriber's national ISDN/MSISDN number (MSISDN number is the number stored in the VLR);
- the country code;
- optionally, subaddress information. The ~~GSM~~ PLMN cannot be responsible for the content of this subaddress. (For definition of the subaddress see ~~CCITT~~ITU-T Recommendation E.164 [3] subclause 11.2).

  In a full ISDN environment, the line identity shall include all the address information necessary to unambiguously identify a subscriber.

  The calling line identity is the line identity of the calling party.

  The connected line identity is the line identity of the connected party.

If for the line identity of the calling party or the connected party additional line identification is received (additional calling party/connected party number) in a ~~GSM~~ PLMN this additional line identification shall be used for the presentation purpose of the line identification presentation services.

Definition of Presentation and Screening Indicators: In addition to or instead of the line identity, the network may give a Presentation Indicator (PI) and/or a Screening Indicator (SI) to the served subscriber. The following information may be given:

- Presentation Indicator showing:

  a) presentation allowed, or

  b) presentation restricted, or

  c) number not available due to interworking;

- Screening Indicator showing:

  a) user provided, verified and passed, or

  b) user provided, not screened, or

  c) network provided.

  If the line identity is that of a ~~GSM~~ PLMN subscriber, then:

  the national number and the country code shall always be provided by the network;

  the subaddress shall only be included if it is provided by the user (or user equipment);

  the screening indicator shall indicate "network provided".

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release ~~1998~~ 1999 document, references to GSM documents are for Release ~~1998~~ 1999 versions (version ~~7~~8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] GSM ~~0~~2.0.04: ~~"Digital cellular telecommunications system (Phase 2+);~~ General on Supplementary Services".

[3] ~~CCITT~~ITU-T Recommendation E.164: "Numbering plan for the ISDN era".

[4] TR 21.905: " Vocabulary for 3GPP Specifications ".

0.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04 and TR 21.905 [4].

1 Calling Line Identification Presentation (CLIP)

1.1 Definition

The CLIP Supplementary Service provides the called party with the possibility to receive the line identity of the calling party.

1.2 Description

1.2.1 Description

This Supplementary Service provides for the ability to indicate the line identity of the calling party to the called party.

The network shall deliver the calling line identity to the called party at call set-up time, regardless of the terminal capability to handle the information.

1.2.2 Applicability to telecommunication services

The applicability of this Supplementary Service is defined in GSM ~~0~~2.0.04 [2].

2 Calling Line Identification Restriction (CLIR)

2.1 Definition

The CLIR Supplementary Service enables the calling party to prevent presentation of its line identity to the called party.

2.2 Description

2.2.1 Description

The CLIR Supplementary Service is a Supplementary Service offered to the calling party to prevent presentation of the calling party's line identity, to the called party. In the case where the called party has an override category, see subclause 2.4.

2.2.2 Applicability to telecommunications services

The applicability of this Supplementary Service is defined in GSM ~~0~~2.0004.

3 Connected Line Identification Presentation (COLP)

3.1 Definition

The Connected Line Identification Presentation (COLP) Supplementary Service provides the calling party with the possibility to receive the line identity of the connected party.

3.2 Description

3.2.1 Description

This Supplementary Service is not a dialling check but an indication to the calling subscriber of the connected line identity in a full ISDN/GSM environment, the connected line identity shall include all the information necessary to unambiguously identify the connected party.

The network shall deliver the connected line identity to the calling party regardless of the terminal capability to handle the information.

3.2.2 Applicability to telecommunication services

The applicability of this Supplementary Service is defined in GSM ~~0~~2.0004.

4 Connected Line Identification Restriction (COLR)

4.1 Definition

The COLR Supplementary Service enables the connected party to prevent presentation of its line identity to the calling party.

4.2 Description

4.2.1 Description

The COLR Supplementary Service is a Supplementary Service offered to the connected party to prevent presentation of the connected line identity, to the calling party. In the case where the calling party has an override category, see subclause 4.4.

4.2.2 Applicability to telecommunications services

The applicability of this Supplementary Service is defined in GSM ~~0~~22.0~~0~~4.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)629***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.082	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122082

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.082 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Call Forwarding (CF) supplementary services - Stage 1 (3G TS 22.082 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines describes the supplementary services belonging to the group call offering supplementary services within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

This specification describes the supplementary services belonging to the group CALL OFFERING SUPPLEMENTARY SERVICES.

The general aspects, including definitions and recommended provision, of the description of the ~~GSM~~ supplementary services are given in specification GSM ~~0~~2.0004.

The group of supplementary services CALL OFFERING SUPPLEMENTARY SERVICES is divided into four different supplementary services:

- Call forwarding unconditional (section 1);
- Call forwarding on mobile subscriber busy (section 2);
- Call forwarding on no reply (section 3);
- Call forwarding on mobile subscriber not reachable (section 4).

Indication of active Call forwarding supplementary service.

An indication that a Call forwarding service is currently active and operative on a number will be given to the forwarding party each time an outgoing call is made. There will be one indication for Unconditional call forwarding and another common indication for the Conditional call forwarding services.

Note on the use of the forwarded-to number at registration.

If the forwarded-to number is a number in the HPLMN country, it may be entered by the served mobile subscriber in three different formats, independent of her actual location, according to the schemes:

1) National (significant) number.
2) National (trunk) prefix plus national (significant) number.
3) International prefix*, country code, national (significant) number.

Scheme 3) Storage of numbers in this format is mandatory for all ~~GSM~~ PLMN operators.

If the forwarded-to number is a number in a~~nother~~ country other than the HPLMN country, it shall be entered by the served mobile subscriber, independent of her actual location, according to the following scheme:

- International prefix (NOTE), country code, national (significant) number.

NOTE: The MMI for entering of international prefix is defined in ~~GSM~~ ~~0~~2.030 ~~and 02.07~~.

The maximum forwarded-to number length is 28 digits.

Principles for interaction with the Barring of Outgoing Calls supplementary services.

Numbers allowed to call according to the Barring of Outgoing call service condition are allowed as forwarded-to numbers for the served mobile subscriber.

Numbers not allowed to call according to the Barring of Outgoing call service condition are not allowed as forwarded-to numbers for the served mobile subscriber.

For Unconditional Call Forwarding the forwarded leg is treated as an outgoing call from the HPLMN country.

For the Conditional Call Forwarding services the forwarded leg is treated as an outgoing call from the LPLMN (HPLMN or VPLMN) country.

Principles for interaction with the Barring of Incoming Calls supplementary services.

When Barring of all incoming calls is active for the served mobile subscriber - no Call forwarding services are allowed for her.

When Barring of all incoming calls when roaming outside the HPLMN country is active and operative - i.e. the served mobile subscriber is roaming outside the HPLMN country, the Conditional Call Forwarding services are not allowed.

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Definitions, abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0~~0~~4: ~~"Digital cellular telecommunication system (Phase 2+);~~ General on supplementary services".

~~[3] GSM 02.07: "Digital cellular telecommunication system (Phase 2+); Mobile Station (MS) features".~~

[~~4~~3] ~~GSM~~TS ~~0~~2.0~~3~~0: ~~"Digital cellular telecommunication system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[~~5~~4] ~~GSM~~TS ~~0~~2.0~~8~~1: ~~"Digital cellular telecommunication system (Phase 2+);~~ Line identification supplementary services - Stage 1".

[~~6~~5] ~~GSM~~TS ~~0~~2.0~~8~~3~~: "Digital cellular telecommunication system (Phase 2+);~~ Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".

[~~7~~6] ~~GSM~~TS ~~0~~2.0~~8~~4~~: "Digital cellular telecommunication system (Phase 2+);~~ MultiParty (MPTY) supplementary services - Stage 1".

[~~8~~7] ~~GSM~~TS ~~0~~2.0~~8~~5~~: "Digital cellular telecommunication system (Phase 2+);~~ Closed User Group (CUG) supplementary services - Stage 1".

[~~9~~8] ~~GSM~~TS ~~0~~2.0~~8~~6: ~~"Digital cellular telecommunication system (Phase 2+);~~ Advice of charge (AoC) supplementary services - Stage 1".

[9] TR 22.905: "Vocabulary for 3GPP Specifications".

0.2 Definitions and abbreviations

Abbreviations used in this specification are listed in GSM 01.04 [1] and TR 22.905 [9].

1 Call Forwarding Unconditional

1.1 Definition

This service permits a called mobile subscriber to have the network send all incoming calls, or just those associated with a specific Basic service group, addressed to the called mobile subscriber's directory number to another directory number. The ability of the served mobile subscriber to originate calls is unaffected. If this service is activated, calls are forwarded no matter what the condition of the termination.

1.2 Description

1.2.1 Description

The served mobile subscriber can request a different forwarded-to number for each Basic service group containing a basic service to which she has subscribed.

1.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0 04.

1.2.3 Terminology

A served mobile subscriber is a mobile subscriber of a particular PLMN access who is requesting that calls to her number be forwarded. This subscriber may also be referred to as the forwarding subscriber or the called subscriber.

A forwarded-to subscriber is a subscriber to whom the call shall be forwarded.

1.3.5 Activation

The user shall be allowed to activate Call Forwarding Unconditional (CFU) by e.g. using the MMI command described in ~~GSM~~TS ~~0~~2.0 30. This activation request may include information of which Basic Service Group(s) it shall apply to. If no such information is included the Activation request applies to all Basic Service Groups.

When receiving an activation request the network shall activate CFU for the Basic Service Groups comprised in the BS group information given by the user against which a CFU forwarded-to-number is registered. The Activation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.0 04.

The user shall receive a notification that CFU has been activated.

The supplementary service is also activated for a Basic service group as a result of Registration for that Basic service group.

1.3.6 Deactivation

An active CFU can be deactivated in either of two ways;

- The user may deactivate CFU by means of an appropriate control procedure (e.g. as described in ~~GSM~~TS ~~0~~2.0 30). A deactivation request may contain information of which Basic Service Group(s) it shall apply to. If no such information is included the Deactivation request applies to all Basic Service Groups.

  When receiving a deactivation request the network shall deactivate CFU for the Basic Service Group(s) comprised in the BS group information given by the user against which a CFU forwarded-to-number is registered. However, the registered information shall not be erased. The Deactivation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.0 04.

Even if there is no data stored against a particular Basic Service group comprised in a deactivation request, the request shall be accepted by the network for the other Basic Service group(s) included in the information given by the user.

- The service is deactivated as a result of Erasure.

In the former case, and also in the latter if Erasure is user controlled, the user shall receive a notification of whether her request was accepted or rejected in accordance with the rules set out in ~~GSM~~TS ~~0~~2.0004.

1.3.7

1.6.82.3 Call forwarding on no reply

Same as interaction between Call forwarding unconditional and Call forwarding on mobile subscriber busy.

1.6.82.4 Call forwarding on mobile subscriber not reachable

Same as interaction between Call forwarding unconditional and Call forwarding on mobile subscriber busy.

1.6.83.1 Call waiting

See ~~GSM~~TS ~~0~~2.083.

1.6.84.1 Multi party

See ~~GSM~~TS ~~0~~2.084.

1.6.85.1 Closed user group

See GSM ~~0~~2.085.

1.6.86.1 Advice of charge

See GSM ~~0~~2.086.

1.6.88.1 Barring of all outgoing calls

Served mobile subscriber:

- If barring of all outgoing calls is active, the registration and/or activation of call forwarding unconditional is denied. The mobile subscriber requesting for this call forwarding service shall be informed of this supplementary service incompatibility.
- If Call forwarding unconditional is active, activation of Barring of all outgoing calls is denied. The mobile subscriber shall be informed of this supplementary service incompatibility.

2 Call Forwarding on Mobile Subscriber Busy

2.1 Definition

This service permits a called mobile subscriber to have the network send all incoming calls, or just those associated with a specific Basic service group, addressed to the called mobile subscriber's directory number and which meet mobile subscriber busy to another directory number. The ability of the served mobile subscriber to originate calls is unaffected. If this service is activated, a call is forwarded only if the call meets mobile subscriber busy.

2.2 Description

2.2.1 Description

The served mobile subscriber can request a different forwarded-to number for each Basic service group containing a basic service to which she has subscribed.

2.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0004.

2.2.3 Terminology

A served mobile subscriber is a mobile subscriber of a particular PLMN access who is requesting that calls to her number be forwarded. This subscriber may also be referred to as the forwarding subscriber or the called subscriber.

A forwarded-to subscriber is a subscriber to whom the call shall be forwarded.

2.3.5 Activation

The user shall be allowed to activate Call Forwarding on Busy (CFB) by e.g. using the MMI command described in ~~GSM~~TS ~~0~~2.030. This activation request may include information of which Basic Service Group(s) it shall apply to. If no such information is included, the Activation request applies to all Basic Service Groups.

When receiving an activation request the network shall activate CFB for the Basic Service Groups comprised in the BS group information given by the user against which a CFB forwarded-to-number is registered. The Activation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

The user shall receive a notification that CFB has been activated.

The supplementary service is also activated for a Basic service group as a result of registration for that Basic service group.

2.3.6 Deactivation

An active CFB can be deactivated in either of two ways:

- The user may deactivate CFB by means of an appropriate control procedure (e.g. as described in ~~GSM~~TS ~~0~~2.030). A deactivation request may contain information of which Basic Service Group(s) it shall apply to. If no such information is included, the Deactivation request applies to all Basic Service Groups.

  When receiving a deactivation request the network shall deactivate CFB for the Basic Service Groups comprised in the BS group information given by the user against which a CFB forwarded-to-number is registered. However, the registered information shall not be erased. The Deactivation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

  Even if there is no data stored against a particular Basic Service group comprised in a deactivation request, the request shall be accepted by the network for the other Basic Service group(s) included in the information given by the user.

- The service is deactivated as a result of Erasure.

In the former case, and also in the latter if Erasure is user controlled, the user shall receive a notification of whether her request was accepted or rejected in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

2.3.7 Invocation

If the supplementary service is activated for a Basic service incoming calls for the specified Basic service that meet mobile subscriber busy will be forwarded by network invocation.

2.6 Interactions with other supplementary services

2.6.81.1 Calling line identification presentation

See ~~GSM~~TS ~~0~~2.0081.

2.6.81.2 Calling line identification restriction

See ~~GSM~~TS ~~0~~2.0081.

2.6.81.3 Connected line identification presentation

See ~~GSM~~TS ~~0~~2.0081.

2.6.81.4 Connected line identification restriction

See ~~GSM~~TS ~~0~~2.0081.

2.6.82.1 Call forwarding unconditional

See section 1.6.82.2.

2.6.83.1 Call waiting

See ~~GSM~~TS ~~0~~2.0083.

2.6.84.1 Multi party

See ~~GSM~~TS ~~0~~2.0084.

2.6.85.1 Closed user group

See ~~GSM~~TS ~~0~~2.0085.

2.6.86.1 Advice of charge

See ~~GSM~~TS ~~0~~2.0086.

2.6.88.1 Barring of all outgoing calls

Same as the interaction between call forwarding unconditional and barring of all outgoing calls.

3 Call Forwarding on No Reply

3.1 Definition

This service permits a called mobile subscriber to have the network send all incoming calls, or just those associated with a specific Basic service group, addressed to the called mobile subscriber's directory number and which meet no

reply to another directory number. The ability of the served mobile subscriber to originate calls is unaffected. If this service is activated, a call is forwarded only if the call meets no reply.

3.2 Description

3.2.1 Description

The served mobile subscriber can request a different forwarded-to number for each Basic service group containing a basic service to which she has subscribed.

3.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0004.

3.2.3 Terminology

A served mobile subscriber is a mobile subscriber of a particular PLMN access who is requesting that calls to her number be forwarded. This subscriber may also be referred to as the forwarding subscriber or the called subscriber.

A forwarded-to subscriber is a subscriber to whom the call shall be forwarded.

3.3.5 Activation

The user shall be allowed to activate Call Forwarding on No Reply (CFNRy) by e.g. using the MMI command described in ~~GSM~~TS ~~0~~2.030. This activation request may include information of which Basic Service Group(s) it shall apply to. If no such information is included, the Activation request applies to all Basic Service Groups.

When receiving an activation request the network shall activate CFNRy for the Basic Service Groups comprised in the BS group information given by the user against which a CFNRy forwarded-to-number is registered. The Activation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

The user shall receive a notification that CFNRy has been activated.

The supplementary service is also activated for a Basic service group as a result of Registration for that Basic service group.

3.3.6 Deactivation

An active CFNRy can be deactivated in either of two ways:

- The user may deactivate CFNRy by means of an appropriate control procedure (e.g. as described in ~~GSM~~TS ~~0~~2.030). A deactivation request may contain information of which Basic Service Group(s) it shall apply to. If no such information is included the Deactivation request applies to all Basic Service Groups.

  When receiving a deactivation request the network shall deactivate CFNRy for the Basic Service Groups comprised in the BS group information given by the user against which a CFNRy forwarded-to-number is registered. However, the registered information shall not be erased. The Deactivation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

  Even if there is no data stored against a particular Basic Service group comprised in a deactivation request, the request shall be accepted by the network for the other Basic Service groups included in the information given by the user.

- The service is deactivated as a result of Erasure.

  In the former case, and also in the latter if Erasure is user controlled, the user shall receive a notification of whether her request was accepted or rejected in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

3.3.7 Invocation

If the supplementary service is activated for a Basic service incoming calls for the specified Basic service that are not answered within the period defined by the no reply condition timer, will be forwarded by network invocation.

3.6 Interactions with other supplementary services

3.6.81.1 Calling line identification presentation

See ~~GSM~~TS ~~0~~2.0081.

3.6.81.2 Calling line identification restriction

See ~~GSM~~TS ~~0~~2.0081.

3.6.81.3 Connected line identification presentation

~~See GSM 02.81.~~ See TS 22.081.

3.6.81.4 Connected line identification restriction

~~See GSM 02.81.~~See TS 22.081.

3.6.82.1 Call forwarding unconditional

See section 1.6.82.3.

3.6.83.1 Call waiting

See ~~GSM~~TS ~~0~~2.0083.

3.6.84.1 Multi party

See ~~GSM~~TS ~~0~~2.0084.

3.6.85.1 Closed user group

See ~~GSM~~TS ~~0~~2.0085.

3.6.86.1 Advice of charge

See ~~GSM~~TS ~~0~~2.0086.

3.6.88.1 Barring of all outgoing calls

Same as the interaction between call forwarding unconditional and barring of all outgoing calls.

3.6.88.2 Barring of outgoing international calls

Same as the interaction between call forwarding on mobile subscriber busy and barring of outgoing international calls.

3.6.88.4 Barring of outgoing international calls except those directed to the home PLMN country

Same as the interaction between call forwarding on mobile subscriber busy and barring of outgoing international calls except those directed to the home PLMN country.

3.6.88.6 Barring of all incoming calls

Same as the interaction between call forwarding unconditional and barring of all incoming calls.

3.6.88.7 Barring of incoming calls when roaming outside the home PLMN country

Same as the interaction between call forwarding on mobile subscriber busy and barring of incoming calls when roaming outside the home PLMN country.

4 Call Forwarding on Mobile Subscriber Not Reachable

4.1 Definition

This service permits a called mobile subscriber to have the network send all incoming calls, or just those associated with a specific Basic service group, addressed to the called mobile subscriber's directory number, but which is not reachable, to another directory number. The ability of the served mobile subscriber to originate calls is principally unaffected, but practically it is affected if the mobile subscriber is de-registered, if there is radio congestion or if the mobile subscriber for example is being out of radio coverage. If this service is activated, a call is forwarded only if the mobile subscriber is not reachable.

4.2 Description

4.2.1 Description

The served mobile subscriber can request a different forwarded-to number for each Basic service group containing a basic service to which he has subscribed.

4.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0004.

4.3.5 Activation

The user shall be allowed to activate Call Forwarding on mobile not Reachable (CFNRc) by e.g. using the MMI command described in ~~GSM~~TS ~~0~~2.030. This activation request may include information of which Basic Service Group(s) it shall apply to. If no such information is included the Activation applies to all Basic Service Groups against which CFNRc data (forwarded-to-number) is registered.

When receiving an activation request the network shall activate CFNRc for the Basic Service Groups comprised in the BS group information given by the user and against which a CFNRc forwarded-to-number is registered. The Activation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.004.

The user shall receive a notification that CFNRc has been activated.

The supplementary service is also activated for a Basic service group as a result of registration for that Basic service group.

4.3.6 Deactivation

An active CFNRc can be deactivated in either of two ways:

- The user may deactivate CFNRc by means of an appropriate control procedure (e.g. as described in ~~GSM~~TS ~~0~~2.0 30). An explicit deactivation request may contain information of which Basic Service Group(s) it shall apply to. If no such information is included the Deactivation applies to all Basic Service Groups.

  When receiving a deactivation request the network shall deactivate CFNRc for the Basic Service Groups comprised in the BS group information given by the user and against which a CFNRc forwarded-to-number is registered. However, the registered information shall not be erased. The Deactivation(s) shall be in accordance with the rules set out in ~~GSM~~TS ~~0~~2.0 04.

  Even if there is no data stored against a particular Basic Service group comprised in deactivation request, the request shall be accepted by the network for the other Basic Service groups included in the information given by the user.

- The service is deactivated as a result of Erasure.

In the former case, and also in the latter if Erasure is user controlled, the user shall receive a notification of whether her request was accepted or rejected in accordance with the rules set out in ~~GSM~~TS ~~0~~2.0 04.

4.6 Interactions with other supplementary services

4.6.81.1 Calling line identification presentation

See ~~GSM~~TS ~~0~~0 2.0 81.

4.6.81.2 Calling line identification restriction

~~See GSM 02.81.~~See TS 02.081.

4.6.81.3 Connected line identification presentation

~~See GSM 02.81.~~ See TS 02.081.

4.6.81.4 Connected line identification restriction

~~See GSM 02.81.~~ See TS 02.081.

4.6.82.1 Call forwarding unconditional

See section 1.6.82.4.

4.6.83.1 Call waiting

See ~~GSM~~TS ~~0~~2.0 83.

4.6.84.1 Multi party

See GSM ~~0~~2.0 84.

4.6.85.1 Closed user group

See GSM ~~0~~2.0 85.

4.6.86.1 Advice of charge

See GSM ~~0~~22.086.

4.6.88.1 Barring of all outgoing calls

Same as the interaction between call forwarding unconditional and barring of all outgoing calls.

4.6.88.2 Barring of outgoing international calls

Same as the interaction between call forwarding on mobile subscriber busy and barring of outgoing international calls.

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)630***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.083	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information:

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

Proposed change affects: (*at least one should be marked with an X*) USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122083

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.083 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Call Waiting (CW) and Call Holding (HOLD); Supplementary Services - Stage 1 (3G TS 22.083 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes Call Waiting (CW) and Call Holding (HOLD) Supplementary Services within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The present document describes the Supplementary Services belonging to the group Call Completion Supplementary Services.

The general aspects, including definitions and recommended provision, of the description of ~~the GSM~~ Supplementary Services are given in specification ~~GSM~~TS ~~0~~2.0004.

The group of Call Completion Supplementary Services is divided into the following two Supplementary Services:

- Call waiting (clause 1);
- Call hold (clause 2).

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0004~~: "Digital cellular telecommunications system (Phase 2+);~~ General on Supplementary Services".

[3] ~~GSM~~TS ~~0~~2.0030: ~~"Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[4] TR 21.905: "Vocabulary for 3GPP Specifications".

~~[4] GSM 02.40: "Digital cellular telecommunication system; Procedures for call progress indications".~~

[5] ~~GSM~~TS ~~0~~2.0081~~: "Digital cellular telecommunication system;~~ Line identification Supplementary Services - Stage 1".

[6] ~~GSM~~TS ~~0~~2.0084: "Digital cellular telecommunication system; MultiParty (MPTY) Supplementary Services - Stage 1".

0.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04 and TR 21.905.

1 Call Waiting (CW)

1.1 Definition

The Call Waiting Service permits a mobile subscriber to be notified of an incoming call (as per basic call procedures) whilst the traffic channel ~~(Bm or Lm)~~ is not available for the incoming call and the mobile subscriber is engaged in an active or held call. Subsequently, the subscriber can either accept, reject, or ignore the incoming call.

1.2 Description

1.2.1 Description

This service operates when the traffic channel ~~(Bm or Lm)~~ at the controlling subscriber B is not available and B is engaged in an active or held call.

When a third party (calling subscriber C) attempts to connect to that termination, the controlling subscriber B is given an appropriate indication of the waiting call. A notification that the call is waiting will be sent back towards the calling subscriber C.

The maximum number of waiting calls at one time per mobile access is one. This means that no further calls are offered to the subscriber while a call is waiting.

NOTE: As a network option this maximum number of waiting calls may be greater than one. This is considered as a possible future enhancement.

1.2.2 Applicability to telecommunication services

The applicability of this Supplementary Service to the ongoing call is defined in ~~GSM~~TS ~~0~~2.0004. The incoming, waiting, call may be of any kind.

1.2.3 Terminology

(Controlling) subscriber B

This is the subscriber who is provided by the network with the Call Waiting Service and who reacts to the Call Waiting.

Subscriber C

This is the subscriber who has originated a call to B which causes the Call Waiting Service to be invoked.

Subscriber A

This represents a subscriber who is engaged in a call with B, being either the calling or the called party.

T2; No answer time out

The duration of this time out is the time the network will wait for a response from subscriber B, to the offered call from subscriber C. The value of the timer is between 0.5 and 2 minutes at the service providers discretion.

1.3 Normal procedures with successful outcome

1.3.1 Provision

This Supplementary Service is provisioned for all Basic Services (BS) subscribed to and to which it is applicable, i.e. not provisioned to any subset of these BS.

1.3.2 Withdrawal

Withdrawal will be at the request of the subscriber or for administrative reasons.

1.3.5 Activation

This Supplementary Service will be activated either collectively for all applicable Basic Services or on a Basic Service group basis by the subscriber using a control procedure, as specified in ~~GSM~~TS ~~0~~2.0 30, or by the service provider. The controlling subscriber shall be informed by the network of the success or otherwise of her action.

1.3.6 Deactivation

The service will be deactivated either collectively for all applicable Basic Services or on a Basic Service group basis by the subscriber using a control procedure, as specified in ~~GSM~~TS ~~0~~2.0 30, or by the service provider. The controlling subscriber shall be informed by the network of the success or otherwise of her action.

1.3.7 Invocation

This service is invoked by the network on arrival of an incoming call if the service is active and the controlling subscriber B's traffic channel is not available, B is engaged in an active or held call and there is no other call currently waiting.

1.3.8 Normal operation with successful outcome

1.3.8.1 Incoming call from C

When an incoming call from subscriber C arrives, the served mobile subscriber is connected to - at least - one call (active or held) and a NDUB (Network Determined User Busy) condition does not exist, then the CW service shall be invoked and the call shall be offered to subscriber B with an appropriate indication, e.g. with a "Call Waiting Tone" ~~(refer to GSM 02.40)~~.

If a response to the offered call is received from the mobile termination at B, then the subscriber C shall be given an indication (e.g. ringing tone) that the called subscriber is being informed of the incoming call and, if possible, that call waiting is in operation.

1.3.8.2 Terminating call by A or B

If either subscriber A or subscriber B requests that the call is terminated, then this call shall be terminated as for basic call (see ~~GSM~~TS ~~0~~2.0 30 for more information). Subscriber B shall then be given the normal notification that there is a new call to her, as for a normal terminating call. The network shall continue to indicate; e.g. ringing tone towards subscriber C as for a normal call. B can then accept the call from C before the expiry of T2.

Subscriber B can also free resources by using the Call Hold Supplementary Service. Subscriber B shall then be able to accept the waiting call from subscriber C before the expiry of T2.

Alternatively, subscriber B may specifically request release or hold of the connection to A and accept the waiting call as one action (see ~~GSM~~TS ~~0~~2.0 30). In this case, the network connects subscriber B to subscriber C with no further notifications to either subscriber. This must be done before the expiry of T2.

1.3.11 Interrogation

Status check

The controlling subscriber may interrogate the network by the use of a control procedure, as specified in ~~GSM~~TS ~~0~~2.0 30. The network shall respond with an appropriate indication telling the subscriber whether the service is supported in this network and, if so, provide a list of all Basic Service groups to which the Call waiting Supplementary Service is active.

1.4 Exceptional procedures or unsuccessful outcome

1.4.1 Incoming call from subscriber C ignored by subscriber B

If no response is received by the network from controlling subscriber B before the expiry of T2, then the network shall inform the controlling subscriber B that the call is no longer waiting. Subscriber C shall then be given a no reply indication, unless e.g. Call Forwarding applies. The call waiting service is then made available for a subsequent incoming call.

1.4.2 Incoming call from subscriber C is indicated as UDUB by subscriber B (or terminal B)

If the waiting call is indicated as UDUB by B before the expiry of T2 the subscriber C shall be given a busy indication, unless e.g. Call Forwarding applies. The call waiting service is then made available for a subsequent incoming call.

1.4.3 Release by subscriber C within the specified period

If calling subscriber C terminates the call attempt to subscriber B before the expiry of T2, the call attempt from C shall be terminated, as for basic call, and subscriber B shall be notified.

1.4.4 Incoming call from subscriber C is rejected by subscriber B

If the waiting call is explicitly rejected by B before the expiry of T2, the subscriber C shall be given a reject indication. The call waiting service is then made available for a subsequent incoming call.

1.5 Alternate procedures

None identified.

1.6 Interactions with other Supplementary Services

1.6.81.1 Calling line identification presentation

See ~~GSM~~TS ~~0~~2.0~~8~~1 ~~subclause 1.6.83.1.~~

1.6.84.2 MultiParty

See GSM ~~0~~2.0~~8~~4 ~~subclause 1.6.83.1~~.

2 Call hold

2.1 Definition

The call hold service allows a served mobile subscriber, who is provisioned with this Supplementary Service, to interrupt communication on an existing active call and then subsequently, if desired, re-establish communication. The traffic channel remains assigned to the mobile subscriber after the communication is interrupted to allow the origination or possible termination of other calls.

2.2 Description

2.2.1 Description

When the call hold service is invoked, communication is interrupted on the traffic channel and the traffic channel is released from the existing call. The traffic channel is reserved for the served mobile subscriber invoking the call hold service. The served mobile subscriber can only have one call on hold at a time.

One traffic channel should be reserved for the served mobile subscriber as long as the subscriber has one call on hold and is currently not connected to any other call, i.e. the network should not reserve more than one traffic channel for a mobile station.

If the served mobile subscriber has a call on hold and is not connected to an active call, she can:

1) Retrieve the held call.

2) Set up another call.

3) Disconnect the held call.

If the served mobile subscriber has a call on hold and is not connected to an active call she can not receive a call, except when using the Call Waiting Supplementary Service. For additional information, see subclause 2.6.83.1 (Interaction with Call Waiting Supplementary Service).

If the served mobile subscriber is connected to an active call and has another call on hold, she can:

1) Alternate from one call to the other.

2) Disconnect the active call.

3) Disconnect the held call.

4) Disconnect both calls.

If the served mobile subscriber is connected to an active call and has another call on hold, she can not receive a call. For additional information, see subclause 2.6.83.1 (Interaction with Call Waiting Supplementary Service).

2.2.2 Applicability to telecommunication services

The applicability of this Supplementary Service is defined in ~~GSM~~TS ~~0~~2.0004.

NOTE: If the served mobile subscriber has a call on hold she may set up another call using a different telecommunications service.

2.3 Normal procedures with successful outcome

2.3.1 Provision

This Supplementary Service is provisioned for all basic services subscribed to and to which it is applicable, i.e. not provisioned to any subset of these BS.

2.3.2 Withdrawal

The service will be withdrawn at the subscriber's request or for administrative reasons.

2.3.5 Activation

The Supplementary Service will be activated by the service provider as a result of provision.

2.3.6 Deactivation

The Supplementary Service will be deactivated by the service provider as a result of withdrawal.

2.3.7 Invocation

Call hold will be invoked by the served mobile subscriber by use of a control procedure as described in ~~GSM~~TS ~~0~~2.0~~3~~0.

2.3.8 Normal operation with successful outcome

Handling of call hold service within a call

The served mobile subscriber may control the call hold service by use of the control procedures as described in ~~GSM~~TS ~~0~~2.0~~3~~0.

2.6 Interactions with other Supplementary Services

2.6.83.1 Call waiting

See subclause 1.6.83.2.

2.6.84.2 MultiParty

See ~~GSM~~TS ~~0~~2.0~~8~~4 ~~subclause 1.6.83.2.~~

2.7 Interworking considerations

The operation of this Supplementary Service is not affected by the nature ~~(i.e. GSM or non-GSM)~~ of the far end of the connection.

NOTE: In some networks the indication to the distant user about the held or retrieve state of the call may not be supported.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)631***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.084	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval [X] *(only one box should*

for information [ ] *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM [ ] ME [ ] UTRAN [ ] Core Network [ ]

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122084

Category:

F	Correction	[ ]
A	Corresponds to a correction in a 2G specification	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[X]

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.084 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; MultiParty (MPTY) Supplementary Services - Stage 1 (3G TS 22.084 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes MultiParty (MPTY) Supplementary Services (stage 1) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The present document describes the Supplementary Services belonging to the group MultiParty Supplementary Services.

The general asbpects, including definitions and recommended provision, of the description of the ~~GSM~~ Supplementary Services are given in ~~GSM~~TS ~~0~~2.0.04.

The group of Supplementary Services MultiParty Supplementary Services consists of one Supplementary Service:

- MultiParty service (Clause 1).

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0.04~~: "Digital cellular telecommunications system (Phase 2+);~~ General on Supplementary Services".

[3] ~~GSM~~TS ~~0~~2.0.30: ~~"Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[4] ~~GSM~~TS ~~0~~2.0.83: ~~"Digital cellular telecommunication system;~~ Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".

[5] ~~GSM~~TS ~~0~~2.0.85~~: "Digital cellular telecommunication system;~~ Closed User Group (CUG) Supplementary Services - Stage 1"..

[6] TS 21.905: "Vocabulary for 3GPP Specifications"

0.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04 and TS 21.905.

1 MultiParty Service (MPTY)

1.1 Definition

This Supplementary Service provides a mobile subscriber with the ability to have a multi-connection call, i.e. a simultaneous communication with more than one party.

1.2.2 Applicability to telecommunication services

The applicability of this Supplementary Service is defined in ~~GSM~~TS ~~0~~2.0.04.

1.3.7 Invocation

Multi-Party service will be invoked by the served mobile subscriber by use of a control procedure, as defined in ~~GSM~~TS ~~0~~2.0 30.

1.3.8.2 Managing an active multiParty call

During an active multiParty call, the served mobile subscriber shall be able to:

(i) Add another remote party, to which a private communication has been established using the same procedures as in Section 1.3.8.1, if the number of remote parties does not then exceed the maximum number allowed, which results in an active multiParty call.

A "MPTY invoke" notification shall be sent towards all remote parties.

A Retrieve notification (according to TS~~GSM~~ ~~0~~2.0 83) shall be sent towards all previously held remote parties.

(ii) Put the connection to multiParty call on hold, i.e. place her connection to the multiParty call on hold (and typically later retrieve it). The served mobile subscriber may make an enquiry call (e.g. to a potential new remote party) or process a Call Waiting request from this state. While the multiParty call is on hold the remaining remote parties in the multiParty call can have communication with each other.

As a result of this scenario, the enquiry call or the accepted waiting call can be added to the multiParty call or released. If the call is released by the served mobile subscriber or by the remote party, the served mobile subscriber is in control of a held multiParty call.

A Hold notification (according to ~~GSM~~TS ~~0~~2.0 83) shall be sent towards all remote parties.

(iii) Separate a remote party:

Explicitly choose one remote party to have a private communication with. This results in that remote party being removed from the multiParty call which is placed on hold, and the conversation between the served mobile subscriber and the designated remote party being a normal active call (see NOTE 1). The remaining remote parties may have communication with each other in this state.

As a result of this scenario the private communication can be added again to the multiParty call or released. If the private call is released by the served mobile subscriber or by the remote party, the served mobile subscriber is in control of a held multiParty call.

A Hold notification (according to ~~GSM~~TS ~~0~~2.0 83) shall be sent towards all remote parties, except the designated remote party to which a private communication was established.

(iv) Terminate the entire multiParty call. When the served mobile subscriber releases, this is interpreted as a request for termination of the entire multiParty call even if there are calls on hold.

No further notification shall be sent.

(v) Disconnect a remote party:

Explicitly release the remote parties on a one at a time basis (see NOTE 1). In the case when no remote parties remain, the multiParty call is terminated.

NOTE 1: If the served mobile subscriber has a private communication with one of the remote parties and this remote party disconnects or is disconnected a notification is sent towards the served mobile subscriber that she has a multiParty call on hold.

The notification about the held multiparty call towards the served mobile subscriber is given by the MS, not by the network.

1.3.8.4.2 Active MPTY and held call

If the served mobile subscriber is connected to a active MPTY and has a single call on hold, she is able to:

1) Disconnect the active MPTY.

2) Disconnect the single held call.

3) Disconnect both. All calls, even if they are on hold, shall be released.

4) Join the single held call and the active MPTY together. This would result in an active MPTY, except if the number of remote parties exceeds the number allowed.

   A "MPTY invoke" notification shall be sent towards all remote parties.

   A Retrieve notification (according to ~~GSM~~TS ~~0~~2.0~~8~~3) shall be sent towards all previously held remote parties.

5) Alternate between both calls.

If the served mobile subscriber is connected to a active Multi Party call and has a single call on hold, a request for establishing a private communication will be rejected by the network. (Because this would lead to an active call and two calls on hold, which is not supported according to the ~~GSM~~ Call Hold Supplementary Service).

An indication will be given to the served mobile subscriber with the reason for failure.

1.6 Interactions with other Supplementary Services

1.6.85.1 Closed user group

See ~~GSM~~TS ~~0~~2.0~~8~~5~~, section 1.6.84.1~~.

1.7 Interworking considerations

Interworking with non-~~GSM~~PLMN/ISDN:

If a remote party is neither a ~~GSM~~ PLMN nor an ISDN subscriber, it is possible that she is not notified.

Mapping of notifications:

Direction ISDN to ~~GSM~~ PLMN:

3PTY and CONF shall be mapped onto MPTY.

Direction ~~GSM~~ PLMN to ISDN:

MPTY shall be mapped onto CONF.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)632***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.085	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122085

Category:

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.085 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Closed User Group (CUG) Supplementary Services - Stage 1 (3G TS 22.085 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes Closed User Group (CUG) Supplementary Services (stage 1) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The present document describes the Supplementary Services belonging to the group Community Of Interest Supplementary Services.

The general aspects, including definitions and recommended provision, of the description of the ~~GSM~~ Supplementary Services are given in ~~GSM~~TS ~~0~~2<u>.0</u>04.

The group of Community Of Interest Supplementary Services includes one Supplementary Service:

- Closed user group (clause 1).

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- <u>For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).</u>

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2<u>.0</u>04: ~~"Digital cellular telecommunications system (Phase 2+);~~ General on Supplementary Services".

[3] ~~GSM~~TS ~~0~~2<u>.0</u>03: "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".

[4] ~~CCITT~~<u>ITU-T</u> Recommendation X.121: "International numbering plan for public data networks".

[5] ~~CCITT~~<u>ITU-T</u> Recommendation X.180: "Administrative arrangements for closed user groups (CUGs)".

<u>[6] TS 21.905: "Vocabulary for 3GPP Specifications".</u>

0.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04 <u>and TS 21.905</u>.

1 Closed User Group (CUG)

1.1 Definition

The Closed User Group (CUG) Supplementary Service enables subscribers, connected to a PLMN and possibly also other networks, to form closed user groups (CUGs) to and from which access is restricted. A specific user may be a member of one or more CUGs. Members of a specific CUG can communicate among each other but not, in general, with users outside the group.

The ability to set up emergency calls remains unaffected.

1.2.3 Definitions

MSISDN: A number conforming to the numbering plan and structure specified in TS~~GSM~~ ~~0~~23.003.

CUG member: A user who has subscribed to the CUG Supplementary Service and is one of the users in the group formed by a particular CUG.

CUG index: A value assigned by the network to identify a CUG.

CUG Interlock Code (IC): Is used by the network (not by the MS) to identify CUG membership.

preferential CUG: A preferential CUG, which can be specified for each basic service group, is the nominated default CUG to be used when no explicit CUG index is received by the network.

suppress preferential CUG: A user action to prohibit the use of the preferential CUG, on a per call basis.

Incoming Access (IA): An arrangement which allows a member of a CUG to receive calls from outside the CUG.

Outgoing Access (OA): An arrangement which allows a member of a CUG to place calls outside the CUG.

suppress OA: A user action to prohibit the use of the OA subscription option, on a per call basis.

Incoming Calls Barred Within A CUG (ICB): An access restriction that prevents a CUG member from receiving calls from other members of that group.

Outgoing Calls Barred Within A CUG (OCB): An access restriction that prevents a CUG member from placing calls to other members of that group.

CUG calls: A CUG call is a call which is restricted to a pre-defined group of users.

1.3 Normal procedures with successful outcome

1.3.8.1 Mobile originating calls

When originating a call, the calling user may specify a CUG index to indicate that service to a particular CUG is required. If no CUG index is given then the preferential CUG (if specified) is used by the network.

The Outgoing Access (OA) capability allows CUG subscribers to make outgoing calls, which are not subject to CUG restrictions.

If a user, subscribing to the CUG Supplementary Service, originates a call and enters a request for suppression of both a preferential CUG and of the OA capability but does not enter a CUG index, the call shall be rejected.

If a user, subscribing to the CUG Supplementary Service and having the OA capability, originates a call and enters a CUG index (without suppressing the OA capability), while having the restriction of outgoing calls barred within that CUG, the call shall be established without any CUG information i.e. as a normal call.

The originating ~~GSM~~ PLMN ~~network~~ actions are illustrated in annex 2.

As a network option, the network may signal towards the calling user the CUG index in use for the current call, if this can be determined by the network.

1.3.8.2 Mobile terminating calls

If a user, with or without the IA capability, receives a CUG call and the calling user is a member of the same CUG, the incoming CUG call shall be indicated as such, towards the called Mobile Station, with the appropriate CUG index.

If a user with the IA capability receives a call from a user who has not subscribed to the CUG Supplementary service, or from a user who is a member from another CUG and who is using the OA capability, the call is offered to the user as a normal incoming call.

The terminating ~~GSM~~ PLMN ~~network~~ actions are illustrated in annex 3.

1.7 Interworking considerations

If, due to an interworking situation, signalling in the network is not able to carry the information required to provide the service, the network shall terminate the attempt and return an appropriate indication to the calling user. However, a CUG call with an OA indication shall in this case continue to be established as a normal call.

The rejection of CUG calls cannot be technically guarantied in all network interconnection cases, and can only be ensured by inter-connect agreement.

Management of CUG spanning over multiple networks:

A CUG may span over several networks. In this case the responsibility for the management of this CUG is in one of these networks.

NOTE: One mechanism exists for CUGs spanning over data networks only, having X.121 as the numbering plan (see ITU-T~~CCITT~~ Recommendation X.180 (1988)), "Administrative arrangements for international closed user groups".

Annex 2 (normative): Originating ~~GSM~~ PLMN ~~network~~ actions on call requests on the calling user's side

	Information from the calling user				
Calling user's subscription - - -	No CUG info	CUG index or CUG index and suppress pref. CUG	Suppress OA	Suppress pref. CUG	CUG index and suppress OA or CUG index and suppress OA and suppress pref CUG
User without preferential CUG and without OA	Reject call	Establish call using CUG index provided	Reject call	Reject call	Establish call using CUG index provided
User with preferential CUG but without OA	Establish call using pref CUG	Establish call using CUG index provided	Establish call using pref CUG	Reject call	Establish call using CUG index provided
User without preferential CUG but with OA	Establish call without any CUG info i.e. a normal call	Establish call using CUG index provided and OA indicator	Reject call	Establish call without any CUG info i.e. a normal call	Establish call using CUG index provided
User with preferential CUG	Establish call using pref CUG	Establish call using CUG index	Establish call	Establish call without any CUG	Establish call using CUG index

and with OA	and OA indicator	provided and OA indicator	using pref CUG	info i.e. a normal call	provided
User without the CUG SS	Normal call	Normal call	Normal call	Normal call	Normal call

NOTE 1: If a CUG user enters a non-allocated CUG index the call shall be rejected.

NOTE 2: If a user, subscribing to the CUG Supplementary Service and having the OA capability, originates a call and enters a CUG index (without suppressing the OA capability), while having the restriction of outgoing calls barred within that CUG, the call shall be established without any CUG information i.e. as a normal call.

Annex 3 (normative): Terminating ~~GSM~~ PLMN ~~network~~ actions

This table shows the type of call request sent to the destination user or that a rejection indication is returned to the calling user, as a result of the CUG checks on the destination network side.

Network actions on call requests on the called user's side

Type of CUG indication from the network	**M or** NM	**CUG attributes of the forwarding user for requested basic service group**				**forwarding user is a non** CUG user
		IA not allowed		IA allowed		
		not icb	icb	not icb	icb	
CUG call with no OA indication	M	CUG call	rejected	CUG call	rejected	rejected
	NM	rejected		rejected		
CUG call with OA indication	M	CUG call	rejected	CUG call	normal call	normal call
	NM	rejected		normal call		
Normal call	--	rejected		normal call		normal call

M: match with any of the called subscriber's CUGs for the requested basic service group.

NM: no match with any of the called subscriber's CUGs for the requested basic service group.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)633***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.086	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122086

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.086 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Advice of Charge (AoC) Supplementary Services - Stage 1 (3G TS 22.086 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes the Advice of Charge (AoC) Supplementary Services (stage 1) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The present document describes the supplementary services belonging to the group Charging Supplementary Services.

The general aspects, including definitions and recommended provision, of the description of the ~~GSM~~ supplementary services are given in TS~~GSM 0~~2.0.04.

Charging services are the supplementary services associated with charging aspects. The group of supplementary services Charging Supplementary Services comprises two services:

- Advice of Charge (Information) - clause 1;
- Advice of Charge (Charging) - clause 2.

Advice of Charge (AoC) supplementary services will use the Charge Advice Information described in ~~GSM 0~~2.0.24.

In principle, the same type of Mobile Station (MS) can be used for both services of Advice of Charge (AoC), except where the application demands special features - e.g. the payment mechanism in a payphone.

Only one of these services may be subscribed to at any one time.

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0.04: ~~"Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

[3] ~~GSM~~TS ~~0~~2.0.24~~: "Digital cellular telecommunications system (Phase 2+);~~ Description of Charge Advice Information (CAI)~~"~~.

~~[4] GSM 11.11: "Digital cellular telecommunication system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface".~~

[4] TS 21.905: "Vocabulary for 3GPP Specifications".

0.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04 and TS 21.905.

1 Advice Of Charge (Information) (AoCI)

1.1 Definition

This service permits MS to display an accurate estimate the size of the bill which will eventually be levied in the Home PLMN.

1.2 Description

1.2.1 Description

This supplementary service provides the MS with the information to produce an estimate of the cost of the service used. Charges are indicated for the call(s) in progress when mobile originated or for the roaming leg only when mobile terminated. Any charges for non-call related transactions, and for certain supplementary services, such as Call Forwarding are not indicated.

The MS will receive at the beginning of each call (and as necessary during the call) a message, the Charge Advice Information. This message contains the elements which together define the rate at which the call is to be charged, time dependence, data dependence and for unit increments - see ~~GSM~~TS ~~0~~2.0.024.

The MS shall still indicate appropriate charges even when roaming, based on Home PLMN units.

Where applicable, the volume charge for Packet data service, in addition to the normal time dependent and incremental charges, shall be indicated.

To indicate the charge per call the Mobile station shall display the units consumed so far during the present call(s) and maintain this value until the MS is switched off or a new call set-up is attempted.

Where required to indicate the total accumulated charge, the MS shall be able to display, and the SIM/USIM shall store in the ACM, the running cumulative unit charge. This value must be stored securely, and all reasonable steps shall be taken to ensure that the written value cannot be interrupted, reset or corrupted (except resetting under control of the unblocking key). ~~This is described in GSM 11.11.~~

1.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0.04.

1.7 Interworking considerations

When interworking with PSPDN, a volume related charge may be incurred, as described in ~~GSM~~TS ~~0~~2.0.024.

2 Advice Of Charge (Charging) (AoCC)

2.2.1 Description

This supplementary service provides the MS with the information to produce an estimate of the cost of the service used. Charges are indicated for the call(s) in progress when mobile originated or for the roaming leg only when mobile terminated. Any charges for non-call related transactions, and for certain supplementary services, such as Call Forwarding are not indicated.

The MS will receive at the beginning of each call (and as necessary during the call) a message, the Charge Advice Information. This message contains the elements which together define the rate at which the call is to be charged, time dependence, data dependence and for unit increments - see ~~GSM~~TS ~~0~~2.0.024.

The MS shall still indicate appropriate charges even when roaming, based on Home PLMN units.

Where applicable, the volume charge for Packet data service, in addition to the normal time dependent and incremental charges, shall be indicated.

To indicate the charge per call the Mobile station shall display the units consumed so far during the present call(s) and maintain this value until the MS is switched off or a new call set-up is attempted.

Where required to indicate the total accumulated charge, the MS shall be able to display, and the SIM/USIM shall store in the ACM, the running cumulative unit charge. This value must be stored securely, and all reasonable steps shall be taken to ensure that the written value cannot be interrupted, reset or corrupted (except resetting under control of the unblocking key). ~~This is described in GSM 11.11.~~

2.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0.04.

2.7 Interworking considerations

When interworking with PSPDN, a volume related charge may be incurred, as described in ~~GSM~~TS ~~0~~2.0.24.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)634***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.087	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG	SA#5	for approval	X	*(only one box should*
list TSG meeting no. here ↑		for information		*be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: *(at least one should be marked with an X)*	USIM	ME	UTRAN	Core Network

Source:	SA WG1	**Date:**	
Subject:	Editorial update of references for GSM/3GPP use.		
3G Work item:	3TS/SA-0122042		

Category:			
	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	X

Reason for change:	The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.
Clauses affected:	All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.087 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; User-to-User Signalling (UUS); Service description - Stage 1 (3G TS 22.087 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines a User-to-user signalling supplementary service which allows a mobile subscriber to send/receive a limited amount of information to/from another PLMN or ISDN subscriber over the signalling channel in association with a call to the other subscriber within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The User-to-User Signalling (UUS) supplementary service allows a mobile subscriber to send/receive a limited amount of information to/from another PLMN or ISDN subscriber over the signalling channel in association with a call to the other subscriber.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0~~0~~4: ~~"Digital cellular telecommunications system (Phase 2+); ~~General on supplementary services~~".

[3] ~~GSM~~TS ~~0~~2.0~~0~~30: ~~"Digital cellular telecommunications system (Phase 2+); ~~Man-Machine Interface (MMI) of the Mobile Station (MS)~~".

[4] TS 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and Abbreviations

3.1 Definitions

For the purposes of this TS, the following definitions apply:

User-to-User Information (UUI): The information transferred by using the UUS supplementary service.

UUS service: The UUS services (Service 1, 2 and 3) are components of the UUS supplementary service. If the UUS supplementary service is provided to a subscriber, she can handle the UUS services independently within a call.

Served subscriber: The subscriber who has a provision of the UUS supplementary service and who activates the UUS supplementary service. For service 1 and 2 the served subscriber is always the calling subscriber, for service 3 either the calling or the called subscriber can be the served subscriber.

Remote party: For service 1 and 2 the remote party is the called party of a call to which the UUS supplementary service is activated by the served subscriber. For service 3 the remote party can be either the called or the calling party of an established call to whom the use of the UUS supplementary service is requested by the served subscriber.

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply.

UUS User-to-User Signalling

UUI User-to-User Information

Further GSM related abbreviations are listed in GSM 01.04 [1] and TS 21.905 [4].

4 Description

4.1 Description

The UUS supplementary service allows the served subscriber to send/receive a limited amount of subscriber generated information to/from another user in association with a call to the user. This information shall be passed transparently (i.e. without modification of contents) through the network. Normally, the network shall not interpret or act upon this information.

The served subscriber can send and receive UUI in different phases of the call depending on the service(s) to which the subscriber subscribes. These services are:

Service 1: UUI can be sent and received during the origination and termination of a call, with UUI embedded within call control messages. The service 1 can be activated implicit by inserting UUI when set-up a call or explicit with an appropriate procedure.

Service 2: UUI can be sent and received after the served subscriber has received an indication that the remote party is being informed of the call and prior to the establishment of the connection. UUI sent by the served subscriber prior to receiving the acceptance of the call by the remote party, may as a network option be delivered to the remote party after the call has been established. The service 2 shall be activated explicitly.

Service 3: User-to-user-information can be sent and received only while the connection is established. The service 3 shall be activated explicitly.

Service 1, service 2 and service 3 shall allow the transmission of UUI with the maximum length of 128 octets per message.

4.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0~~0~~4 [2].

5.7.1.1 Service 1

UUS service 1 shall be activated by the calling mobile subscriber when originating a call if UUI transfer is desired in either direction.

Service 1 is automatically deactivated when the call is terminated.

Service 1 can be activated by means of an implicit activation request or an explicit activation request.

Implicit activation:

Service 1 is implicitly activated when UUI is included when originating a call.

When service 1 is implicitly activated, service 1 is active for the call, i.e. the remote party is not required to send a response to the implicit activation request. However, the remote party can include UUI in the call response.

Explicit activation:

The UUS service 1 shall be activated explicitly by using of the procedure defined in ~~GSM~~TS ~~0~~2.0~~3~~0 [3].

The served mobile subscriber shall be given an explicit response (acceptance or rejection) to an explicit activation request. An explicit activation request can include UUI.

When service 1 is explicitly requested, the remote party can include UUI when accepting the activation request for the UUS supplementary service.

5.7.1.2 Service 2

The UUS service 2 shall be activated by using of the procedure defined in ~~GSM~~TS ~~0~~2.0~~3~~0 [3].

Service 2 shall be activated by the served subscriber when originating a call, if UUI transfer is desired in either direction.

Service 2 shall be explicitly requested. The served mobile subscriber shall be given an explicit response (acceptance or rejection) to an explicit activation request.

Service 2 is automatically deactivated when the called subscriber is no longer being informed of the call, i.e. if the call is established or released.

5.7.1.3 Service 3

The served subscriber can explicit request the activation of service 3 when a call is originated or after the connection has been established by using the procedure defined in ~~GSM~~TS ~~0~~2.0~~3~~0 [3]. The request for the UUS service 3 shall be accepted from the remote party in order to activate the UUS supplementary service. The served user shall be given an explicit response (acceptance or rejection) to the explicit activation request.

Service 3 is automatically deactivated when the call is no longer established.

5.7.2.1 Service 1

A ~~GSM~~ PLMN subscriber can transfer UUI when originating a call. When service 1 has been activated, either subscriber can include UUI when accepting, rejecting, or terminating a call.

NOTE: It is possible for a calling subscriber to invoke the UUS service 1 with a call set-up and terminate the call before the connection is established.

5.7.2.3 Service 3

After service 3 has been activated, either subscriber can transfer UUI to the other subscriber on the call after the connection has been established.

NOTE: The amount of UUI messages that can be transferred with service 3 shall be defined.

~~NOTE: SMG3 is asked for guidance how the amount of UUI messages can be restricted (e.g. by using of an existing mechanism).~~

9 Interworking considerations

The UUS supplementary service can be delivered only when both subscribers' ~~are GSM PLMN/ISDN subscribers or when a non ISDN~~ network~~s~~ provide~~s~~ a means of conveying the UUI.

Some networks may support the transmission of UUI with a maximum length of only 32 octets per message for service 1. In the interworking case only the first 32 octets of UUI with more than 32 octets per message shall be transferred. No notification about the limitation of the UUI shall be given to any subscriber.

Annex A (informative): Deviations of the ~~GSM~~ 3GPP UUS supplementary service from the ISDN service

The ISDN service UUS allows as a network option the transfer of UUI with a maximum length of 32 octets for service 1. This option shall not be supported in ~~GSM networks~~PLMNs. However there is the possibility that networks using the phase 1 or phase 2 standard can support the UUS service 1 implicitly requested with 32 octets. These networks shall apply the rules defined in the section 8, Interworking considerations.

In the 3GPP~~GSM~~ specification some charging requirement are defined. These requirements shall allow network operators to charge their subscribers for the use of and to prevent misuse of the UUS supplementary service.

Because of the different handling of busy states in ISDN the interactions with call forwarding on mobile subscriber busy are different.

The network option to allow forwarding of UUS requests and UUI only if the forwarding subscriber has the subscription of the relevant UUS service is not supported.

The general principle of CCBS to retain all information of the original call set-up and reusing this information for the CCBS call shall also be valid for the UUS supplementary service. Therefore the UUI contained in the original call set-up shall be stored in network and reused in the CCBS call.

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)635***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.088	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122042

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.088 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Call Barring (CB) Supplementary Services - Stage 1 (3G TS 22.088 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes the Call Barring (CB) Supplementary Services (stage 1) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

0 Scope

The present document describes the supplementary services belonging to the group Call Restriction Supplementary Services.

The general aspects - including definitions and recommended provision - of the description of the ~~GSM~~ supplementary services are given in TS~~GSM 0~~2.0 04.

The Call Restriction supplementary services allow the possibility for a mobile subscriber to have barring of certain categories of outgoing or incoming calls at the mobile subscribers access.

The group of Call Restriction Services includes two supplementary services:

- barring of outgoing calls;
- barring of incoming calls.

By use of subscription options, the mobile subscriber can at provision time select a set of one or more barring programs to determine the categories of calls to be barred. The following categories are defined:

- all outgoing calls;
- outgoing international calls;
- outgoing international calls except those directed to the home PLMN country;
- all incoming calls;
- incoming calls when roaming outside the home PLMN country.

NOTE 1: Each category (barring program) is handled as a single supplementary service.

NOTE 2: The call barring program "incoming calls when roaming outside the home PLMN country" is only relevant if as a general rule the called mobile subscriber pays the charges for the forwarded part of the call from his home PLMN country to any other country.

The barring services can be offered to a mobile subscriber with a password option allowing the activation and deactivation by the subscriber. One password per mobile subscriber is supported by the network for all barring services. For the definition of the password, the description of its use and its management, see ~~GSM~~TS ~~0~~2.0 04.

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0 04: ~~"Digital cellular telecommunications system (Phase 2+); "~~General on supplementary services~~""~~.

[3] ~~GSM~~TS ~~0~~2.0 30: ~~"Digital cellular telecommunications system (Phase 2+); "~~Man-Machine Interface (MMI) of the Mobile Station (MS)".

[4] ~~GSM~~TS ~~0~~2.0~~8~~2: "~~Digital cellular telecommunication system (Phase 2+);~~ Call Forwarding (CF) supplementary services - Stage 1".

[5] ~~GSM~~TS ~~0~~2.0~~8~~4: "~~Digital cellular telecommunication system (Phase 2+);~~ MultiParty (MPTY) supplementary services - Stage 1".

[6] TS 22.905: "Vocabulary for 3GPP Specifications".

0.2 Abbreviations

Abbreviations used in the present document are listed in GSM 01.04 [1] and TS 21.905 [6].

1.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0~~0~~4 [2].

1.3.3 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", the service provider has to register a password at provision time. Furthermore the served mobile subscriber can change the password at any time by an appropriate control procedure which is described in ~~GSM~~TS ~~0~~2.0~~0~~4.

1.3.6 Deactivation

Deactivation takes place by means of an appropriate control procedure by the subscriber, or by the service provider, or finally by activation of a new barring program for the same basic service group.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", the supplementary service is deactivated if the subscriber provides the following information to the network:

- password;
- information as to whether barring of all calls or calls of a specific basic service group should be deactivated.

NOTE: If no Basic Service code is inserted by the user this is interpreted as the group "All Basic Services".

- selected barring program (i.e. the code for one specific Outgoing Barring program given in GSM 02.30) or selected barring supplementary service (i.e. the code for Outgoing Barring Service or the code for All Barring Services given in ~~GSM~~TS ~~0~~2.0~~3~~0).

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by service provider", the supplementary service cannot be deactivated by the subscriber. The deactivation has to be performed by the service provider.

1.4 Exceptional procedures or unsuccessful outcome

1.4.1 Provision

A ~~GSM~~ PLMN which does not support the barring program "Barring of Outgoing International Calls Except Those Directed to the Home PLMN Country", shall replace this program with "Barring of Outgoing International Calls".

1.4.2 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by service provider", an attempt to register a password will be denied and the served mobile subscriber should receive a notification.

When the served mobile subscriber at provision time has selected the subscription option "control of barring services by the subscriber using password", the handling of incorrect password entry is described in ~~GSM~~TS ~~0~~2.0004.

1.4.4 Activation

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by the service provider", an attempt to activate the barring services will be denied and the served mobile subscriber should receive a notification.

When the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using a password", the handling of incorrect password entry is described in ~~GSM~~TS ~~0~~2.0004.

The barring of outgoing calls activation request must specify the basic service group and the selected barring program. If the subscriber does not completely specify for which basic service group (individual basic service group or all basic service groups) barring of outgoing calls is to be activated and the selected barring program, the network will reject the activation request with appropriate cause.

NOTE 1: If no basic service group code is inserted by the user this is interpreted as the group "All Basic Services".

NOTE 2: The group "all basic services" in the context of barring of outgoing calls means all except emergency calls.

1.4.5 Deactivation

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by the service provider", an attempt to deactivate will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber, at provision time, has selected the subscription option "control of the barring services by the subscriber using password", the handling of incorrect password entry is described in ~~GSM~~TS ~~0~~2.0004.

The barring of outgoing calls deactivation request must specify the basic service group and the selected barring program (i.e. the code for one specific Outgoing Barring program given in ~~GSM~~TS ~~0~~2.030) or the selected barring supplementary service (i.e. the code for Outgoing Barring Service or the code for All Barring Services given in ~~GSM~~TS ~~0~~2.030). If the subscriber does not completely specify for which basic service group (individual basic service group or all basic service groups) barring of outgoing calls is to be deactivated and the selected barring program or supplementary service, the network will reject the deactivation request with appropriate cause.

NOTE: If no basic service group code is inserted by the user this is interpreted as the group "All Basic Services".

1.5 Alternate procedures

None identified.

1.6 Interactions with other supplementary services

1.6.82.1 Call forwarding unconditional

See ~~GSM~~TS ~~0~~2.082.

1.6.82.2 Call forwarding on mobile subscriber busy

See ~~GSM~~TS ~~0~~2.0~~8~~2.

1.6.82.3 Call forwarding on no reply

See ~~GSM~~TS ~~0~~2.0~~8~~2.

1.6.82.4 Call forwarding on mobile subscriber not reachable

See ~~GSM~~TS ~~0~~2.0~~8~~2.

1.6.83.1 Call waiting

The activation of barring of outgoing calls at the calling mobile subscriber's side does not affect any currently waiting calls originated by the calling mobile subscriber.

1.6.83.2 Call hold

If barring of outgoing calls is activated after a call hold is invoked on an outgoing call, the held call can be retrieved. Any new outgoing call to a number not allowed by the barring program is barred.

1.6.84 MultiParty service

See ~~GSM~~TS ~~0~~2.0~~8~~4.

1.6.85.1 Closed user group

Barring of outgoing calls takes precedence over the CUG restrictions. The activation of barring of outgoing calls during an outgoing call does not affect any current CUG call.

2.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM~~TS ~~0~~2.0~~0~~4.

2.3.3 Registration

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", the service provider has to register a password at provision time. Furthermore, the served mobile subscriber can change the password at any time by an appropriate control procedure which is described in ~~GSM~~TS ~~0~~2.0~~0~~4.

2.3.4 Erasure

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", a password can be erased as described in ~~GSM~~TS ~~0~~2.0~~0~~4.

2.3.6 Deactivation

Deactivation takes place by means of an appropriate control procedure by the subscriber, or by the service provider, or finally by activation of a new barring program for the same basic service group.

If the served mobile subscriber at provision time has selected the subscription option "control of barring services by subscriber using password", the supplementary service is deactivated if the subscriber provides the following information to the network:

- password;

- information as to whether barring of all calls or calls of a specific basic service group should be deactivated.

NOTE: If no Basic Service code is inserted by the user this is interpreted as the group "All Basic Services".

- selected barring program (i.e. the code for one specific Incoming Barring program given in ~~GSM~~TS ~~0~~2.0 30) or selected barring supplementary service (i.e. the code for Incoming Barring Service or the code for All Barring Services given in ~~GSM~~TS ~~0~~2.0 30).

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by service provider", the supplementary service cannot be deactivated by the subscriber. The deactivation has to be performed by the service provider.

2.4.2 Registration

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by service provider", an attempt to register a password will be denied and the served mobile subscriber should receive a notification.

When the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by subscriber using password", the handling of incorrect password entry is as described in ~~GSM~~TS ~~0~~2.0 04.

2.4.4 Activation

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by the service provider", an attempt to activate the barring services will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by the subscriber using password", the handling of incorrect password entry is as described in ~~GSM~~TS ~~0~~2.0 04.

The barring of incoming calls activation request must specify the basic service group and the selected barring program. If the subscriber does not completely specify for which basic service (individual basic service group or all basic service groups) barring of incoming calls is to be activated and the selected barring program, the network will reject the activation request with appropriate cause.

NOTE: If no Basic Service group code is inserted by the user this is interpreted as the group "All Basic Services".

2.4.5 Deactivation

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by the service provider", an attempt to deactivate will be denied and the served mobile subscriber should receive a notification.

If the served mobile subscriber, at provision time, has selected the subscription option "control of barring services by the subscriber using password", the handling of incorrect password entry is as described in ~~GSM~~TS ~~0~~2.0 04.

The barring of incoming calls deactivation request must specify the basic service group and the selected barring program (i.e. the code for one specific Incoming Barring program given in ~~GSM~~TS ~~0~~2.0 30) or the selected barring supplementary service (i.e. the code for Incoming Barring Service or the code for All Barring Services given in ~~GSM~~TS ~~0~~2.0 30). If the subscriber does not completely specify for which basic service group (individual basic service group or all basic service groups) barring of incoming calls is to be deactivated and the selected barring program or supplementary service, the network will reject the deactivation request with appropriate cause.

NOTE: If no Basic Service group code is inserted by the user this is interpreted as the group "All Basic Services".

2.5 Alternate procedures

None identified.

2.6 Interactions with other supplementary services

2.6.82.1 Call forwarding unconditional

See ~~GSM~~TS ~~0~~2.0082.

2.6.82.2 Call forwarding on mobile subscriber busy

See ~~GSM~~TS ~~0~~2.0082.

2.6.82.3 Call forwarding on no reply

See ~~GSM~~TS ~~0~~2.0082.

2.6.82.4 Call forwarding on mobile subscriber not reachable

See ~~GSM~~TS ~~0~~2.0082.

2.6.83.2 Call hold

If barring of incoming calls is activated after a call hold is invoked on an incoming call, the held call can be retrieved. Any new incoming call not allowed by the barring program is barred.

2.6.84 MultiParty service

See ~~GSM~~ ~~0~~2.0084.

2.6.85.1 Closed user group

Barring of incoming calls takes precedence over the CUG restrictions. The activation of barring of incoming calls during an incoming call does not affect any current CUG call.

2.7 Interworking considerations

None identified.

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)636***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.090	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

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

USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122090

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.090 V3.0.0 (1999-07)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Unstructured Supplementary Service Data (USSD) - Stage 1 (3G TS 22.090 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS defines the stage 1 description of Unstructured Supplementary Service Data (USSD) for use within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

This TS defines the stage 1 description of Unstructured Supplementary Service Data (USSD) for use in one or a number of ~~GSM~~ Public Land Mobile Networks (PLMNs).

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0004: "~~Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

[3] ~~GSM~~TS ~~0~~2.0030: "~~Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[4] ~~GSM~~TS ~~0~~2.0038: "~~Digital cellular telecommunications system (Phase 2+);~~ Alphabets and language-specific information".

[5] ~~GSM~~TS ~~0~~2.0~~8~~0: "~~Digital cellular telecommunications system (Phase 2+);~~ Mobile radio interface layer 3 supplementary services specification Formats and coding".

[6] TS 21.905: "Vocabulary for 3GPP Specifications".

3 Abbreviations

Abbreviations used in this TS are listed in GSM 01.04 [1] and TS 21.905 [6].

5.1.1 Initiating action at the Mobile Station (MS)

If the user enters an MMI string that, according to ~~GSM~~TS ~~0~~2.0~~3~~0 [3], should be treated as USSD, the MS shall send this string to the network using the appropriate operation from ~~GSM~~TS ~~0~~2.0~~8~~0 [5].

The mobile initiated operation shall contain an alphabet indicator and language indicator. The alphabet indicator shall indicate the alphabet used in the operation and shall be set to "SMS default alphabet". The language indicator shall indicate "language unspecified".

The MS may initiate an USSD Operation either during a call or out of call.

5.1.2 Action at the network

A network supporting USSD shall examine the alphabet indicator. If the serving network does not recognize the alphabet indicated in the mobile initiated USSD operation, it shall send the operation to the HLR.

On recognition of the alphabet, the network shall examine the contents of the string, and take appropriate action, according to the following rules, depending of the format of the message.

Case a) 1, 2 or 3 digits from the set (*, #) followed by 1X(Y), where X=any number 0-4, Y=any number 0-9, then, optionally "* followed by any number of any characters", and concluding with # SEND:

This case is reserved for HPLMN use. When a serving network receives such a message from a visiting subscriber, it shall pass the USSD message directly to the HPLMN. If it receives it from a home subscriber, it is up to the network to decide whether to treat it locally or to pass it to the HLR.

Case b) 1, 2 or 3 digits from the set (*, #) followed by 1X(Y), where X=any number 5-9, Y=any number 0-9, then, optionally "* followed by any number of any characters", and concluding with # SEND:

This case is reserved for VPLMN use. It is up to the VPLMN to decide how to treat it.

Case c) 7(Y) SEND, where Y=any number 0-9:

This case is reserved for HPLMN use. When a serving network receives such a message from a visiting subscriber, it shall pass the USSD message directly to the HPLMN. If it receives it from a home subscriber, it is up to the network to decide whether to treat it locally or to pass it to the HLR.

Case d) All other formats:

The visited network examines the message. If it is able, it acts upon it. Failing that, it passes the message to the HLR.

If the HLR does not support the alphabet indicated, it shall inform the MS.

The network shall terminate the mobile initiated operation by responding to the request from the mobile with either an error signal, or a text string indicating the outcome of the operation. The response string uses the characters available in the "Default Alphabet" as defined in TS~~GSM 0~~23.038 [4]. If no indication to the user is required, the response string may be empty.

The response to the mobile initiated USSD operation shall contain alphabet and language indicators. The selection of values for these indicators is a matter for the network operator.

5.1.4 Allocation of service codes (to be noted by network operators)

Service codes for use in control of Supplementary Services are standardized by international agreement, so must not be used by ~~GSM~~ PLMNs unless authorized, except for those codes allocated for PLMN use.

If the message is of the format:

1, 2 or 3 digits from the set (*, #), followed by

NN(N), where N=0-9,

optionally followed by "* and any number of any characters",

and terminating in # SEND:

then NN(N) is known as the service code. Only codes specified in ~~GSM~~TS ~~0~~22.030 [3] and those defined in cases a) and b) above may be used ~~in GSM~~. All other values are reserved.

Similarly, if the message is of the format:

X(Y) SEND, where X=0-6 or 8-9 and Y=0-9:

the codes X(Y) are standardized. Only codes specified in ~~GSM~~TS ~~0~~22.030 [3] subclause 4.5.5 may be used ~~in GSM~~. All other values are reserved.

5.2 Network initiated unstructured SS data operation

5.2.2 Actions at the MS

If the MS is unable to process the network initiated unstructured SS data operation (e.g. the feature is not supported or the user is engaged in another MMI activity) then an error indication shall be returned to the node that originated the operation. If the alphabet indicated by the network is not supported by the MS, the MS shall inform the network.

The network may explicitly indicate to the MS that a response from the user is required. In this case, the next string entered by the user shall be used as the response (and is not interpreted according to normal MMI procedures stated in ~~GSM~~TS ~~0~~22.030 [3]). An MMI command shall be provided to allow the user to terminate the dialogue with a null response. The response string uses the characters available in the "default alphabet" as defined in ~~GSM~~TS ~~0~~23.038 [4]. The response is sent to the node that originated the operation. If the network does not indicate that a response is required, then the normal MMI procedures on the MS continue to apply.

The MS shall include alphabet and language indicators in the response to the network (if any). The alphabet indicator shall indicate "SMS default alphabet". The language indicator shall indicate "language unspecified".

6.2 Mobile initiated transfer

6.2.1 Initiating action at the mobile station

If the MS wishes to send data to the network, it can do so using USSD. It shall be possible for the MS to send data to nodes in the VPLMN and in the HPLMN, i.e. ~~GSM network elements (e.g.~~ MSC, VLR, HLR~~)~~, MExE servers, CSEs and proxy servers.

6.3.2 Action at the mobile station

The MS shall pass the message to the ME, to the SIM/USIM or to the TE as indicated in the message.

6.4 External addressing

The USSD dialogue exists inside the ~~GSM network~~PLMN. However, it shall be possible to transport the address of an external node in the USSD message. The address format must be standardised and support at least E.164- and IP-addresses.

When addressing of an MS from an external node the address shall be an MSISDN number. The return address shall be present and in the same format the MS uses to address an external node.

This mechanism for communication between the ~~GSM network~~PLMN and the external node is out of scope of this document.

TSG-SA Working Group 1 meeting #5 | ***TSG S1*** | ***(99)637***

Munich, Germany, 27-28 Sep 1999 | Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.091	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG: SA#5 (*list TSG meeting no. here* ↑)

for approval: **X** (*only one box should be marked with an X*)

for information: ( )

Form: 3G CR cover sheet, version 1.0 *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf*

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

USIM ( ) ME ( ) UTRAN ( ) Core Network ( )

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122091

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

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.091 V3.0.0 (1999-08)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects;
Explicit Call Transfer (ECT)
(3G TS 22.091 version 3.0.0)

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS specifies the stage 1 description of Explicit Call Transfer (ECT) from the service subscriber's and user's points of view within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document specifies the stage 1 description of Explicit Call Transfer (ECT) from the service subscriber's and user's points of view, in particular:

- the procedures for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other ~~Global System for Mobile communications (GSM)~~ supplementary services.

The present document does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate ~~GSM~~ Technical Specifications ~~and ETS~~.

The charging principles applied to ECT are established in the present document in terms of the charging information required to be collected. Any subsequent charging implications are outside of the scope of the present document.

~~The present document is applicable to the digital cellular telecommunication system GSM.~~ Any interactions with other networks not dealt with in Clause 9 are outside the scope of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM~~TS ~~0~~2.0030: "~~Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[3] TS 21.905: "Vocabulary for 3GPP Specifications".

3.2 Abbreviations

All abbreviations used within the present document are given in GSM 01.04 [1] and 3GPP TS 21.905 [3].

5.7 Invocation

ECT shall be invoked by the served mobile subscriber by use of a control procedure as described in ~~GSM~~TS ~~0~~2.0030 [2].

9 Interworking considerations

The operation of this supplementary service is not affected by the nature ~~(i.e. GSM or non-GSM)~~ of the far end of the connections.

NOTE: In some networks the indication to the remote parties about the invocation of ECT may not be supported.

Annex A (informative): Deviations of ~~GSM~~ PLMN ECT to the ISDN specifications of ECT

A.1 Subclause 4.1 Applicability to telecommunication services

This service is applicable to Telephony (TS:11) only.

NA1 states: applicable to all circuit switched basic telecommunication services.

A.2 Subclause 5.8 Normal operation

The NOTE describing the Call Hold scenario is not included in the 3GPP~~GSM~~ stage 1 specifications.

In ~~GSM~~3GPP specifications there a explicit explanation that the previously held party shall be informed of the retrieve procedure.

NA1: there is no explicit description of this procedure.

In ~~GSM~~3GPP specifications there is no explicit exchange of the subaddress of the remote parties after the successful transfer defined.

NA1 states: After the successful transfer of the call, the subscriber B and subscriber C can deliver if supplied their subaddress to the other subscriber.

A.3 Subclause 6 Exception procedures or unsuccessful outcome

In the case where:

- the two calls are incompatible with ECT (either one of them or both are not Telephony service);
- the call state is not compatible with the request, e.g. one call is not answered;
- etc. (for further study).

the request will be rejected by the network and the subscriber will be notified of the cause.

NA1 states: It is the responsibility of the served user to ensure that the two calls are compatible.

A.4 Subclause 8.6 and 8.7

NA1: There is no special definition of the impact of the interaction between CFB and CFNRy and ECT on the line identification supplementary services.

A.5 Annexes

Annex A is missing in the ISDN specification.

Annex B (normative): Cross Phase compatibility

As a operator option it is possible to support also the invocation of ECT ~~done by an old mobile station (Phase 1 or Phase 2)~~ by using Unstructured Supplementary Service Data (USSD).

The USSD string used should be the same as the standardised MMI code (4 SEND) for ECT.

The network shall send an indication towards the user if ECT was invoked successfully or unsuccessfully, though the mechanism for this indication is not specified.

If a remote party uses a non-ECT mobile station they may not receive the ECT notification.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)638***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.093	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122093

Category:

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

1 Scope

The present document specifies the stage 1 description of Completion of Calls to Busy Subscriber (CCBS) from the subscriber's and user's points of view; in particular:

- the procedures for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other ~~GSM~~ supplementary services;

The present document does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate ~~GSM~~ specifications.

The charging principles applied to CCBS are outside of the scope of this specifcation.

~~The present document is applicable to the digital cellular telecommunication system Global System for Mobile communications (GSM).~~ Any interactions with other networks not dealt with in the present document are outside the scope of the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[6] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TS ~~GSM 0~~2<u>.0</u>04: "~~Digital cellular telecommunications system (Phase 2+);~~ General on supplementary services".

[3] TS ~~GSM 0~~2<u>.0</u>30: "~~Digital cellular telecommunications system (Phase 2+);~~ Man-Machine Interface (MMI) of the Mobile Station (MS)".

[4] TS~~GSM~~ 2~~0~~9.<u>0</u>02: "~~Digital cellular telecommunications system (Phase 2+);~~ Mobile Application Part (MAP) specification".

[5] TS~~GSM 0~~ 22.<u>0</u>85: "~~Digital cellular telecommunications system (Phase 2+);~~ Closed User Group (CUG) Supplementary Services - Stage 1".

[6] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

CCBS supplementary service: is a service which enables a calling subscriber A, encountering a NDUB destination B, to have the call completed when the busy destination B becomes idle, without having to make a new call attempt**.**

CCBS busy on the A side: is caused by the following condition:

- while the CCBS recall timer T4 or the CCBS notification timer T10 is running or until the CCBS call is completed or the CCBS call fails.

CCBS busy on the B side: is caused by the following conditions:

- while the idle guard timer (T8) is running;
- while there is CCBS recall pending (i.e. while the CCBS recall timer T9 is running).

Subscriber A and Destination B is indicated as **idle** if there are no active calls, no calls on hold and no call waiting for the subscribers.

Subscriber A and Destination B is indicated as **not reachable** if one of the conditions defined in ~~GSM 09~~TS 29.002 [4] apply (e.g. IMSI detach, no paging response, no location information in HLR).

CCBS recall: an indication informing subscriber A that destination B is idle.

CCBS call: a call set-up from subscriber A to destination B resulting from subscriber A's acceptance of a CCBS recall.

CCBS request: A request by subscriber A against an NDUB destination B requesting that subscriber A be automatically informed when destination B becomes idle. The CCBS request shall be held in a CCBS queue pending the correct conditions for the CCBS request to be completed.

Destination B: the entity addressed in the original call set up.

Subscriber A: the subscriber that originated the call, activated a CCBS request and is uniquely identifiable for CCBS recall.

Suspended CCBS request: a CCBS request which cannot be served even if destination B is idle, because subscriber A is CCBS busy, not reachable or is not idle and ignores the CCBS recall.

Resumed CCBS request: a CCBS request which was suspended before and has become not suspended as a result of subscriber A becoming idle, not CCBS busy or reachable again.

Automatic deactivation: an action by the network resulting in removal of all reference to a CCBS request without informing the subscriber. Automatic deactivation is performed after a successful CCBS procedure or for exceptional situations.

Timers at the originating side (A):

CCBS retention timer (T1): this timer specifies the amount of time that the network retains the call information when the call encounters busy. The value shall be greater than 15 seconds. The upper limit of the CCBS retention timer is a network option.

CCBS service duration timer (T3): the maximum time the CCBS request will be active within the network. The value of this period is a network option, in the range of 15 to 45 minutes.

CCBS recall timer (T4): the maximum time the network will wait for a subscriber A response to a CCBS recall when subscriber A is idle. The value of this timer is a network option and shall be in the range 20 to 30 seconds**.**

CCBS notification timer (T10): the maximum time the network will wait for a subscriber A response to a CCBS recall when subscriber A is not idle and not CCBS busy. The value of the timer is a network option and shall be in the range 20 to 30 seconds.

CCBS resume timer (T11): the timer started as soon as a suspended CCBS request is resumed, making sure only one CCBS request is becoming resumed at a time. Duration of the timer shall allow a CCBS recall resulting from the destination side CCBS queue being processed. The value of the timer is a network option and shall be in the range 20 to 25 seconds.

Timers at the terminating side (B):

CCBS service duration timer (T7): is the timer which specifies the maximum length of time the CCBS request will be held within the network. The value of this period is a network option shall be greater than 45 minutes.

Destination B idle guard timer (T8): the time the network will wait after destination B has become idle before initiating a "CCBS recall" to subscriber A. The value of this timer is a network option and shall be in the range 0 to 15 seconds.

NOTE 1: This timer enables destination B to initiate a call before any notification is given to subscriber A that destination B has become idle and prevents destination B to receive incoming calls.

CCBS recall B timer (T9): is the timer, which supervises the CCBS recall establishment on the B-side. The value is a network option and shall be shall be in the range of 40 to 55 seconds.

NOTE 2: This timer prevents destination B from receiving other incoming calls than from subscriber A.

NOTE 3: The timer values may vary from one PLMN to another and thus give the subscriber a slightly different perception of the service as she roams between PLMN's.

3.2 Abbreviations

For the purposes of the present document the following abbreviations apply:

CCBS	Completion of Calls to Busy Subscriber
NDUB	Network Determined User Busy

Additional ~~GSM related~~ abbreviations may be found in GSM 01.04 [1] and TR 21.905 [6].

4.1 Applicability to telecommunications services

The applicability of the CCBS supplementary service is defined in ~~GSM 02~~TS 22.004 [2].

5.5 Activation

The CCBS service shall be activated as a result of provisioning.

A CCBS request shall be activated by the mobile subscriber on a per-call basis by a control procedure as described in ~~GSM 0~~TS 22.030 [3].

When subscriber A encounters a NDUB destination B, the network shall retain the call information for a period defined by the CCBS retention timer (T1), and inform subscriber A that CCBS is possible when the following set of conditions apply:

- subscriber A has the CCBS supplementary service provisioned;
- the call failure reason is either "user busy or "no circuit/channel available";
- CCBS is available (as determined by network B as described below).

During this time subscriber A can activate the CCBS request.

CCBS is available at network B, when the following set of conditions apply:

- network B supports the CCBS supplementary service;
- destination B is found to be NDUB; and
- the maximum length of destination B's CCBS queue is greater than zero.

If the network accepts the activation of a CCBS request the network shall register the call information in the original call request, and subscriber A shall be informed that the activation was successful.

When the activation of a CCBS request is accepted the CCBS service duration timers (T3 and T7) are started. The network shall monitor destination B for destination B becoming idle.

Subscriber A can have a limited number of CCBS requests outstanding. This limit is a network option (with a maximum value of 5). The CCBS requests can be to different destination Bs, or can be to the same destination B with different basic service requirements.

Destination B can have a limited number of incoming CCBS requests outstanding. This limit is a network option (with a maximum value of 5). The requests can be from different subscriber As, or can be from the same subscriber A with different basic service requirements.

Having activated a CCBS, subscriber A can originate calls and receive calls as normal.

5.6 Deactivation

The CCBS supplementary service shall be deactivated as a result of withdrawal.

A previous CCBS request activation shall be deactivated by the mobile subscriber by a control procedure as described in TS 22.030 [3]~~GSM 02.30~~ or shall be automatically deactivated after a successful CCBS procedure or for exceptional situations as described in subclause 6.4.

Deactivation of a CCBS request shall result in all reference to this CCBS request (entries in A and B queue and timers) being removed from the network.

Subscriber A can send the following deactivation request:

a) deactivate all outstanding CCBS requests;

b) deactivate one specific CCBS request.

Subscriber A shall be informed that the deactivation is successful.

5.8 Interrogation

Subscriber A can request the list of the CCBS requests by a control procedure as described in TS 22.030 [3].~~GSM 02.30~~. In response to the request subscriber A shall be given a list of the addresses and basic services against which CCBS requests are outstanding.

7.12 Closed user group

Closed user group information from the original call, stored in the network, shall also be automatically included in the CCBS call.

If subscriber A or destination B roam to a network not supporting CUG the call restriction procedures as described in ~~GSM~~ TS 2~~0~~2.0~~8~~5 [4] shall apply after a CCBS request has been activated.

8 Mobility aspects

The processing of CCBS requests shall not be affected by the mobility of subscriber A or destination B~~,~~ if either or both of the subscribers is a mobile ~~GSM~~ subscriber.

Annex A (informative): Cross Phase compatibility

Users of existing MSs (Phase 2 and possibly Phase 1) are not prevented from using the CCBS supplementary service.

Existing Phase 1/Phase 2 functional signalling mechanisms and USSD shall be used to offer the service to these MSs. Networks wishing to offer this service to existing MSs are therefore required to support both functional (Phase 1/Phase 2) and stimulus signalling (USSD).

A.1 Activation of a CCBS request

Activation of CCBS requests by existing MSs shall be performed using USSD. The standardised MMI is defined in TS~~GSM 0~~2.0 30 [3]. The network shall interpret the USSD string as an activation of a CCBS request.

Consequently, networks which do not support USSD will not be able to offer the service to existing MSs which do not support USSD will not be able to activate a CCBS request.

A.2 CCBS Recall

A CCBS Recall to an existing MS shall be handled as a normal mobile terminated call using Phase 1/Phase 2 functional signalling.

A.3 Interrogation

Existing MSs shall use USSD to interrogate the service. The MMI is defined in TS~~GSM 0~~ 2.0 30[3].

A.4 Deactivation

Existing MSs shall use USSD to deactivate the service. The MMI is defined in TS~~GSM 0~~2.0 30 [3].

TSG-SA Working Group 1 meeting #5 **TSG S1** ***(99)639***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.096	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122096

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS describes name identification supplementary services (stage 1) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document describes the supplementary services belonging to the group Name Identification supplementary services.

The general aspects, including definitions and recommended provision, of the description of the ~~GSM~~ supplementary services are given in ~~GSM 0~~TS 22.004.

The group of Name Identification supplementary services is divided into the following supplementary services:

CNAP Calling Name Presentation (clause 4).

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] ~~GSM 0~~TS 22.004: "~~Digital cellular telecommunications system (Phase 2+);~~ General on Supplementary Services".

[3] ~~GSM 0~~TS 22.081: "~~Digital cellular telecommunications system (Phase 2+);~~ Line Identification Supplementary Services - Stage 1".

[4] TR 21.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

Definition of name identity:

The name identity is made up of the following information unit:

- The name of the mobile subscriber for the purpose of calling name presentation - up to 80 characters of information associated with a specific calling party.

The calling name identity is the name identity of the calling party.

Definition of Presentation Indicator:

In addition to or instead of the name identity, the network may give a Presentation Indicator (PI) to the called mobile subscriber of the CNAP service. The following information may be given:

- Presentation Indicator (PI) showing:

a) presentation restricted, or

b) name unavailable.

The name identity of a ~~GSM~~ PLMN subscriber shall always be provided by the network.

Calling Party: The calling party is the originating party.

Called Party: The called party is the terminating party. The CNAP service is provided to the called party.

Calling Name Information: The calling name information of the calling party includes either the calling name identity or an indication of privacy or unavailability.

4.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM 0~~TS 22.004 [2].

CNAP is applicable to all telecommunication services except Short Message service. (for further study)

4.3 Normal procedures with successful outcome

4.3.1 Provision

This supplementary service is provisioned for all Basic Services subscribed to and to which it is applicable, i.e. not provisioned for any subset of these Basic Services.

This service shall be provided after pre-arrangement with the service provider. It may be provided on a subscription basis or be generally available.

The override category controlling the name information is separate from the override category for the line identity information. It is left to the CNAP service provider to ensure that no discrepancy between these two override categories occurs. The handling of override category within a PLMN or between PLMNs shall follow the rules applying to the override category of the line identification services TS 22.081 [3].

4.6 Interactions with other ~~GSM~~ supplementary services

Only those supplementary services for which CNAP has any interactions are detailed in this clause. For all other ~~Phase 2~~ supplementary services not mentioned in this clause no interactions were identified.

4.8 Interworking considerations

According to national network specific rules, the CNAP supplementary services need not be applicable, if at least one of the two parties is not an ISDN or ~~GSM~~ PLMN subscriber.

TSG-SA Working Group 1 meeting #5 ***TSG S1*** ***(99)640***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.097	**CR**	**001**	Current Version:	3.0.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 for approval **X** *(only one box should*

list TSG meeting no. here ↑ for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ME UTRAN Core Network

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122097

Category:

F	Correction	
A	Corresponds to a correction in a 2G specification	
B	Addition of feature	
C	Functional modification of feature	
D	Editorial modification	**X**

(only one category shall be marked with an X)

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

Foreword

This Technical Specification has been produced by the 3GPP.

~~This TS gives an overall view of how this service shall operate both in the PLMN and within the Mobile Station (MS) within the 3GPP system.~~

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 Indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

The present document ~~is Technical Specification (TS)~~ gives an overall view of how this service shall operate both in the PLMN and within the Mobile Station (MS). This TS defines functionality and is not intended to constrain implementation.

NOTE: MSP phase 1 will be implemented using CAMEL phase 2. This TS reflects this implementation choice.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".

[2] TS 22.004: "General on supplementary services".

~~[2] GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".~~

[3~~3~~] ~~GSM 0~~TS 22.030: "~~Digital cellular telecommunications system (Phase 2+);~~ Man-machine Interface (MMI) of the mobile station (MS)".

[4~~4~~] ~~GSM 0~~TS 23.040: "~~"Digital cellular telecommunications system (Phase 2+);~~ Technical realization of the Short Message Service (SMS) Point to Point (PP)"~~"~~.

[5] TR 22.905: "Vocabulary for 3GPP Specifications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS the following definitions apply:

Subscriber: The user who is provisioned with the MSP service

Profile: A profile consists of a set of telecommunications services for the subscriber. In the case of the single numbering scheme there is a unique MSISDN associated with each profile. In the multi-numbering scheme there is the ability to have a unique MSISDN associated with each basic service in each profile.

Service Provider (SP): The organisation through which the subscriber obtains ~~GSM~~ PLMN telecommunication services. This may be the network operator or possibly a separate body.

Profile Identification (Profile ID): The profile IDs allow unambiguous identification of each profile. This will allow the subscriber to select the preferred profile for outgoing calls and for subscriber actions. For terminating calls the profile ID shall be part of the notification of the profile.

Registered Profile: The registered profile is that registered by/for the subscriber

Selected Profile: For mobile originated calls and short messages this is the registered profile unless the subscriber explicitly selects an alternative profile. For mobile terminating activities, this is the profile associated with the MSISDN addressed.

Mobile Terminating Activities: These include mobile terminating calls, short messages (SMS MT) and Call Independent Supplementary Services (e.g. NI-USSD).

Default Profile: Profile to be used when roaming to non-supporting network

3.2 Abbreviations

For the purposes of this TS the following abbreviations apply, in addition, abbreviations used in this TS are listed in GSM 01.04 ~~(ETR 350)~~[1].

MSP Multiple Subscriber Profile

4 Description

Multiple Subscriber Profile is an optional service to enable mobile subscribers to have several profiles associated with a ~~single SIM and a~~ single IMSI, with each profile being a subscription option. Each profile may be used for mobile originated and mobile terminated calls.

Up to four different profiles can be provisioned against a subscriber using the MSP feature. This will allow the subscriber to separate her telecommunication service needs into different identities (e.g. business and home).

The charges accrued for services shall be associated with the appropriate profile, allowing separate charging for each profile.

A supporting visited network shall indicate [on the billing record] for charging purposes the profile used.

4.1 Applicability to telecommunication services

The applicability of this supplementary service is defined in ~~GSM 0~~TS 22.004 [2].

5.2.3 Registration

Registration is the procedure by which information is written to the network to allocate a particular profile to be used for all outgoing calls and supplementary service related activities. Registration to a profile shall take place either by the service provider or with an appropriate control procedure by the subscriber as defined in ~~GSM~~ TS ~~0~~22.030 [3]. At all times only one profile shall be registered. The network shall indicate to the user whether an attempt to register a profile has been successful or not.

5.2.4 Selection

The profile to be used for mobile originated calls is selected either implicitly or explicitly:

- Implicit selection occurs if the served subscriber does not indicate a profile ID when initiating a call or short message. In this case the selected profile is the registered profile.
- Explicit selection occurs if the served subscriber does indicate a profile ID when initiating a call or short message.

The control procedure used to select the profile is as defined in ~~GSM 02~~TS 22.030 [3].

For mobile terminating activities, the profile is selected according to the MSISDN addressed.

5.2.5 Erasure

A previous registration can be erased in the following ways:

- the subscriber can register to another profile which causes the previous registration to be overridden;
- the registered profile is erased as a result of withdrawal of the MSP service.

5.2.6 Interrogation

The subscriber shall be able to interrogate which profile is the registered profile and all other available profile IDs, with an appropriate control procedure as defined in TS ~~GSM~~ 2~~0~~2.0 30 [3].

5.3 Normal operation with successful outcome

5.3.1 Mobile Originating Calls

Mobile originating calls shall be handled according to the selected profile. This shall be the registered profile unless an alternative is explicitly selected by the subscriber. Profiles are registered and selected according to control procedures in TS~~GSM~~ 2~~0~~2.0 30 [3].

Any activity that is normally chargeable shall be identified against the selected profile.

7 Interaction with other services

7.1 The Multi-Numbering Scheme

[FFS]

7.2 The Short Message Service

The Short Message Service is described in TS~~GSM 0~~23.040 [4]. It will not be possible to indicate the profile used for either the MT or the MO case. All MO short messages will be sent from the default profile.

MO short messages will be charged to the default profile.

TSG-SA Working Group 1 (Services) meeting #4 *TSGS1#4(99)544*
Québec, Canada, 5th-9th July 1999 **Agenda 6.1.4.1**

CHANGE REQUEST No : **023**

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

Technical Specification / Report UMTS 22.100 Version: 3.3.0

Submitted to TSG_SA 5 *list TSG plenary meeting no. here ↑*

for approval **X**
for information

without presentation ("non-strategic") **X**
with presentation ("strategic")

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip

Proposed change affects: USIM TE Network **X**

(at least one should be marked with an X)

Work item: UMTS phase 1 release 99

Source: S1 **Date:**

Subject: Editorial changes

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

F	Correction		**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	**X**		UMTS 99	**X**

Reason for change: Editorial changes related to terminology.

Clauses affected:

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:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3 Definitions, and abbreviations

3.1 Definitions

Definitions applicable to current document :

CAC (Connection Admission Control) : is a set of measures taken by the network to balance between the QoS requirements of new connections request and the current network utilisation without affecting the grade of service of existing/already established connections.

Capability Class : is a piece of information which indicates general UMTS mobile station characteristics (e.g. supported radio interfaces,...) for the interest of the network.

Connection mode : characterizes the type of association between two ~~end~~points as required by the bearer service for the transfer of information. A bearer service is either connection-oriented or connectionless. In a connection oriented mode, a logical association called *connection* needs to be established between the source and the destination entities before information can be exchanged between them. ~~Within the connection, information is delivered to the destination entity in the same order as it was provided by the source entity.~~ Connection oriented bearer services lifetime is the period of time between the establishment and the release of the connection.

In a connectionless mode, no connection is established beforehand between the source and the destination entities ; the source and destination network addresses need to be specified in each message. Transferred information cannot be guaranteed of ordered delivery. Connectionless bearer services lifetime is reduced to the transport of one message.

FC (Flow Control) : is a set of mechanisms used to prevent the network from becoming overloaded by regulating the input rate transmissions.

GSM BSS : refers in this specification to the GSM/GPRS access network.

GSM core network : refers in this specification to the GSM NSS and GPRS backbone infrastructure.

Home environment : enables a user to obtain UMTS services in a consistent manner regardless of the user's location or terminal used (within the limitations of the serving network and current terminal).

Performance : is concerned with the ability to track service and resource usage levels and provides feedback on the responsiveness and reliability of the network.

Serving network : provides the user with access to the services of home environment.

UMTS core network : refers in this specification to an evolved GSM core network infrastructure or any new UMTS core network infrastructures, integrating circuit and packet switched traffic..

UMTS mobile termination : part of the UMTS Mobile Station which provides functions specific to the management of the radio interface (Um).

UMTS network: refers to a network operated by a single network operator and consisting of :
- UTRAN access networks (WCDMA and/or TD-CDMA),
- optionally GSM BSS access networks,
- an UMTS core network.

UPC (Usage Parameter Control) : is a set of actions taken by the network to monitor and control the offered traffic and the validity of the connection with respect to the traffic contract negotiated between the user and the network.

~~Further definitions [Tbd]~~

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

BSS	Base Station System
CS	Circuit switched
~~CDMA~~	~~Code Division Multiple Access~~
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
NSS	Network Sub System
PC	Personal Computer
PS	Packet switched
QoS	Quality of Service
SIM	GSM Subscriber Identity Module
TD-CDMA	Time Division-Code Division Multiple Access
UICC	UMTS IC Card
UMTS	Universal Mobile Telecommunications System
USIM	User Service Identity Module
UTRAN	UMTS Terrestrial Radio Access Network
VHE	Virtual Home Environment
WCDMA	Wideband Code Division Multiple Access

7 UTRAN capabilities

NOTE : The term performance refers in this clause to the realisation of the QoS objectives inside the UTRAN.

UTRAN capabilities for UMTS are the complete set of radio access bearer capabilities and radio access bearer control specified in UMTS 22.05. The UTRAN shall have the following capabilities :

1) A UTRAN shall be contained within only one UMTS network. (In the case of a network with a phase 1 UMTS core network consisting of an evolved GSM core network, it shall be possible to connect the UTRAN to the GSM NSS and GPRS backbone infrastructures or only one of them.)

2) The UTRAN shall support the set-up, re-negotiation and clearing of connections with a range of traffic and performance characteristics. The re-negotiation of QoS attributes / bearer attributes may result from an upper layer request or a change in the radio conditions (handover, cell load modification,...) and may be mobile station (e.g. by an application or the user via an application) or network initiated. It shall be possible for the UTRAN to apply the following traffic policing mechanisms such as :
   . connection admission control (CAC) during connection set-up and re-negotiation,
   . flow control (FC) on a connection during its lifetime,
   . usage parameter control (UPC) on a connection during its lifetime..

~~3) The UTRAN shall support a range of traffic and performance characteristics for the connectionless traffic.~~

4) The UTRAN shall support radio access bearers for broadcast and multicast applications.

4) The range of traffic and performance characteristics that shall be supported by UTRAN ~~for connection oriented and connectionless traffic is~~are indicated in TS 22.05~~ sections 5.2 to 5.4~~.

5) The UTRAN shall allow one mobile termination to handle more than one radio access bearer service simultaneously~~ and to have bearer services of different connection modes~~. It is nevertheless expected that the terminal and network capabilities will put some limitations on the number of radio access bearer services that can be handled simultaneously. It shall be possible for each radio access~~connection~~ to have independent traffic and performance characteristics. ~~It shall be possible for each connectionless message to have independent traffic and performance characteristics.~~

6) Seamless handover of active radio access bearer service(s) from a single mobile termination, between cells of one UTRAN shall be supported. This shall result in an imperceptible loss of speech (if any) for the user of telephony services and without incurring degradation of QoS for data services.

7) At least one Capability Class shall be standardised for mobile terminals supporting more than one UTRA mode (e.g. UTRA FDD and TDD modes). It shall support monitoring of the different types of cells in idle mode (cell reselection procedure) and active mode (handover preparation procedure).

8) For UMTS networks composed of UTRANs with different UTRA modes, the cell selection and the paging procedures shall accommodate to the fact that service areas may be covered by cells supporting one specific mode (e.g. FDD or TDD mode), and cells supporting more than one mode (e.g. FDD and TDD modes).

9) Handover of one mobile termination handling one or more radio access bearer services between cells of two UTRANs using different UTRA modes and operated by one single UMTS network operator shall be supported in both directions. Furthermore, handover between cells using two different UTRA modes should be supported similarly to handover within one mode.

10) The UTRAN shall facilitate determination of the location of a UMTS mobile termination. The realisation of a positioning service can be determined by several methodologies, namely *mobile-based positioning*, *network-based positioning*, or a *hybrid position* architecture. It shall be possible for the location precision to be a UMTS network operator choice, with the precision of the location varying from one part of the service area to another. It shall be possible to achieve a minimum precision of around 50 meters in all types of terrestrial radio environments. Location requirements are detailed in UMTS 22.05 subclause 8.5.

11) The UTRAN shall support the Localised Service Area (LSA) concept. It shall facilitate user-dependent radio resource selection based on LSA (e.g. when user is located at his office, radio coverage provided with indoor radio solutions should be preferred). Corresponding GSM feature has been specified in GSM 02.43.

12) The optimisation of the UTRAN radio interface shall be based upon the objectives expressed in UMTS 22.05 clause 5.

13) Standardised protocols shall be defined for the operation, administration and maintenance of each of the UTRAN components in UMTS phase 1 in cooperation with ETSI TMN.

14) The USIM requirements defined for later releases of UMTS should be taken into account in the design of UTRAN (for any impact).

8 UTRAN and GSM BSS relationship

There is a special relationship between the UTRAN and GSM access networks as it is expected that UTRANs will start as islands in a sea of GSM BSS. GSM BSS access networks will be a key element for service continuity in UMTS networks. The requirements are the following for UMTS phase 1 :

1) UMTS phase 1 shall support dual mode UMTS/GSM terminals. At least one Capability Class shall be standardised for mobile terminals supporting the GSM and UTRA modes. It shall support monitoring of cells belonging to the two types of access networks in idle mode (cell reselection procedure) and active mode (handover preparation procedure).

2) Cell selection and paging procedures shall be designed to accommodate to the fact that networks may consist of GSM BSS cells, UTRAN cells or a combination of both.

3) For UMTS networks composed of both GSM BSS and UTRAN access networks, handover of radio access bearer services shall be supported between GSM BSS and UTRAN cells, in both directions (i.e. UTRAN to GSM BSS and GSM BSS to UTRAN). Some traffic flows may be re-negotiated, temporarily released or re-established during these handover procedures because of the different radio access bearer capabilities of the GSM BSS and UTRAN access networks.

9 UMTS Core Network

NOTE 1: The term performance refers in this clause to the resource level usage and reliability of the UMTS core network.

NOTE 2: ~~SMG1 does not use the (circuit switched) notion of call to define UMTS phase 1 core network capabilities. If SMG12 decides to use this notion to fulfil SMG1 requirements, it shall be noted that i~~It is not required for phase 1 UMTS core networks to support calls with multiple connections. Multiple connections for a single mobile could be realised through several calls.

In the first phase of UMTS, the UMTS core network capabilities are a superset of the phase 2+ release 99 GSM core network capabilities. The additional requirements for the phase 1 UMTS core network are the following :

1) The phase 1 UMTS core network shall support circuit switched data service capability of at least 64 kbit/s per user. *This shall not limit the user from choosing lower data rates.*

2) The phase 1 UMTS core network shall support packet switched data service capabilities of at least 2 Mbit/s peak bit rate per user. *This shall not limit the user from choosing lower data rates.*

3) The phase 1 UMTS core network shall enable set-up, re-negotiation and clearing of connections (i.e. CS calls or PS sessions) with a range of traffic and performance characteristics~~.~~ . The re-negotiation of QoS attributes / bearer may be caused by an application or the user via an application (see UTRAN capability section). It shall be possible to apply traffic policing (e.g. connection admission control, flow control, usage parameter control...) on a connection during its set-up and lifetime.

4) The phase 1 UMTS core network shall support a range of traffic and performance characteristics for connectionless (e.g. unicast, broadcast, and multicast) traffic.

5) The range of traffic and performance characteristics that shall be supported by the phase 1 UMTS core network ~~for connection oriented and connectionless traffic~~ shall be at least those of GPRS phase 2+ release 99. This means that the support of the full set of bearer services defined in TS 22.05 ~~section 5.2 to 5.4~~ is not required for the phase 1 UMTS core network.

6) Point to multipoint communication configurations as defined in TS 22.05 shall be supported by the phase 1 UMTS core network.

7) Established bearers shall not prevent the set-up of a new bearer. These new bearers can be of any type (e.g. PS, CS). ~~The phase 1 UMTS core network shall allow one mobile termination to handle more than one bearer service simultaneously and to have bearer services of different connection modes.~~ It is nevertheless expected that the terminal and network capabilities will put some limitations on the number of bearer services that can be handled simultaneously. It shall be possible for each ~~connection~~ bearer to have independent traffic and performance characteristics. ~~It shall be possible for each connectionless message to have independent traffic and performance characteristics.~~

8) In order to facilitate the development of new applications, it shall be possible to address applications to/from a phase 1 UMTS mobile termination ~~in connection oriented and connectionless traffic modes~~ (e.g. the notion of Internet port).

9) Operator specific services based on the VHE concept shall be provided by the phase 1 UMTS core network. This functionality could be provided through available toolkits (such as CAMEL, MExE, WAP and SIM Toolkit).

10) If UMTS authentication is invoked while a user has services active, the authentication shall not degrade the user services.

11) The phase 1 UMTS core network shall support the generation of standardised charging records based upon parameters such as the dialled number, call duration, traffic (volume, bit rate) and perceived Quality of Service provided to the user.

12) The phase 1 UMTS core network shall support on-line billing. Billing of 3rd party value added services with the concept of one-stop-billing shall be supported by the phase 1 UMTS core network through standardised procedures.

TSG-SA Working Group 1 meeting #5 **TSG S1** ***(99)641***

Munich, Germany, 27-28 Sep 1999 Agenda: 6.2.1

3G CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

22.100	**CR**	**024**	Current Version:	3.3.0

3G specification number ↑ ↑ *CR number as allocated by 3G support team*

For submision to TSG SA#5 *list TSG meeting no. here* ↑

for approval **X** *(only one box should*

for information *be marked with an X)*

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ☐ ME ☐ UTRAN ☐ Core Network ☐

(at least one should be marked with an X)

Source: SA WG1 **Date:**

Subject: Editorial update of references for GSM/3GPP use.

3G Work item: 3TS/SA-0122100

Category:

	F	Correction	
	A	Corresponds to a correction in a 2G specification	
(only one category	B	Addition of feature	
shall be marked	C	Functional modification of feature	
with an X)	D	Editorial modification	**X**

Reason for change: The transfer of GSM specifications for 3GPP requires the update of references to the transferred 3GPP equivalents. Text referring to the GSM system needs to be changed to refer to both the GSM and 3G systems.

Clauses affected: All clauses with GSM references

Other specs affected:	Other 3G core specifications		→ List of CRs:	
	Other 2G 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:	


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3G TS 22.100 3.3.0 (1999-06)

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects
UMTS phase 1 Release 99
(3G TS 22.100 version 3.3.0)

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1999 document, references to GSM documents are for Release 1999 versions (version 8.x.y).

2.1 Normative references

This document is the starting point of the set of specifications that define the UMTS Service Requirements for UMTS Phase 1 Release 99. The UMTS Service requirements for Release 99 are defined in the following normative specifications. Since these specifications may also address some requirements for later Releases of UMTS phase 1, they explicitly state when a requirement does not apply to Release '99.

[1] 3G TS 22.101: "Universal Mobile Telecommunications System (UMTS): Service aspects; Service principles".

[2] 3G TS 22.105: "Universal Mobile Telecommunications System (UMTS); Services and Service Capabilities".

[3] 3G TS 22.115: "Universal Mobile Telecommunications System (UMTS); Service Aspects: Charging and Billing".

[4] 3G TS 22.121: "Universal Mobile Telecommunications System (UMTS); VHE Stage 1".

[5] 3G TS TS 22.129, Handover requirements between UMTS and GSM or other Radio System]".

[6] 3G TS 21.133 : "Universal Mobile Telecommunications System (UMTS) ; Security threats and requirements"

[7] ~~GSM~~ TS ~~0~~23.045: "Technical realization of facsimile group 3 service - transparent"

[8] ~~GSM~~TS ~~0~~23.046: "Technical realization of facsimile group 3 service - non-transparent"

These specifications may refer (directly or indirectly) to further specifications which provide detailed descriptions of service requirements incorporated in UMTS. In particular the service requirements of any GSM component of a UMTS system are specified by reference to GSM service requirements specifications.

6.2.2 End-to-End

A UMTS fax service using an end-to-end fax session between a PSTN/ISDN fax machine and a mobile terminal shall be standardised. This service shall work end-to-end such that a sender on the PSTN is aware of whether or not the fax has succeeded, and such that a mobile sender is aware of whether or not the fax has succeeded. From the user perspective the end-to-end fax service must look and feel like a T.30 based fax service. The end-to-end service may work with ordinary T.30 based fax machines at the mobile end using a mobile fax adapter [7~~6~~][8~~7~~] with a modem that terminates the analogue 2-wire connection from the fax machine.

TSG-SA Working Group 1 (Services) meeting #4 *TSGS1#4(99)481*
Québec, Canada, 5th-9th July 1999 **Agenda 6.3.1.4**

CHANGE REQUEST No : **015**

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

Technical Specification / Report UMTS 22.105 Version: 3.5.0

Submitted to TSG SA 5 *list TSG plenary meeting no. here ↑*

for approval [X] for information [ ]

without presentation ("non-strategic") [X] with presentation ("strategic") [ ]

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip

Proposed change affects: USIM [ ] TE [ ] Network [ ]

(at least one should be marked with an X)

Work item: UMTS Services and Service Capabilities

Source: Rapporteur **Date:**

Subject: Editorial changes

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

F	Correction		**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	X	UMTS 99	X

Reason for change: To clarify shall, must and will and minor editorial changes

Clauses affected:

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:

<--------- double-click here for help and instructions on how to create a CR.

Technical Specification

3rd Generation Partnership Project;
Technical Specification Group Services and System Aspects
Service aspects;
Services and Service Capabilities
(3G TS 22.105 version 3.5.0)

Reference
DTS/TSGS-0122105U

Keywords
<keyword[, keyword]>

3GPP

Postal address

3GPP support office address
650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Internet
http://www.3gpp.org

Contents

Foreword

This Technical Specification has been produced by the 3GPP.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of this TS, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version 3.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 Indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the specification;

1 Scope

Pre-UMTS systems have largely standardised the complete sets of bearer services, teleservices and supplementary services which they provide. One major difference between UMTS and pre-UMTS systems is that service capabilities rather than services are standardised for UMTS, allowing service differentiation and system continuity. This Technical Specification (TS) describes how and what kind of services the UMTS user has access to.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

2.1 Normative references

[1] GSM 02.02: "Digital cellular telecommunications system (Phase 2+); Bearer services supported by a GSM Public Land Mobile Network (PLMN)".

[2] GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".

[3] GSM 02.04: "Digital cellular telecommunications system (Phase 2+); General on supplementary services".

[4] GSM 02.42: "Digital cellular telecommunications system (Phase 2+); Network Identity and Timezone (NITZ); Service description; Stage 1".

[5] GSM 02.43: "Digital cellular telecommunications system (Phase 2+); Support of Localised Service Area (SoLSA); Service description; Stage 1".

[6] GSM 02.57: "Digital cellular telecommunications system (Phase 2+); Mobile Station Application Execution Environment (MExE); Service description; Stage 1".

[7] GSM 02.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Service definition - Stage 1".

[8] GSM 02.78: "Digital cellular telecommunications system (Phase 2+); Customised Applications for Mobile network Enhanced Logic (CAMEL); Service definition - Stage 1".

[9] GSM 02.90: "Digital cellular telecommunications system; Unstructured Supplementary Service Data (USSD) - Stage 1".

[10] GSM 22.01: "Universal Mobile Telecommunications System (UMTS); Service aspects; Service principles".

[11] GSM 22.20: "Universal Mobile Telecommunications System (UMTS); Virtual Home Environment (VHE), Stage 1".

[12] GSM 23.10: "Universal Mobile Telecommunications System (UMTS); UMTS Access Stratum; Services and Functions".

2.2 Informative references

[1] ITU-T recommendation F.700: "Framework recommendation for audio-visual/multimedia services".

[2] GSM 02.01: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this TS, the following definitions apply:

Basic telecommunication service : this term is used as a common reference to both bearer services and teleservices.

Bearer service : is a type of telecommunication service that provides the capability of transmission of signals between access points.

Call : a logical association between several users (this could be connection oriented or connection less).

Connection : is a communication channel between two or more end-points (e.g. terminal, server etc.).

Mobile termination : the mobile termination is the component of the mobile station which supports functions specific to management of the radio interface (Um).

Multimedia service : Multimedia services are services that handle several types of media. For some services, synchronisation between the media is necessary (e.g. synchronised audio and video). A multimedia service may involve multiple parties, multiple connections, and the addition or deletion of resources and users within a single call.

Nomadic Operating Mode : Mode of operation where the terminal is transportable but being operated while stationary and may in addition require user co-operation (e.g. close to open spaces, antenna setup...).

Quality of Service : the collective effect of service performances which determine the degree of satisfaction of a user of a service. It is characterised by the combined aspects of performance factors applicable to all services, such as;

service operability performance;

- service accessibility performance;
- service retainability performance;

- service integrity performance; and
- other factors specific to each service.

Service feature : Standardised building block used to create services.

Supplementary service : is a service which modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a standalone service. It ~~must~~shall be offered together with or in association with a basic telecommunication service. The same supplementary service may be common to a number of basic telecommunication services.

Teleservice; is a type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to standardised protocols and transmission capabilities established by agreement between operators.

3.2 Abbreviations

For the purposes of this TS, the following abbreviations apply;

BER	Bit Error Rate
B-ISDN	Broadband ISDN
CAMEL	Customised Application for Mobile network Enhanced Logic
DTMF	Dual Tone Multiple Frequency
TR	Technical Report
TS	Technical Specification
ETSI	European Telecommunications Standards Institute
FAX	Facsimile
FER	Frame Erasure Rate
GSM	Global System for Mobile Communications
HE	Home Environment
IMUN	International Mobile User Number
IN	Intelligent Network
ISDN	Integrated Services Digital Network
ISO	International Organisation for Standardisation
ITU	International Telecommunication Union
LCS	Location Services
MExE	Mobile station Execution Environment
MMI	Man Machine Interface
MO	Mobile Origination
MS	Mobile Station
MT	Mobile Termination
O&M	Operations and Maintenance
PBX	Private Branch eXchange
PC	Personal Computer
PCMCIA	Personal Computer Memory Card International Association
PIN	Personal Identity Number
PNP	Private Numbering Plan
POTS	Plain Old Telephony Service
QoS	Quality of Service
USIM	User Service Identity Module
SMS	Short Message Service
SAT	SIM Application Toolkit
SN	Serving Network
SoLSA	Support of Localised Service Area

UMTS Universal Mobile Telecommunications System

4 Framework for the description of telecommunication services and applications

4.1 General

Telecommunication services supported by UMTS are the communication capabilities made available to users by home environment and serving network. A UMTS network provides, in co-operation with other networks, a set of network capabilities which are defined by standardised protocols and functions and enable telecommunication services to be offered to users.

A service provision by a HE/SN to a UMTS user may cover the whole or only part of the means required to fully support the service.

The service classification and description which follow are independent of different possible arrangements for the ownership and provision to the user of the means required to support a service.

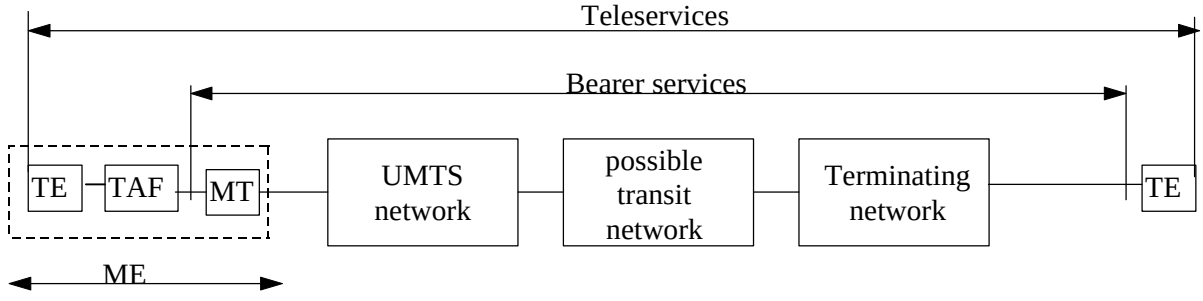
4.2 Basic telecommunication services

Basic telecommunication services are divided in two broad categories;

- bearer services, which are telecommunication services providing the capability of transmission of signals between access points;
- teleservices, which are telecommunication services providing the complete capability, including terminal equipment functions, for communication between users according to protocols established by agreement between network operators.

The communication link between the access points consists of UMTS, one or more transit networks and a terminating network. The networks between the two access points typically use different means for bearer control.

Figure 1 illustrates these definitions.



ME: Mobile Station
MT: Mobile Termination
TE: Terminal Equipment
TAF: Teminal Adaption Function

NOTE 1: In order to limit the complexity of the figure, only one transit network is shown.

NOTE 2: The terminating network type may include a UMTS network, either the originating one or another one.

NOTE 3: The bearer service terminates in the mobile station.

NOTE 4: The terminating network may be a non UMTS network such as: PSTN, N-ISDN, GSM, IP networks/LANs and X.25

Figure 1; Basic telecommunication services supported by a UMTS network

4.2.1 Bearer services

The characterisation of a bearer service is made by using a set of characteristics that distinguishes it from other bearer services. Particular values are assigned to each characteristic when a given bearer service is described and defined.

The service characteristics as they apply at a given reference point where the user accesses the bearer service.

In the general case networks between the two access points use different control mechanisms. In this case the bearer services of each network throughout the communication link have to be translated at the network interfaces to realize an end to end bearer service.

A list of definitions of attributes and values used for bearer services is contained in clause 5.

The bearer services are negotiable and can be used flexibly by applications.

4.2.2 Teleservices

Section 6 defines both standardised and non-standardised teleservices. Some teleservices are standardised because that interworking with other systems have been recognised as a requirement. Other teleservices ~~shall~~ will not be standardised. A decoupling between lower layer (i.e. bearer attributes) and higher layer capabilities will be necessary for the development of teleservices.

4.3 Supplementary services

A supplementary service modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a stand alone service. It ~~must~~shall be offered together or in association with a basic telecommunication service. The same supplementary service may be applicable to a number of basic telecommunication services.

Two methods are used for the characterisation of supplementary services;

- The first method is used for the description of existing standardised supplementary services. These services are specified through the detailing of each of the operations involved in service provision and service usage (the provision/withdrawal, registration/erasure, activation/deactivation, invocation and interrogation operations). Clause 7 lists these services.

- The second method enables the provision of HE/SN specific supplementary services. To make this possible, standardised building blocks referred to as service features are specified in clause 8. The combination and parametrisation of these service features allow the creation of supplementary services.

UMTS shall be able to handle multiple supplementary services within a call. Interactions shall be handled when several supplementary services are activated in the same call.. When multiple supplementary services can be activated concurrently, some prioritisation of the services will be necessary. Certain services may override or deactivate other services.

Interactions between operator specific supplementary services are not defined.

The following issues need consideration when interactions between services occur;

- Different phases of a call.
- A service spanning on more than one network.
- Service interactions that may occur between services offered to a single user, as well as between services offered to different interacting users.

NOTE: The methods defined for characterisation of services are description methods. They do not imply or restrict different implementations.

4.4 Service features

UMTS service features are based on functionality and mechanisms such as provided by SAT, MExE, IN and CAMEL. These toolkits are the basic building blocks for the VHE. These features can be used both by standardised and non-standardised services through the UMTS Application Programming Interface. The UMTS services and applications get access to UMTS service capabilities (bearers) for transport of user data through the UMTS adaptation layer. This lowest layer of the VHE is responsible for the selection of appropriate service capabilities according to the requirements of services and applications.

High level service features requirements :

. support of wide range of user applications,

. support of rapid application/service development,

. support of easy deployment of new services,

. scalability.

5 Bearer Services

5.1 Definition of bearer services

Bearer services provide the capability for information transfer between access points and involve only low layer functions. These functions are sometimes referred as low layer capabilities (in reference to OSI layers). The user may choose any set of high layer protocols for his communication and the UMTS network does not ascertain compatibility at these layers between users.

In the general case a communication link between access points provides a general service for information transport. The communication link may span over different networks such as Internet, Intranets, LANs and ATM based transit networks, having network specific means for bearer control. Each network contributes to the end-to-end QoS perceived by the end-user.

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, N-ISDN, GSM, IP networks/LANs, X.25 and a UMTS network.

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 3rd Generation subscriber is concerned 3G network elements have to provide sufficient performance (reflecting possible performance constraints in terminating networks) that 3G networks 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.

5.2.1 Information transfer

Connection oriented / conectionless services

Both Connection oriented and connectionless services shall be supported.

Traffic type- It is required that the bearer service provides guaranteed/constant bit rate and a non-guaranteed/dynamically variable bit rate.

Real time and non real time applications shall be supported.

- Real time video, audio and speech ~~must~~shall be supported. This implies the:
- ability to provide a real time stream of guaranteed bit rate, end to end delay and delay variation.
- ability to provide a real time conversational service of guaranteed bit rate, end to end delay and delay variation.
- Non real time interactive and file transfer service ~~must~~shall be supported. This implies the:
- ability to support message transport with differentiation as regards QoS between different users.
- Multimedia applications shall be supported. This implies the:
- ability to support several user flows to/from one user having different traffic types (e.g. real time, non real time)

Traffic characteristics

It shall be possible for an application to specify its traffic requirements to the network by requesting a bearer service with one of the following configurations

1) Point-to-Point
   - Uni-Directional
   - Bi-Directional
     - Symmetric
     - Asymmetric
2) Uni-Directional Point-to-Multipoint
   - Multicast
   - Broadcast

A multicast topology is one in which sink parties are specified before the connection is established, or by subsequent operations to add or remove parties from the connection. The source of the connection ~~will~~shall always be aware of all parties to which the connection travels.

A broadcast topology is one in which the sink parties are not always known to the source. The connection to individual sink parties is not under the control of the source, but is by request of each sink party.

In the case of a mobile termination with several active bearer services simultaneously, it shall be possible for each bearer service to have independent configurations and source/sink parties.5.2.2 Information quality

5.2.2 Information Quality

Information quality a characterizes the bit integrity and delay requirements of the applications.

Other parameters may be needed.

Maximum transfer delay

Transfer delay is the time between the request to transfer the information at one access point to its delivery at the other access point. In clause 5.5 requirements on maximum transfer delay is defined.

Delay variation

The delay variation of the information received information over the bearer has tobe controlled to support real-time services. The possible values for delayvariation are not a limited set, but a continuous range of values.

Bit error ratio

The ratio between incorrect and total transferred information bits. The possible values for Bit error ratio are not a limited set, but a continuous range of values.

Data rate

The data rate is the amount of data thranserfered between the two access points in a given period of time.

5.3 Supported bit rates

It shall be possible for one application to specify its traffic requirements to the network by requesting a bearer service with any of the specified traffic type, traffic characteristics, maximum transfer delay, delay variation, bit error ratios & data rates. It shall be possible for the network to satisfy these requirements without wasting resources on the radio and network interfaces due to granularity limitations in bit rates.

It shall be possible for one mobile termination to have several active bearer services simultaneously, each of which could be connection oriented or connectionless.

The only limiting factor for satisfying application requirements shall be the cumulative bit rate per mobile termination at a given instant (i.e. when summing the bit rates of one mobile termination's simultaneous connection oriented and connectionless traffic, irrespective of the traffic being real time or non real time) in each radio environment:

- At least 144 kbits/s in satellite radio environment (Note 1).
- At least 144 kbits/s in rural outdoor radio environment.
- At least 384 kbits/s in urban/suburban outdoor radio environments.
- At least 2048 kbits/s in indoor/low range outdoor radio environment.

NOTE 1 : This Peak Bit Rate may only be achieved in a nomadic operating mode.

5.4 Range of QoS requirements

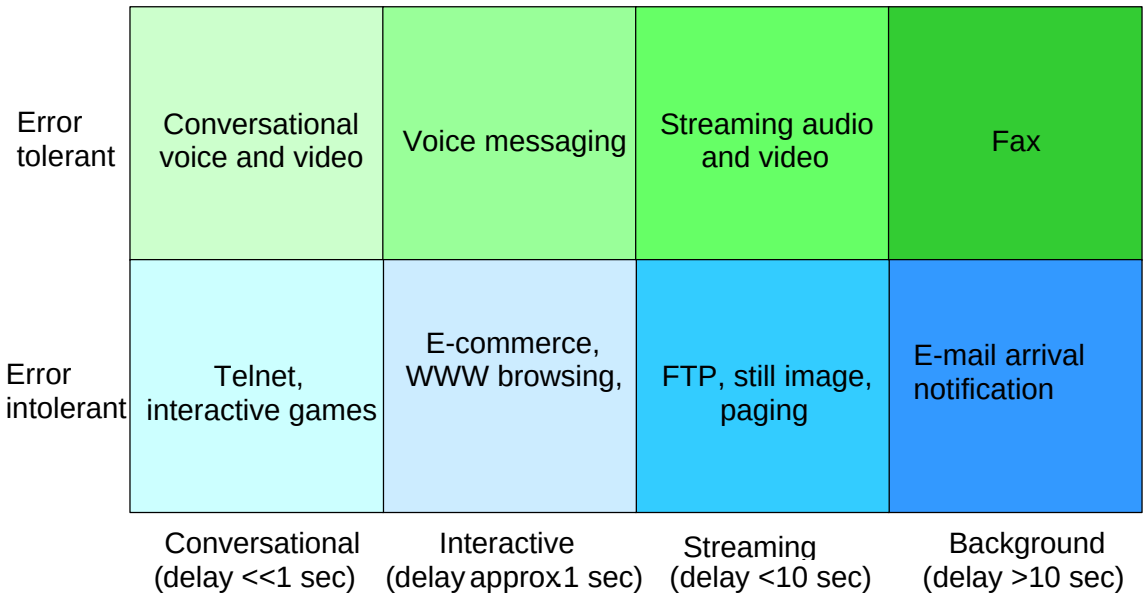
It shall be possible for one application to specify its QoS requirements to the network by requesting a bearer service with any of the specified traffic type, traffic characteristics maximum transfer delay, delay variation, bit error ratios & data rates.

The following table indicates the range of values that shall be supported by UMTS. These requirements are valid for both connection and connectionless traffic. It shall be possible for the network to satisfy these requirements without wasting resources on the radio and network interfaces due to granularity limitations in QoS.

	Real Time (Constant Delay)	Non Real Time (Variable Delay)
Operating environment	**BER/Max Transfer Delay**	**BER/Max Transfer Delay**
Satellite (Terminal relative speed to ground up to 1000 km/h for plane)	Max Transfer Delay less than 400 ms BER 10-3 - 10-7 (Note 1)	Max Transfer Delay 1200 ms or more (Note 2) BER = 10-5 to 10-8
Rural outdoor (Terminal relative speed to ground up to 500 km/h) (Note 3)	Max Transfer Delay 20 - 300 ms BER 10-3 - 10-7 (Note 1)	Max Transfer Delay 150 ms or more (Note 2) BER = 10-5 to 10-8
Urban/ Suburban outdoor (Terminal relative speed to ground up to 120 km/h)	Max Transfer Delay 20 - 300 ms BER 10-3 - 10-7 (Note 1)	Max Transfer Delay 150 ms or more (Note 2) BER = 10-5 to 10-8
Indoor/ Low range outdoor (Terminal relative speed to ground up to 10 km/h)	Max Transfer Delay 20 - 300 ms BER 10-3 - 10-7 (Note 1)	Max Transfer Delay 150 ms or more (Note 2) BER = 10-5 to 10-8
NOTE 1; There is likely to be a compromise between BER and delay. NOTE 2; The Max Transfer Delay should be here regarded as the target value for 95% of the data. NOTE 3; The value of 500 km/h as the maximum speed to be supported in the rural outdoor environment was selected in order to provide service on high speed vehicles (e.g. trains). This is not meant to be the typical value for this environment (250 km/h is more typical).		

5.5 Supported End User QoS

This section outlines the QoS that shall be provided to the end user / applications. Figure 2 below summarises the major groups of application in terms of QoS requirements. Applications and new applications may be applicable to one more groups.



The following tables further elaborate UMTS end user / application QoS requirements.

Table 1: End-user Performance Expectations - Conversational / Real-time Services

Medium	**Application**	**Degree of symmetry**	**Data rate**	**Key performance parameters and target values**		
				One-way Delay	Delay Variation	Information loss
Audio	Conversational voice	Two-way	4-25 kb/s	<150 msec preferred <400 msec limit	< 1 msec	< 3% FER

Video	Videophone	Two-way	32-384 kb/s	< 150 msec preferred <400 msec limit Lip-synch : < 100 msec		< 1% FER
Data	Telemetry - two-way control	Two-way	<28.8 kb/s	< 250 msec	N.A	Zero
Data	Interactive games	Two-way	< 1 KB	< 250 msec	N.A	Zero
Data	Telnet	Two-way (asymmetric)	< 1 KB	< 250 msec	N.A	Zero

[Note: The values provided in table 1 need to be further reviewed and may be revised in the next version of this specification]

Table 2: End-user Performance Expectations - Interactive Services

Medium	**Application**	**Degree of symmetry**	**Data rate**	**Key performance parameters and target values**		
				One-way Delay	Delay Variation	Information loss
Audio	Voice messaging	Primarily one-way	4-13 kb/s	< 1 sec for playback < 2 sec for record	< 1 msec	< 3% FER
Data	Web-browsing - HTML	Primarily one-way		< 4 sec /page	N.A	Zero
Data	Transaction services – high priority e.g. e-commerce, ATM	Two-way		< 4 sec	N.A	Zero
Data	E-mail (server access)	Primarily One-way		< 4 sec	N.A	Zero

[Note: The values provided in table 2 need to be further reviewed and may be revised in the next version of this specification]

Table 3: End-user Performance Expectations - Streaming Services

Medium	**Application**	**Degree of symmetry**	**Data rate**	**Key performance parameters and target values**		
				One-way Delay	Delay Variation	Information loss
Audio	High quality streaming audio	Primarily one-way	32-128 kb/s	< 10 sec	< 1 msec	< 1% FER

Video	One-way	One-way	32-384 kb/s	< 10 sec		< 1% FER
Data	Bulk data transfer/retrieval	Primarily one-way		< 10 sec	N.A	Zero
Data	Still image	One-way		< 10 sec	N.A	Zero
Data	Telemetry - monitoring	One-way	<28.8 kb/s	< 10 sec	N.A	Zero

[Note: The values provided in table 3 need to be further reviewed and may be revised in the next version of this specification]

5.6 Radio Interface optimisation

The following requirements shall lead the radio interface optimisation process;

- support of high bit rate (around the Peak Bit Rate), bursty, asymmetric, non-real time bearer capabilities;
- support of high bit rate (around the Peak Bit Rate), bursty, asymmetric, real time bearer capabilities;
- the ability to extend or reduce bandwidth associated to a bearer capability in order to adapt to bit rate or radio condition variations, to add or drop service components.

However, the services provided by GSM (speech in particular) shall be supported in a spectrally efficient manner (at least as efficiently as in GSM) for the same quality of service.

In order to allow the support of flexible, bandwidth on demand services, bearer services should be provided with the finest possible granularity that can be efficiently supported.

5.7 Support of GSM general bearer services

UMTS shall support GSM General Bearer Services (GBS) and interworking scenarios as specified in 02.02.

6 Teleservices

6.1 Definition of teleservices

Teleservices provide the full capabilities for communications by means of terminal equipment, network functions and possibly functions provided by dedicated centres.

6.2 Description of teleservices

The basic reference in UMTS for the description of teleservices is the ITU-T F700 recommendation. F700 provides a generic, network independent, description of multimedia services. The methodology used covers both monomedia and multimedia services, the monomedia services being a particular type of multimedia services. Multimedia services are classified into categories with similar functional characteristics. The six categories are multimedia conference services, multimedia conversational services, multimedia distribution services ,multimedia retrieval services, multimedia messaging services and multimedia collection services.

The rest of clause 6 describes the teleservices and options that ~~will~~shall be provided by UMTS networks.

A teleservice can be viewed as set of upper layer capabilities utilising the lower layer capabilities described by the set of attributes in clause 5.

Multimedia teleservices support the transfer (and in some case retrieval, messaging, distribution) of several types of information (service components). For this reason, there are service attributes (relating to all the components of a teleservice) and service component attributes (relating to only one service component).

6.3 Support of teleservices in UMTS networks

The realisation of teleservices requires the association of terminal and network capabilities. In the terminals and in the network, both upper layer capabilities and lower layer capabilities are necessary. The term upper layer capabilities is used because it relates to the OSI upper layers. Decoupling between upper layers and lower layers (transfer) is required. Even if this de-coupling may impact radio interface optimisation, it is nevertheless the only way of designing a system that is not outdated;

- Each time the information rate associated with an already supported teleservice is decreased by more efficient source coding techniques.

- Each time a new service is introduced that requires transfer capabilities not used by currently available teleservices.

Taking the example of two application that exchange information through a teleservice, the upper layer capabilities can be located in various places;

- In the two terminals if the two applications are connected to a UMTS network.

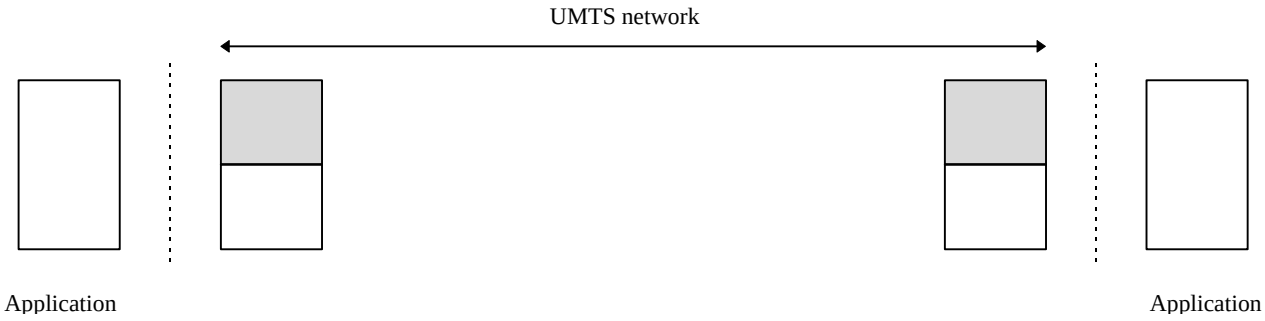


Figure 2; UMTS teleservice

In the terminal of the application connected to a UMTS network and in the upper layer interworking unit that is at the border of the UMTS network and the target network if one application is connected to a UMTS network and the other one is connected to another type of system. The upper layer interworking unit makes the adaptation between the UMTS network and the target network at a service level.

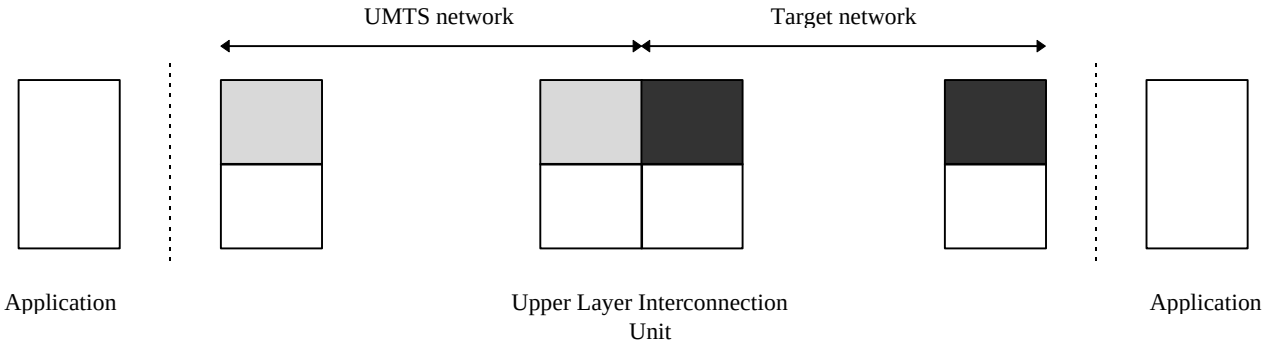


Figure 3; Teleservice with upper layer interworking

In the terminal of the application connected to a UMTS network and in the terminal of the application connected to a target network if one application is connected to a UMTS network and the other one is connected to another type of system, but only lower layer interconnecting unit is used at the border of the two networks. In this case, the interconnecting unit makes the adaptation between the UMTS network and the target network at the transmission level.

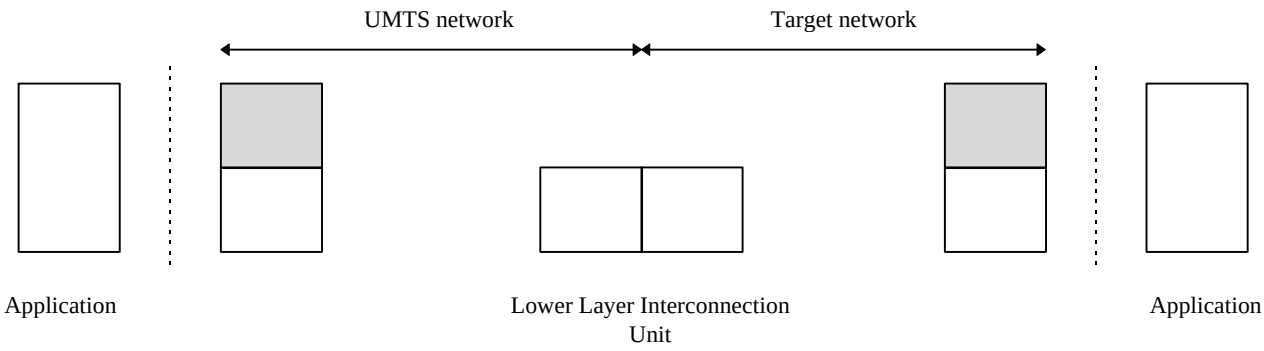


Figure 4; Teleservice with lower layer interworking

6.4 Existing Teleservices supported by UMTS networks

The subset of standardised teleservices shall be supported by UMTS for interworking with teleservices provided on other networks. The means to support the following set of teleservices will be standardised;

- Speech;
- Emergency call;
- Short message service;

6.4.1 Speech

The speech service as defined in international standards should be supported by UMTS. The international reference for the speech is ITU E.105 recommendation. UMTS networks should contain interworking units which allow calls to be received from or destined to users of existing networks like PSTN, ISDN, GSM. This will include interworking units for generation of DTMF or other tones (the entire DTMF tone set would at minimum be available) and detection of DTMF tones.

Speech (7kHz) communications via bi-directional and symmetric channels between UMTS users or with fixed wireline or GSM users with equivalent or better quality than the audio quality of G.722 shall be supported in Phase 1, but not in Release 99.

A default speech codec shall be specified to provide speech service across the UTRAN. The selected speech codec shall be capable of operating with minimum discernible loss of speech on handover between the GSM access network and UTRAN.

6.4.2 Emergency Call

This service will use a speech component~~s of Speech~~. There are however, compared to Telephony reduced authentication requirements and a requirement for specific routing. Additionally Emergency Calls may have higher priority than normal calls, etc.. The reference for the emergency call service is GSM 02.03.

6.4.3 Short Message Service - Point to Point (SMS-PP)

The short message service point to point as specified in GSM 02.03 shall be supported in UMTS. A short message service shall be provided seamlessly (as far as the user or the users terminal equipment is concerned) across the UMTS and GSM access network. Additional features are planned for SMS in Release 99.

6.4.4 Short Message Service - Cell Broadcast (SMS-CB)

A short message service cell broadcast shall be provided seamlessly (as far as the user or the users terminal equipment is concerned) across the UMTS and GSM network.

6.5 Internet Access

UMTS shall provide means to interwork with external data networks. This interworking shall satisfy, within the constraints introduced by the mobile radio environment, the QoS requirements of the interworked-with network. For UMTS the Internet is seen as the most important interworked-with network, therefore the specification of an optimised access to Internet ~~shall~~will be part of the UMTS standard. The most important benefits achieved by the definition of Internet Access would be:

- Optimised transmission of IP traffic over the UMTS radio interface to minimise the amount of information transmitted.
- Optimised usage of encryption protocols/algorithms over the UMTS radio interface.
- Inter-operation of QoS mechanisms used in both, UMTS and in Internet.

For the purposes of optimised access to Internet one or more of the UMTS generic bearers will be used. On top of the bearer a UMTS protocol profile will be defined. This profile would be based on the work done by IETF or other relevant fora, and will consist of a recommended set of parameters and standardised protocols providing similar services than the Internet ones but optimised for wireless access. In the case of Internet traffic it would be possible for the user to select the encryption to be used (e.g. no encryption, end-to-end encryption, encryption over UMTS radio, etc.). The QoS mechanisms defined for UMTS packet access mode ~~shall~~will be harmonised with those defined for Internet (e.g. Differentiated Services).

7 Supplementary Services

Supplementary services are used to complement and personalise the usage of basic telecommunication services (bearer services and teleservices). The capabilities standardised in UMTS shall enable all the supplementary services specified in GSM 02.04 and the 02.8x set to be provided.

8 Service features

Service features are building blocks which can be used to create services. The functionality offered by a service feature may depend upon the underlying service capability used to realise the service feature e.g. CAMEL, MExE etc.. Service features may be used to offer the user some control over a service such as the ability to modify a service, subscribe or unsubscribe to a service.

Service features are associated with call/session control, bearer control, mobility management. The term calls is used to encompass not only circuit-switched (e.g. voice) calls, but also virtual-circuit sessions set-up to handle packet data traffic.

The following service features are required;

- security/privacy;
- access control;
- address translation;
- call/session/bearer control;
- location;
- messaging;
- service control;
- user interaction.

8.1 Security/Privacy features

- presentation of or restriction of information associated with a party involved in a call or a session (e.g. calling line ID, calling name, location...);
- encryption of user data and signalling;

8.2 Access Control features

The access control features are defined to provide access to the UMTS network to the UMTS users over the serving network's air interface. These features include;

- user registration;
- user de-registration;
- mutual authentication.

8.3 Address Translation Features

This address translation feature ~~shall~~shall allow UMTS to offer the wide range of addressing options including;

- E.164 Numbering (e.g. GSM MS-ISDN);
- ASEA Numbering (ATM);
- IP v6 Numbering;
- X.25 Numbering;
- Internet symbolic naming.

8.4 Call/Session/Bearer Control Features

These features will be used to establish, handle and terminate calls. The following service features shall be supported;

- call/session set-up (point to point, point to multi-point, multi-point to multi-point);
- add/delete a party from a call/session;
- call/session termination;
- call/session establishment e.g. answering of calls;
- monitoring of call/session states and events;
- modification of the bearer service attributes.
- capability at initial call set-up to modify or reject the called party address;
- capability for an incoming call to modify or reject the called party address both at early and late stage of the call;
- capability to suspend and resume a call;
- capability to re-route a call;
- capability to be notified when a specified terminal is free or is ready to accept the call.

8.5 Location Features

Location features shall also be supported, to allow new and innovative location based services to be developed;

- to identify and report in a standard format (e.g. geographical co-ordinates) the current location of the user's terminal.

  The precision of the location ~~shall~~will be network design dependent, i.e. an operator choice. This precision may vary from one part of a network to another. It may be chosen to be as low as hundreds of meters in some place and as accurate as 5 meters in other place. It is required that a minimum precision of around 50 meters can be achieved in all types of terrestrial radio environment. Technical issues may constrain the precision to be mobile state dependent as well (mobile idle / mobile in communication). Several design optional features (e.g. size of the cell, adaptive antenna technique, path loss estimation technique...) ~~shall~~will allow the network operator to reach cost effectively the target precision.

  Because there may be very different uses of the location information;

  - It shall be possible to make the information available to the user, HE/SN and value added service providers. The user shall be able to restrict access to the location information (permanently or on a per call basis). The restriction can be overridden by the network operator when appropriate (e.g. emergency calls).

  - It shall be possible to set the delay to get the location information (the situation is quite different whether the information is needed for call routing or if it is needed by a user application).

  - It shall be possible to select the frequency of the location information update.

  If the terminal is switched off, then the last known position and time/date shall be available. The time of last known location shall be recorded and be made available in universal time.

- to identify and report when the user's terminal enters or leaves a specified geographic area.

- It shall be possible to specify the area as a circular zone (centre and radius) to a resolution that will be limited by the accuracy capability of the part of the serving network where the user is registered.

8.6 Messaging features

Messages are a block of data that may range from a few bytes to megabytes. Message delivery may involve store and forward of messages in transit. To be able to exchange and to control the exchange of messages between user the following service features shall be supported;

- capability to send messages;

- capability to receive messages;

- capability to request confirmation of receipt;

- capability to modify the content as well as the recipient of message;

- capability to reject a outgoing and/or incoming message;

- capability to re-route a message.

8.7 Service control features

To allow the support of HE/SN specific services the following service features shall be supported;

- capability to download service software to network nodes;

- capability to download service software to terminals;

- capability to download service software to the USIM;

- capability to negotiate of supported capabilities between USIM, terminals, HE and SN;

  - capability to negotiate bearer services and service capabilities

8.8 User Interaction Features

To allow the support of HE/SN specific user interfaces, databases containing user profiles shall be provided. This user profile functionality shall provide the following interaction features :

  - capability to indicate information to the user;

- capability to collect user information;

  - capability to activate and deactivate a special user profile;

  - capability to change the user profile.

9 Standardised Protocols and Capabilities

This clause introduces a list of standardised protocols and capabilities that shall be supported by UMTS for the control and creation of services. The access protocols and the execution environment described below are essential for UMTS.

9.1 Access protocols

The access protocols shall allow the support of multimedia services. These services are characterised by the ability to dynamically change the number of participants and the number of connections during a call. The characteristics of the connections (confer the list of attributes used to describe a connection) may differ from one connection to another. They are negotiated during call set-up. They may be independently and dynamically re-negotiated on application (the telecommunication requirements of the application changes) or network initiative (change of network load conditions, during a handover procedure) during the call.

The application may require synchronisation between some of the connections. Later, this synchronisation shall not be lost during handover procedures.

Whenever a call is terminated in other types of networks, the negotiation shall take into account the limitations of these networks. Interworking shall be possible with PSTN, GSM, ISDN and Internet networks. ~~L~~later ~~it shall also be possible~~releases will specify ~~to~~ interwork<u>ing</u> with B-ISDN networks.

The access protocols shall allow a mobile station to have several calls active simultaneously .

9.2 Execution Environment

The execution environment is a set of standardised capabilities that shall allow the support of HE/SN specific services (i.e. both applications, teleservices and supplementary services). The execution environment shall be distributed between the IC card, terminal and network nodes. The terminal and the serving network capabilities shall be the only limiting factor for the support of the services designed to run on the execution environment. The execution environment is composed of the following building blocks;

- A standardised content description language for support of NO/SP specific user interfaces (both for information output and user input). This is intended only for platforms which are terminals.

- A standardised procedural language for support of NO/SP specific scripts. This language shall be common to all types of platforms. The scripts could be used for e.g. improving the user interface, adding new features to the terminal like the latest version of a codec, controlling the execution of a service.

- Standardised application programming interfaces for opening platform resources and capabilities to the scripts written with the standardised procedural language. These interfaces would be platform type dependent. The

interfaces shall include primitives for accessing to the basic control functions, as illustrated on the figures 5 and 6 below.

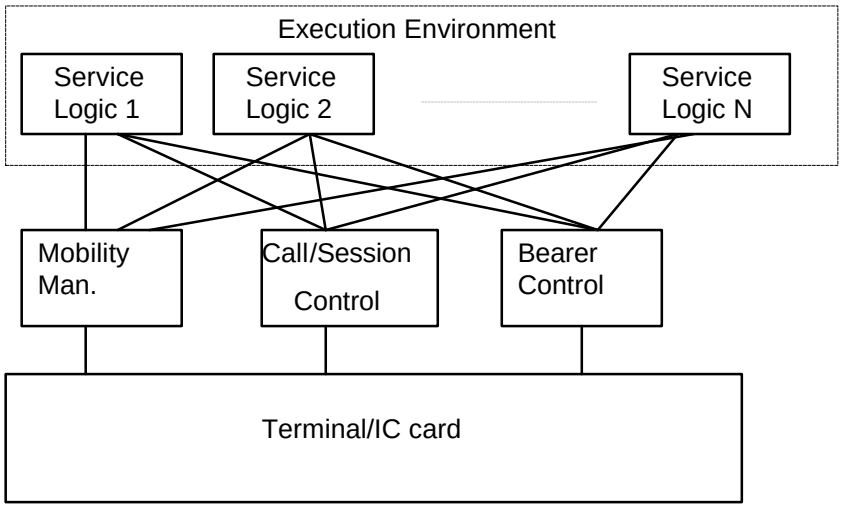


Figure 5: Execution Environment in the Mobile Station

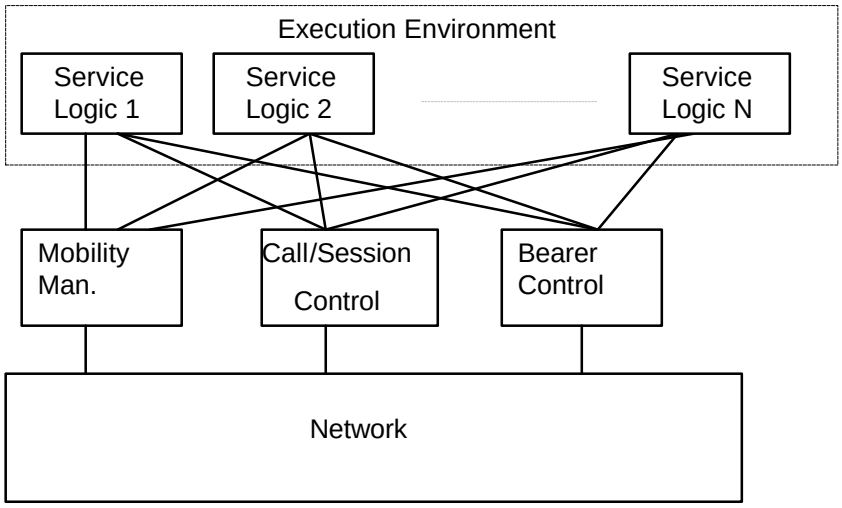


Figure 6: Execution Environment in the Network

- Call states, messages, information elements, values of information elements shall serve as triggers for subsequent interaction with service logic. The list of triggers is for further study and is likely to incorporate CAMEL, SIM Toolkit, MExE.
- Means to turn triggers on and off, and associate them with service logic ~~shall~~will be standardised.
- A standardised certification scheme and security model with several levels of trusts in order to control the scripts access rights to the platform resources and capabilities. This would be used to allow e.g. the SP and the SP only to access to USIM data.
- Standardised protocols for allowing the download of content description pages and scripts in the platform.

10 Existing GSM System features

Following GSM system features shall be supported by G-UMTS standards (for networks based on GSM evolution).

10.1 Network Identity and Time Zone (NITZ)

NITZ is specified in GSM 02.42.

10.2 Support of Localised Service Area (SoLSA)

SoLSA is specified in GSM 02.43.

Note : SoLSA modifications due to UTRAN related aspects are FFS.

10.3 Mobile station Execution Environment (MExE)

MExE is specified in GSM 02.57.

10.4 Location Services (LCS)

LCS is specified in GSM 02.71.

Note : LCS modifications due to UTRAN related aspects are FFS.

10.5 Customised Application for Mobile network Enhanced Logic (CAMEL)

CAMEL is specified in GSM 02.78.

10.6 Unstructured Supplementary Service Data (USSD)

USSD is specified in GSM 02.90

Note : USSD modifications due to UTRAN related aspects are FFS.

Annex A (informative): Examples of services built from service features

Call Barring

In standard GSM, the Call Barring services allow to prevent outgoing calls to certain sets of destinations, based on the number dialled and whether the user is roaming. In UMTS, it is proposed that this service allows to block outgoing calls based on a wider range of parameters which could include factors such as the time of day, day of week, location, type of call requested, cost of the service and/or destination. This would allow to develop Call Barring services tailored to business and personal markets to avoid abuse.

This service is invoked during the initial outgoing call set-up procedure and allow the call to be blocked prior to incurring any charges. This Service can be applied to any teleservice for both connection-oriented and connectionless-oriented services.

Call Filtering/Forwarding

In standard GSM, there is no call filtering service. All calls are presented to the user unless a call forwarding service is used to re-direct calls; there is no different call handling depending on the incoming call parameters (although differentiation on call type (voice/data) is possible).

In UMTS, the call filtering service allows the control of whether incoming calls are accepted, forwarded or terminated. The parameters which can be used to determine the final destination of a call may include the caller ID (CLI), original number dialled, time of day, current user location/network, user profile settings and current state of the terminal.

This service shall be two-stage; immediate call filtering (handled regardless of whether the terminal is online or not) and late call filtering (handled only if the terminal is online). It shall be possible to create and operate new call filtering services which can access any of the key parameters to handle calls in this way.

Hold

This service allows an established call to be maintained, whilst suspending use of the bearer from the incoming access point of the network. This saves on both air interface and network traffic resources when a call is temporarily suspended. The incoming access point in the network means either the originating UMTS terminal, or interworking point with another network.

Transfer

This service allows either an established or held call to be redirected to another destination. This may either be used by setting up a new call to the destination first, or simply redirecting the existing call to the new destination. It shall be possible to revert such a call back to the diverting terminal at any time before it is accepted (answered) by the new destination. The UMTS system shall ensure that an optimal traffic route is used after the call has been answered by its new (final) destination.

Call-back When Free

This service can be invoked where a call (or a connectionless message) cannot be delivered to its destination because it is in use. The UMTS system ~~will~~shall inform the requesting entity when the destination is next able to accept the call, allowing a new call to be originated. This allows existing GSM services, such as Call-back When Free to be implemented. Where multiple requests are outstanding for a terminal which becomes available, the system ~~will~~shall determine in which order the requests are handled, probably in a serial manner. Ideally, it shall be possible to create the service logic which determines the order used from a range of accessible parameters.

Annex B (informative) : Description and analysis of communication schemes

This annex gives a high level classification and description of communications requirements from end users and applications.

B.1 Communication schemes

The requirements on bearer services are based on an analysis of user and application needs. Four end-user groups are identified according to four distinctly different communication schemes; Conversational - real time, Interactive services, Streaming services and Background services.

B.2 QoS related performance requirements for example end user applications

A typical user is not concerned with how a particular service is provided. However, the user is interested in comparing one service with another in terms of universal, user-oriented performance parameters which apply to any end-to-end service. From a user's perspective, performance should be expressed by parameters which:

- Focus on user-perceivable effects, rather than their causes within the network
- Are independent of the networks internal design
- Take into account all aspects of the service from the user's point of view which can be objectively measured at the service access point
- Can be assured to a user by the service providers(s)

With these considerations in mind, this section examines the requirements of typical end user applications that can be expected in UMTS.

B.2.1 Performance requirements for conversational real-time

The most well known use of this scheme is telephony speech (e.g. GSM), but with Internet and multimedia a number of new applications will require this scheme, for example voice over IP and video conferencing tools. Real time conversation is always performed between peers (or groups) of live (human) end-users. This is the only scheme where the required characteristics are strictly given by human perception (the senses). Therefore this scheme raises the strongest and most stringent QoS requirements.

The real time conversation scheme is characterised by that the transfer time ~~must~~shall be low because of the conversational nature of the scheme and at the same time that the time relation (variation) between information entities of the stream ~~must~~shall be preserved in the same way as for real time streams. The maximum transfer delay is given by the human perception of video and audio conversation. Therefore the limit for acceptable transfer delay is very strict, as failure to provide low enough transfer delay will result in unacceptable lack of quality. The transfer delay requirement is therefore both significantly lower and more stringent than the round trip delay of the interactive traffic case.

Real time conversation - fundamental characteristics for QoS:

- preserve time relation (variation) between information entities of the stream
- conversational pattern (stringent and low delay)

The resulting overall requirement for this communication scheme is to support conversational real time services with low transfer delay as given by the human perception. (There are less hard requirements on packet loss ratio.)

A real-time streaming application is one that delivers time-based information in real-time, where time-based information is user data that has an intrinsic time component. Video, audio and animation are examples of time-based information, in that they consist of a continuous sequence of data blocks that ~~must~~shall be presented to the user in the right sequence at pre-determined instants.

Conversational voice

Audio transfer delay requirements depends on the level of interactivity of the end users. To preclude difficulties related to the dynamics of voice communications, ITU-T Recommendation G.114 recommends the following general limits for one-way transmission time (assuming echo control already taken care of):

0 to 150 ms	preferred range [<30ms, user does not notice any delay at all, <100ms, user does not notice delay if echo cancellation is provided and there are no distortions on the link]
150 to 400 ms	acceptable range (but with increasing degradation)
above 400 ms	unacceptable range

The human ear is highly intolerant of short-term delay variation (jitter) it is therefore paramount that this is reduced as lower level as is practical. A limit as low as 1 msec is suggested as a target.

Requirements for information loss are influenced by the fact that the human ear is tolerant to a certain amount of distortion of a speech signal. It is has been suggested in studies that acceptable performance is typically obtained with frame erasure rates (FER) up to 3 %.

A connection for a conversation normally requires the allocation of symmetrical communication resources, with the average hold time of a call being in the region of 2 minutes.

Videophone

Videophone implies a full-duplex system, carrying both video and audio and intended for use in a conversational environment. As such, in principle the same delay requirements as for conversational voice will apply, i.e. no echo and minimal effect on conversational dynamics, with the added requirement that the audio and video must be synchronised within certain limits to provide “lip-synch” (i.e. synchronisation of the speaker's lips with the words being heard by the end user). In fact, due to the long delays incurred in even the latest video codecs, it will be difficult to meet these requirements.

Once again, the human eye is tolerant to some loss of information, so that some degree of packet loss is acceptable depending on the specific video coder and amount of error protection used. It is expected that the latest video codecs will provide acceptable video quality with frame erasure rates up to about 1%.

Interactive games

Requirements for interactive games are obviously very dependent on the specific game, but it is clear that demanding applications will require very short delays, and a value of 250 msecs is proposed, consistent with demanding interactive applications.

Two-way control telemetry

Two-way control telemetry is included here as an example of a data service which does require a real-time streaming performance. Clearly, two-way control implies very tight limits on allowable delay and a value of 250 msec is proposed, but a key differentiator from the voice and video services in this category is the zero tolerance for information loss (obvious if you are controlling an important industrial process, for example).

Telnet

Telnet is included here with a requirement for a short delay in order to provide essentially instantaneous character echo-back.

B.2.2 Performance requirements for Interactive Services

When the end-user, that is either a machine or a human, is on line requesting data from remote equipment (e.g. a server), this scheme applies. Examples of human interaction with the remote equipment are: web browsing, data base retrieval, server access. Examples of machines interaction with remote equipment are: polling for measurement records and automatic data base enquiries (tele-machines).

Interactive traffic is the other classical data communication scheme that on an overall level is characterised by the request response pattern of the end-user. At the message destination there is an entity expecting the message (response) within a certain time. Round trip delay time is therefore one of the key attributes. Another characteristic is that the content of the packets must be transparently transferred (with low bit error rate).

Interactive traffic - fundamental characteristics for QoS:

- request response pattern
- preserve payload content

The resulting overall requirement for this communication scheme is to support interactive non-real time services with low round-trip delay.

Voice messaging and dictation

Requirements for information loss are essentially the same as for conversational voice, but a key difference here is that there is more tolerance for delay since there is no direct conversation involved. The main issue, therefore becomes one of how much delay can be tolerated between the user issuing a command to replay a voice message and the actual start of the audio. There is no precise data on this, but a delay of the order of a few seconds appears reasonable for this application.

Data

Although there may be some exceptions, as a general rule it is assumed that from a user point of view, a prime requirement for any data transfer application is to guarantee essentially zero loss of information. At the same time, delay variation is not applicable. The different applications therefore tend to distinguish themselves on the basis of the delay which can be tolerated by the end-user from the time the source content is requested until it is presented to the user.

Web-browsing

In this category we will refer to retrieving and viewing the HTML component of a Web page, other components eg images, audio/video clips are dealt with under their separate categories. From the user point of view, the main performance factor is how fast a page appears after it has been requested. A value of 2-4

seconds per page is proposed, however improvement on these figures to a target figure of 0.5 seconds wound be desirable.

High-priority transaction services (E-commerce)

The main performance requirement here is to provide a sense of immediacy to the user that the transaction is proceeding smoothly. A value of 2-4 seconds is suggested to be acceptable to most users.

E-mail (server access)

E-mail is generally thought to be a store and forward service which in principle can tolerate delays of several minutes or even hours. However, it is important to differentiate between communications between the user and the local email server and server to server transfer. When the user communicates with the local mail server, there is an expectation that the mail will be transferred quite rapidly, although not necessarily instantaneously. Consistent with the research findings on delay tolerance for Web-browsing, a requirement of 2-4 seconds is proposed.

B.2.3 Performance requirements for streaming services

When the user is looking at (listening to) video (audio) the scheme streams applies. The real time data flow is always aiming at a live (human) destination. It is a one way transport.

This scheme is one of the newcomers in data communication, raising a number of new requirements in both telecommunication and data communication systems. First of all it is a mainly unidirectional stream with high continuous utilisation (i.e. having few idle/silent periods.) It is also characterised by that the time relations (variation) between information entities (i.e. samples, packets) within a flow must be preserved, although it does not have any requirements on low transfer delay.

The delay variation of the end-to-end flow must be limited, to preserve the time relation (variation) between information entities of the stream. But as the stream normally is time aligned at the receiving end (in the user equipment), the highest acceptable delay variation over the transmission media is given by the capability of the time alignment function of the application. Acceptable delay variation is thus much greater than the delay variation given by the limits of human perception.

Real time streams - fundamental characteristics for QoS:

- unidirectional continuous stream
- preserve time relation (variation) between information entities of the stream

The resulting overall requirement for this communication scheme is to support streaming real time services having unidirectional data flows with continuous utilisation. (There are less stringent requirements on delay and packet loss ratio, i.e. the ratio of lost or corrupted packets out of all packets sent.)

Audio streaming

Audio streaming is expected to provide better quality than conventional telephony, and requirements for information loss in terms of packet loss will be correspondingly tighter. However, as with voice messaging, there is no conversational element involved and delay requirements can be relaxed, even more so than for voice-messaging.

One-way video

The main distinguishing feature of one-way video is that there is no conversational element involved, meaning that the delay requirement will not be so stringent, and can follow that of streaming audio.

Bulk data

This category includes file transfers, and is clearly influenced by the size of the file. As long as there is an indication that the file transfer is proceeding, it is reasonable to assume some what longer tolerance to delay than for a single Web-page.

Still image

This category includes a variety of encoding formats, some of which may be tolerant to information loss since they will be viewed by a human eye. However, given that even single bit errors can cause large disturbances in other still image formats, it is argued that this category should in general have zero information loss. However, delay requirements for still image transfer are not stringent, given that the image tends to be built up as it is being received, which provides an indication that data transfer is proceeding.

Telemetry (monitoring)

Monitoring covers a wide range of applications, but in this category it is taken to apply to relatively low priority activities, eg status updating, rather than control.

B.2.4 Performance requirements for Background applications

When the end-user, that typically is a computer, sends and receives data-files in the background, this scheme applies. Examples are background delivery of E-mails, SMS, download of databases and reception of measurement records.

Background traffic is one of the classical data communication schemes that on an overall level is characterised by that the destination is not expecting the data within a certain time. The scheme is thus more or less delivery time insensitive. Another characteristic is that the content of the packets must be transparently transferred (with low bit error rate).

Background traffic - fundamental characteristics for QoS:

- the destination is not expecting the data within a certain time
- preserve payload content

The resulting overall requirement for this communication scheme is to support non-real time services without any special requirement on delay.

A background application is one that does not carry delay information. In principle, the only requirement for applications in this category is that information should be delivered to the user essentially error free. However, there is still a delay constraint, since data is effectively useless if it is received too late for any practical purpose.

Fax

Fax is included in this category since it is not normally intended to be an accompaniment to real-time communication. Nevertheless, there is an expectation in most business scenarios that a fax will be received within about 30 seconds. The information loss requirement is based on established wireline requirements for a Group 3 fax. As for the symmetry this should provide the required through put in the sending direction and the control signalling in backwards direction, hence an asymmetric connection is required.

Low priority transaction services

An example in this category is Short Message Service (SMS). 30 seconds is proposed as an acceptable delivery delay value.

Email (server to server)

This category is included for completeness, since as mentioned earlier, the prime interest in email is in the access time. There is a wide spread in user expectation, with a median value of several hours.

B.3 Adaptability and bearer service negotiation

Applications using the *interactive* or *real time conversational* communication schemes can also be described according to their possibilities for adapting to different environmental conditions as follows:

- Rigid applications; these applications can not adapt at all (e.g. GSM full rate speech.)
- Adaptive applications; these applications can adapt to the environment; they therefore require the network to support service negotiation. (e.g. multi-rate speech codecs)
- Elastic applications; these applications adapt totally to the environment and do therefore not require service negotiation (e.g. web browsing.)

The resulting overall requirement is to support service negotiation.

Annex C (informative) : Change history

Change history					
SMG No.	**TDoc. No.**	**CR. No.**	**Section affected**	**New version**	**Subject/Comments**
SMG#25				3.0.0	Approved at SMG#25 Sophia Antipolis 17-20 March 1998
SMG#26	98-0325	001	Section 3.1 (a new definition is added) and section 5 (the current text is clarified).	3.1.0	Clarification of the sections where the bearer services are characterised.
Pre-SMG#28	SMG1 Tdoc 98-0864	A002	3.2, 4.1, 4.3, 4.4, 6.1, 6.4.1, 6.4.3, 6.4.4., 6.4.5, 8.2, 8.3, 8.5, 8.7, 8.8, 9.1, 9.2	Draft 3.2.0	SMG1 Agreed at this stage Aligning this specification with 22.00
Pre-SMG#28	SMG1 Tdoc 98-0870	003	Sections 2, 9	Draft 3.2.0	SMG1 Agreed at this stage References to relevant GSM specs has been added.
Pre-SMG#28	SMG1 Tdoc 0895 (865#5)	004	Annex B	Draft 3.2.0	SMG1 Agreed at this stage In line with views expressed by SMG2 and SMG12 about descriptions and analysis of communication schemes.
Pre-SMG#28		005	Section 8	Draft 3.2.0	Service features are only used to create services (as building blocks) and not to modify and delete services. (Added Jan 27, 1999)
SMG#28				Version 3.2.0	Approved Versions
SA#2 Florida		006	6.4	Version 3.3.0	Cell Broadcast Service in UMTS.
				Version 3.3.0	reformatted for TSG SA
SA#3, Japan		007	6.4.1	Version 3.4.0	Add requirement for high quality speech.
SA#3, Japan		008	2.1, 5.7 (added)	Version 3.4.0	Support of GSM BSs
Post-SA#3				Version 3.4.1	Updated logo, foreword, etc …
SA#4, Miami	SP-99 230	A013 r3	4.2 , 4.2.1, 5.1, 5.2, 5.2.1, 5.2.2, 5.4, 5.5	Version 3.5.0	End to end QoS is required for UMTS Release'99 to enable satisfactory operation of end user applications, which have specific requirements regarding bandwidth, delay, delay variation or information loss.
SA#4, Miami	SP-99 230	A014r1	Annex B	Version 3.5.0	End to end Quality of Service (QoS) is required in UMTS Release'99 to enable satisfactory operation of end user applications. The informative annex on communication schemes is enhanced to provide more detailed background information on the QoS requirements of typical end user applications that can be expected in UMTS.

History

Document history	
June 1998	Version 3.1.0 Unpublished
January 1999	**v.3.2.0 - with 4 CRs accepted by SMG1 - Presented to TSG SA WG1 - To be presented to SMG#28 for Approval**
February 1999	3.3.0 SMG#28
March 1999	3.3.1
May 1999	Version 3.4.0 with approved CRs from SA#3, Yokohama, Japan
June 1999	Version 3.5.0 with two approved CRs from SA#4, Miami, Florida

CHANGE REQUEST No : **017**

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

Technical Specification / Report UMTS 22.105 Version: 3.5.0

Submitted to TSG_SA	for approval		without presentation ("non-strategic")	X
list TSG plenary meeting no. here ↑	for information		with presentation ("strategic")	

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip

Proposed change affects: USIM ☐ TE ☐ Network ☐

(at least one should be marked with an X)

Work item: UMTS Quality of Service

Source: BT **Date:** 28/09/1999

Subject: Correction of nomenclature

Category: *(one category and one release Only shall be Marked with an X)*

F	Correction		**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	X		UMTS 99	X

Reason for change: Correction of nomenclature

Clauses affected: 4.1

Other specs	Other releases of same spec		→ List of CRs:	
Affected:	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:	

<--------- double-click here for help and instructions on how to create a CR.

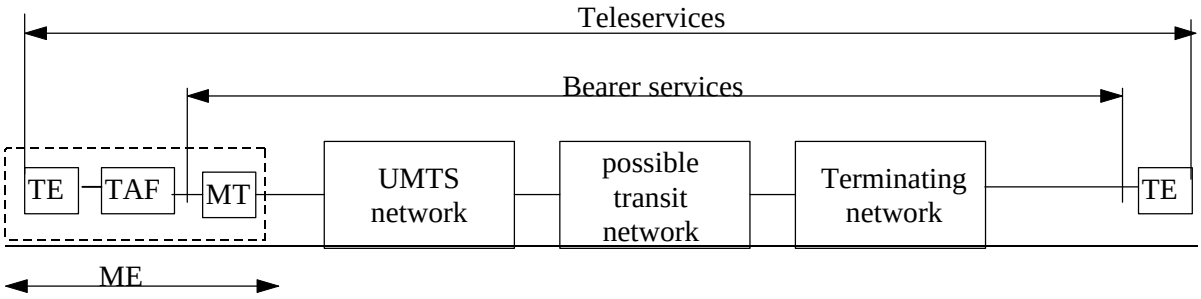
4.2 Basic telecommunication services

Basic telecommunication services are divided in two broad categories;

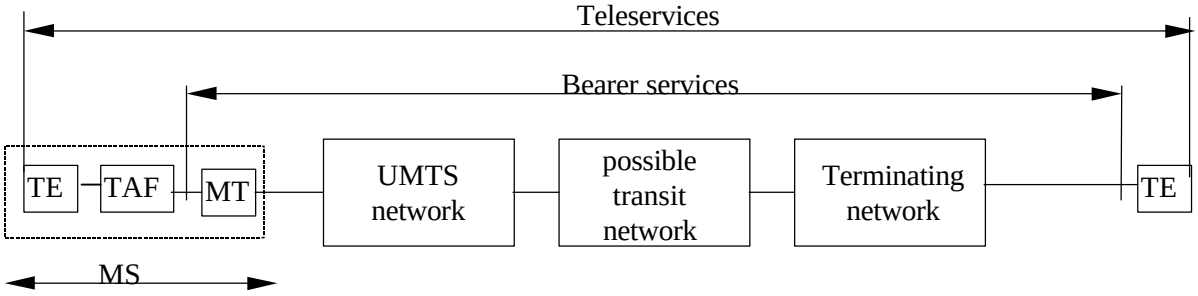
- bearer services, which are telecommunication services providing the capability of transmission of signals between access points;
- teleservices, which are telecommunication services providing the complete capability, including terminal equipment functions, for communication between users according to protocols established by agreement between network operators.

The communication link between the access points consists of UMTS, one or more transit networks and a terminating network. The networks between the two access points typically use different means for bearer control.

Figure 1 illustrates these definitions.



ME: Mobile Station
MT: Mobile Termination
TE: Terminal Equipment
TAF: Teminal Adaption Function



MS: Mobile Station
MT: Mobile Termination
TE: Terminal Equipment
TAF: Teminal Adaption Function

TSG-SA Working Group 1 (Services) meeting #4
Quebec City, Canada, 5-9 July 1999

TSGS1#4(99)548
Agenda Item 6.3.1

CHANGE REQUEST No : **015**

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

Technical Specification / Report UMTS 22.105 Version: 3.5.0

Submitted to TSG_SA *list TSG plenary meeting no. here ↑*

for approval [ ]
for information [ ]

without presentation ("non-strategic") [X]
with presentation ("strategic") [ ]

PT SMG CR cover form is available from: http://docbox.etsi.org/tech-org/smg/Document/smg/tools/CR_form/crf28_1.zip

Proposed change affects: USIM [ ] TE [ ] Network [ ]

(at least one should be marked with an X)

Work item: UMTS Quality of Service

Source: Nortel Networks **Date:** 08.07.99

Subject: Removal of notes from tables.

Category: *(one category and one release Only shall be Marked with an X)*

F	Correction		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	X	UMTS 99	X

Reason for change: The review of the tables has taken place and no revision was found to be needed.

Clauses affected: ~~5.2.1,~~ 5.5

Other specs Other releases of same spec [ ] → List of CRs:

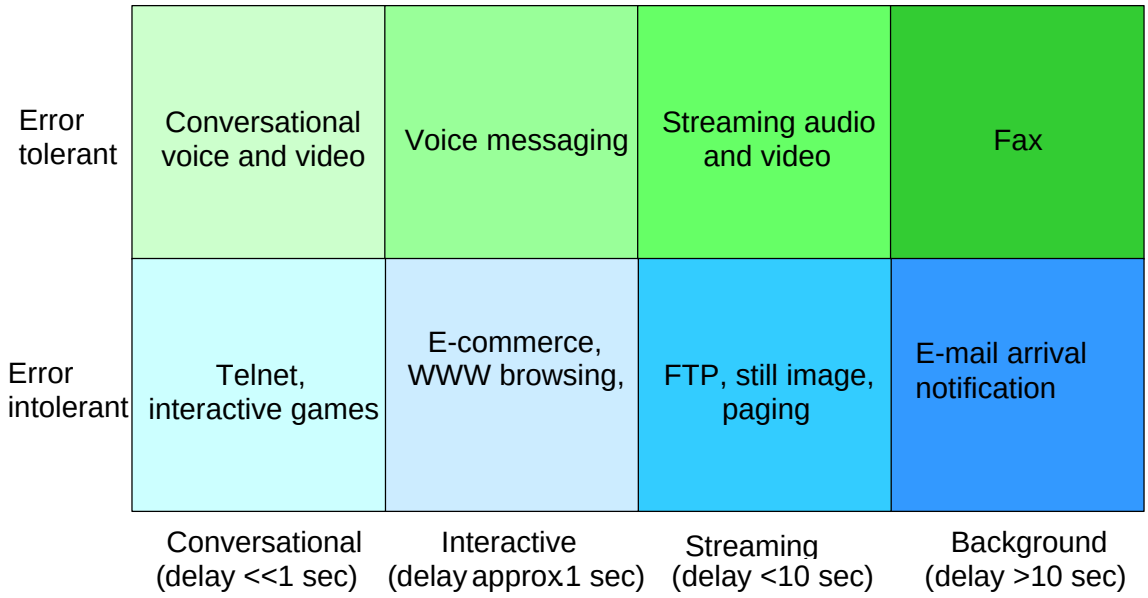
Affected:	Other core specifications		→ List of CRs:	
	MS test specifications / TBRs		→ List of CRs:	
	BSS test specifications		→ List of CRs:	
	O&M specifications		→ List of CRs:	

Other comments:	

<--------- double-click here for help and instructions on how to create a CR.

~~5.5~~5.6 Supported End User QoS

This section outlines the QoS that shall be provided to the end user / applications. Figure 2 below summarises the major groups of application in terms of QoS requirements. Applications and new applications may be applicable to one more groups.



The following tables further elaborate UMTS end user / application QoS requirements.

Table 1: End-user Performance Expectations - Conversational / Real-time Services

Medium	**Application**	**Degree of symmetry**	**Data rate**	**Key performance parameters and target values**		
				One-way Delay	Delay Variation	Information loss
Audio	Conversational voice	Two-way	4-25 kb/s	<150 msec preferred <400 msec limit	< 1 msec	< 3% FER

Video	Videophone	Two-way	32-384 kb/s	< 150 msec preferred <400 msec limit Lip-synch : < 100 msec		< 1% FER
Data	Telemetry - two-way control	Two-way	<28.8 kb/s	< 250 msec	N.A	 Zero
Data	Interactive games	Two-way	< 1 KB	< 250 msec	N.A	Zero
Data	Telnet	Two-way (asymmetric)	< 1 KB	< 250 msec	N.A	Zero

~~[Note: The values provided in table 1 need to be further reviewed and may be revised in the next version of this specification]~~

Table 2: End-user Performance Expectations - Interactive Services

Medium	**Application**	**Degree of symmetry**	**Data rate**	**Key performance parameters and target values**		
				One-way Delay	Delay Variation	Information loss
Audio	Voice messaging	Primarily one-way	4-13 kb/s	< 1 sec for playback < 2 sec for record	< 1 msec	< 3% FER
Data	Web-browsing - HTML	Primarily one-way		< 4 sec /page	N.A	Zero
Data	Transaction services – high priority e.g. e-commerce, ATM	Two-way		< 4 sec	N.A	Zero
Data	E-mail (server access)	Primarily One-way		< 4 sec	N.A	Zero

~~[Note: The values provided in table 2 need to be further reviewed and may be revised in the next version of this specification]~~

Table 3: End-user Performance Expectations - Streaming Services

Medium	**Application**	**Degree of symmetry**	**Data rate**	**Key performance parameters and target values**		
				One-way Delay	Delay Variation	Information loss
Audio	High quality streaming audio	Primarily one-way	32-128 kb/s	< 10 sec	< 1 msec	< 1% FER
Video	One-way	One-way	32-384 kb/s	< 10 sec		< 1% FER
Data	Bulk data transfer/retrieval	Primarily one-way		< 10 sec	N.A	Zero

Data	Still image	One-way		< 10 sec	N.A	Zero
Data	Telemetry - monitoring	One-way	<28.8 kb/s	< 10 sec	N.A	Zero

~~[Note: The values provided in table 3 need to be further reviewed and may be revised in the next version of this specification]~~