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## **Digital cellular telecommunications system (Phase 2+); General on supplementary services; (GSM 02.04)**

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## Foreword

This Global System for Mobile communications Technical Specification (GTS) has been produced by the Special Mobile Group (SMG) Technical Committee (TC) of the European Telecommunications Standards Institute (ETSI).

This GTS defines a recommended set of supplementary services to the Teleservices and Bearer services which will be supported within the digital cellular telecommunications system (Phase 2/Phase 2+).

This GTS is a TC-SMG approved GSM technical specification version 5, which contains GSM Phase 2+ enhancements/features to the version 4 GSM technical specification. The ETS on which this Phase 2+ GTS is based is Phase 2 GSM ETS 300 503 edition 3 (GSM 02.04 version 4.9.1).

GTS are produced by TC-SMG to enable the GSM Phase 2 + specifications to become publicly available, prior to submission for the formal ETSI standards approval procedure to become European Telecommunications Standards (ETS). This ensures the earliest possible access to GSM Phase 2 + specifications for all Manufacturers, Network operators and implementors of the Global System for Mobile communications.

The contents of this GTS are subject to continuing work within TC-SMG and may change following formal TC-SMG approval. Should TC-SMG modify the contents of this GTS it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version 5.x.y

where:

- y     the third digit is incremented when editorial only changes have been incorporated in the specification;
  
- x     the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

The specification from which this GTS has been derived was originally based on CEPT documentation, hence the presentation of this GTS may not be entirely in accordance with the ETSI rules.

Reference is made within this TS to GSM-TSs (note).

NOTE :     TC-SMG has produced documents which give the technical specifications for the implementation of the digital cellular telecommunications system. Historically, these documents have been identified as GSM Technical Specifications (GSM-TSs). These TSs may have subsequently become I-ETTs (Phase 1), or ETs/ETSI Technical Reports (ETRs) (Phase 2). TC-SMG has also produced ETSI GSM TSs which give the technical specifications for the implementation of Phase 2+ enhancements of the digital cellular telecommunications system. These version 5.x.x GSM Technical Specifications may be referred to as GTs.

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## 1 Scope

The purpose of this ETS 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 specifications GSM 02.80 series.

Supplementary services not covered in GSM 02.04 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 Specifications GSM 03.11 and 04.10.

### 1.1 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

- [1] GSM 01.04 (ETR 100): "Digital cellular telecommunication system (Phase 2); Abbreviations and acronyms".
- [2] GSM 02.01 (ETS 300 500): "Digital cellular telecommunication system (Phase 2); Principles of telecommunication services supported by a GSM Public Land Mobile Network (PLMN)".
- [3] GSM 02.02 (ETS 300 501): "Digital cellular telecommunication system (Phase 2); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [4] GSM 02.03 (ETS 300 502): "Digital cellular telecommunication system (Phase 2); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [5] GSM 02.30 (ETS 300 511): "Digital cellular telecommunication system (Phase 2); Man-Machine Interface (MMI) of the Mobile Station (MS)".
- [6] GSM 02.67: "Digital cellular telecommunication system (Phase 2+); enhance Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".
- [7] GSM 02.81 (ETS 300 514): "Digital cellular telecommunication system (Phase 2); Line identification supplementary services - Stage 1".
- [8] GSM 02.82 (ETS 300 515): "Digital cellular telecommunication system (Phase 2); Call Forwarding (CF) supplementary services - Stage 1".
- [9] GSM 02.83 (ETS 300 516): "Digital cellular telecommunication system (Phase 2); Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 1".
- [10] GSM 02.84 (ETS 300 517): "Digital cellular telecommunication system (Phase 2); MultiParty (MPTY) supplementary services - Stage 1".
- [11] GSM 02.85 (ETS 300 518): "Digital cellular telecommunication system (Phase 2); Closed User Group (CUG) supplementary services - Stage 1".
- [12] GSM 02.86 (ETS 300 519): "Digital cellular telecommunication system (Phase 2); Advice of charge (AoC) supplementary services - Stage 1".

- [13] GSM 02.88 (ETS 300 520): "Digital cellular telecommunication system (Phase 2); Call Barring (CB) supplementary services - Stage 1".
- [14] GSM 03.11 (ETS 300 529): "Digital cellular telecommunication system (Phase 2); Technical realization of supplementary services".
- [15] GSM 04.10 (ETS 300 558): "Digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 Supplementary services specification General aspects".
- [16] GSM 04.80 (ETS 300 564): "Digital cellular telecommunication system (Phase 2); Mobile radio interface layer 3 supplementary services specification Formats and coding".
- [17] CCITT Recommendation I.210: "Principles of telecommunication services supported by an ISDN and the means to describe them".

## 1.2 Abbreviations

Abbreviations and acronyms used in this specification are listed in GSM 01.04.

## 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 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 Specification 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 activeNot 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.

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 1: 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.

NOTE 2: The terms "she" and "her" are used as abbreviation of "she/he" and "her/his, her/him" respectively.

### 3 Categories and framework of supplementary services

#### 3.1 Framework for the description of supplementary services

Specification GSM 02.01 describes the principles of the Telecommunication services provided in a GSM PLMN. It 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 Specification GSM 02.02 and 02.03. 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 (identical to table 1/GSM 02.01 and to table 1 of CCITT Recommendation I.210) illustrates the description of Telecommunication services.

**Table 3.1/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.

Note that Supplementary Service operations on "alternate" and "followed by" Bearer Services (BS61 and BS81) are managed on the basis of the Bearer Service BS2x or BS3x corresponding to the data part of the "alternate" and "followed by" Bearer Services. This means that subscribers with a subscription to basic services BS61 or BS81 can perform call independent supplementary service operations against the groups "all data circuit asynchronous" and "all data circuit synchronous" regardless of whether or not they have a subscription to any of the basic services in the set BS2x or BS3x.

This is also required for the invocation of a supplementary service related to the "alternate" and "followed by" Bearer Services.

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

**Table 3.2/GSM 02.04: List of basic service groups**

Basic service group		Basic service (1) (2)	
number	name	number (3)	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 21 BS 22 BS 23 BS 24 BS 25 BS 26	Data circuit duplex asynch. 300 bit/s Data circuit duplex asynch. 1200 bit/s Data circuit duplex asynch. 1200/75 bit/s Data circuit duplex asynch. 2400 bit/s Data circuit duplex asynch. 4800 bit/s Data circuit duplex asynch. 9600 bit/s
8	All Data circuit synchronous	BS 31 BS 32 BS 33 BS 34	Data circuit duplex synch. 1200 bit/s Data circuit duplex synch. 2400 bit/s Data circuit duplex synch. 4800 bit/s Data circuit duplex synch. 9600 bit/s
9	All dedicated PAD access	BS 41 BS 42 BS 43 BS 44 BS 45 BS 46	PAD access circuit asynch. 300 bit/s PAD access circuit asynch. 1200 bit/s PAD access circuit asynch. 1200/75 bit/s PAD access circuit asynch. 2400 bit/s PAD access circuit asynch. 4800 bit/s PAD access circuit asynch. 9600 bit/s
10	All dedicated packet access	BS 51 BS 52 BS 53	Data packet duplex synch. 2400 bit/s Data packet duplex synch. 4800 bit/s Data packet duplex synch. 9600 bit/s
12	Voice group services	TS 91 TS 92	Voice Group Call Service Voice Broadcast Service

NOTE 1: Basic services are defined in specifications GSM 02.02 and 02.03.

NOTE 2: Alternate speech/unrestricted data (BS61) and speech followed by data (BS81) belong to the BS-group of the equivalent data service.

NOTE 3: 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 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.

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/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/GSM 02.04: Supported Supplementary Services

		Supplementary Service					
GSM Spec/section		Reg	Eras	Act	Deact	Inv	Int
02.72. Call Deflection SS	CD	-	-	p	w	u	-
02.81. Number Identif. SS	CLIP	-	-	p	w	n	s
	CLIR	-	-	p	w	n	dr
	CoLP	-	-	p	w	n	s
	CoLR	-	-	p	w	n	s
02.82. 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
02.83. Call Completion SS	CW	-	-	a/s	a/s	n	s
	HOLD	-	-	p	w	u	-
02.84. Multi Party SS	MPTY	-	-	-	-	u	-
02.85. Comm. of Interest SS	CUG	-	-	p	w	u/n	-
02.87. User-to-User SS	UUS	-	-	s	c	u/n	-
02.86. Charging SS	AoCI	-	-	p	w	n	-
	AoCC	-	-	p	w	n	-
02.88. 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
02.67	eMLPP	a/s	w/r/s	-	-	u/n	s/dr
02.90. Call Transfer SS	ECT	-	-	p	w	u	-
02.95. Support of Private Numbering Plan SS	SPNP SS	-	-	p	w	n	dr
	Numbering plans	a/s	w/r	r/s	e/c	-	-

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
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

#### 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.

## 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 GSM 02.30.

#### 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 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 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, 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 GSM 02.80 series - sections x.3 (Normal Procedures), x.4 (Exceptional Procedures) and x.6 (Interaction). Also GSM 02.04 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 GSM 02.04 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 GSM 02.04 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 GSM 02.80 series of specifications. The letter "y" denominates the specification (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: Applicability of SSs to telecommunication services**

SS	Telephony	Emergency Call	SMS PTP		SMS-CB	Fax	cct Data	PAD/Packet Access	
	TS11	TS12	TS21	TS22	TS 23	TS 6x	BS2x, BS3x	BS4x	BS5x
CD	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CLIP	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CLIR	Yes					Yes	Yes	Yes	Yes
COLP	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
COLR	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CFU	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CFB	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CFNRy	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CFNRc	Yes					Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
CW <sup>1</sup>	Yes					Yes	Yes	Yes	Yes
HOLD <sup>2</sup>	Yes								
MPTY	Yes								
CUG	Yes					Yes	Yes		
AoCI	Yes					Yes	Yes	Yes	Yes
AoCC	Yes					Yes	Yes	Yes	Yes
UUS	Yes					Yes	Yes		
BAOC	Yes		Yes <sup>3</sup>	Yes		Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
BOIC	Yes		Yes <sup>3</sup>	Yes		Yes	Yes		
BOIC-exHC	Yes		Yes <sup>3</sup>	Yes		Yes	Yes		
BIC	Yes		Yes	Yes <sup>3</sup>		Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
BIC-Roam	Yes		Yes	Yes <sup>3</sup>		Yes	Yes	Yes <sup>3</sup>	Yes <sup>3</sup>
ECT	Yes								
CCBS	Yes					Yes	Yes		
SPNP	Yes		Yes <sup>5</sup>	Yes <sup>5</sup>		Yes	Yes		

NOTE 1: The applicability of Call Waiting refers to the telecommunication service of the active call and not of the waiting call. The incoming, waiting, call may be of any kind.

NOTE 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.

NOTE 3: The SS is applicable, but generally will not be invoked.

NOTE 4: For the purposes of applicability of supplementary services, the Alternate speech/unrestricted data (BS61) and speech followed by data (BS81) belong to the BS-group of the equivalent data service.

NOTE 5: Both the SMS service centre and the mobile destination can be reached by PNP numbers.

## History

<b>Change history</b>					
<b>SMG No.</b>	<b>TDoc. No.</b>	<b>CR. No.</b>	<b>Section affected</b>	<b>New version</b>	<b>Subject/Comments</b>
SMG#14	235/95	Delta	4.0	5.0.0	Provision for ECT
SMG#17	052/96	A005r2	3.1,4.0	5.1.0	Addition of handling for VBS, VGCS & eMLPP
SMG#18	222/96 224/96	A007 A006	4.1, AnnA Annex A	5.2.0	Introduction of UUS Applicability to Telecommunication services for SPNP
SMG#19	362/96  364/96	A008  A009	4.1  4.1, Ann A	5.3.0	Inclusion of SPNP service into GSM 02.04 Introduction of Call Deflection

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