# 3G TS 22.094 V2.1.0 (1999-09)

*Technical Specification*

**3rd Generation Partnership Project;**
**Technical Specification Group Services and System Aspects;**
**Follow Me Service description -  Stage 1**
**(3G TS 22.094 version 2. 1.0)**

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# 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 present document specifies the stage 1 description for the Follow Me feature.

The Follow Me feature enables a mobile subscriber A to manipulate the Follow Me data of a party B in such a way that - under certain conditions - subsequent calls directed to party B will be forwarded to subscriber A.

The feature 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 TS does not deal with the Man-Machine Interface (MMI) requirements, but makes reference to the appropriate specifications.

Any interaction with other services and/or networks not dealt with in this specification are outside the scope of this TS.

# 2 References

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case 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 TS 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 TS 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: "Digital cellular telecommunication system (Phase 2+); Definitions, abbreviations and acronyms".

[2]        TS 22.004: "General on supplementary services".

[4]        TS 22.030: "Man-Machine Interface (MMI) of the Mobile Station (MS)".

[5]        TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[6]        TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

[7]        TS 22.041: "Closed User Group (CUG) supplementary services - Stage 1".

[8]           TS 22.078: " Customized Applications for Mobile network Enhanced Logic (CAMEL); Service definition (Stage 1).

[9]           TS 22.079: "Support of Optimal Routeing (SOR); Service definition (Stage 1)".

[10]         TS 22.090: " Unstructured Supplementary Service Data (USSD) Stage 1"

[11]         GSM 02.31: "Fraud Information Gathering System (FIGS); Service description - Stage 1"

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

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

**initiating subscriber:** the mobile subscriber which modifies the Follow Me data of the remote party.

**remote party:** Is characterised by a number in E.164 format defined in the numbering plan of a PLMN operator. The Follow Me feature enables the initiating subscriber to modify the Follow Me data associated with this number. In general this number is not assigned to a subscriber. In particular cases the remote party is a subscriber of the PLMN and the number denotes her basic MSISDN.

## 3.3 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].

FM            Follow Me feature

# 4 Description

Follow Me enables an initiating mobile subscriber A to have control over the Follow Me data of a remote party B. Initiating Subscriber A shall be able to manipulate the Follow Me data of remote party B such that subsequent calls directed to remote party B are forwarded to initiating subscriber A.

Initiating subscriber A needs to have FM provisioned by her service provider. In case remote party B is a subscriber she needs to have FM provisioned by her service provider too.

It remains in the responsibility of a FM provisioning service provider to confine

    a.) the range of remote parties for which a FM provisioned subscriber may become initiating subscriber

    b.) the range of potential initiating subscribers for a remote party.

The mobile subscriber who has been provisioned Follow Me is able to use the following control operations:

      Registration   (available to the initiating subscriber)

      Interrogation  (available to the initiating and remote party in case the remote party corresponds to a subscriber)

      Erasure    (available to the initiating and remote party in case the remote party corresponds to a subscriber)

    (There is no explicit activation or deactivation.)

NOTE 1:  The functionality of the Follow Me feature is equivalent to the Call Forwarding Unconditional Supplementary Service (see TS 22.082 [5]), controlled by initiating subscriber A and effecting remote party B.

NOTE 2:  The Follow Me feature is designed in such a way that the requirements of "functional addressing", which is needed for GSM-Railway operators, can be met. The concept of "functional addressing" enables a subscriber to set up a call to a "function" - e.g. the conductor - on a "train".

The Follow Me feature identifies this "function" with the remote party B. Consequently a "functional number" is the equivalent to the number of  remote party B (e.g. the MSISDN of a subscriber B).  A call to that "functional number" (the conductor on a particular train - to stay with the example) will be forwarded to the MS of the person, who is on duty as a conductor at this time for this train.

In the context of the Follow Me feature, this person (the train conductor) constitutes the "initiating subscriber" A, who has registered Follow Me with respect to the remote party B (the "function" train conductor).

## 4.1      Normal Operation

Due to reduced security requirements to the Follow Me feature the service shall not be offered in standard operations of public GSM networks.  In railway operations it must be enabled by definitive action on the part of the operator.

Fraud Information Gathering System (FIGS) as specified in [11] can be used to protect  in CAMEL based inter-working networks.

The Follow Me feature shall be controlled by means of  Subscriber Controlled Input using USSD.

# 5        Applicability to telecommunication services

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 PLMN in connection with other networks, are defined in TS 22.002, GSM 02.03 and TS 22.101. A list of basic service groups can be found in GSM TS 22.004.

Follow Me is applicable to the following telecommunication services:

**Table 1: Applicability of the Follow Me feature to telecommunication services**

| Feature | Telephony | Emergency Call | SMS PTP | | SMS-CB | Fax | cct Data | PAD/Packet Access | | Voice Group Services | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | TS11 | TS12 | TS21 | TS22 | TS 23 | TS 6x | BS2x, BS3x | BS4x | BS5x | TS 91 | TS 92 |
| Follow Me | Yes | | | | | Yes | Yes | | | No[1] | No[1] |

NOTE 1:   The feature is in general not applicable for Voice Group Services. However a dispatcher may be an initiating subscriber or a remote party for the Follow Me feature.

EDITOR's Note: The applicability of FM to SMS is for further study.

# 6        Normal procedures with successful outcome

## 6.1      Provision

Follow Me shall be provided after prior arrangement with the service provider. Follow Me will be provisioned for all Basic Services subscribed to and to which it is applicable.

NOTES:

  - A Follow Me provision is required for the initiating subscriber and for the remote party in case the remote party corresponds to a subscriber.

  - If Follow Me is provisioned for a mobile subscriber she may assume the role of an initiating subscriber and/or the role of a remote party.

- A Follow Me provisioning service provider may confine:

    a.) the range of remote parties for which a FM provisioned subscriber may become initiating subscriber

    b.) the range of potential initiating subscribers for a remote party.

NOTE: (Health warning on security) The Follow Me feature is designed in such a way as to meet the security requirements of GSM-Railway operators. If the Follow Me feature is to be used by other operators - in particular if the remote party corresponds to a subscriber - operators are strongly advised to care for additional suitable security mechanisms to protect the remote party from potential harm by misuse of FM. These mechanisms are out of scope of this specification.

To support such mechanisms the possibility is foreseen to convey additional operator-specific information in the registration, interrogation and erasure procedures to the PLMN of the remote party. It should however be noted, that this is not a very secure mechanism. Operators should try to use existing security mechanisms where possible

## 6.2 Withdrawal

Follow Me will be withdrawn at the subscriber's request or for administrative reasons.

## 6.3 Registration

Follow Me shall be registered with an appropriate control procedure by the initiating subscriber.

The initiating Subscriber registers the Follow Me feature with respect to a particular remote party.

The initiating subscriber shall provide the following information to the network:

    the number of the remote party (e.g. the Basic MSISDN of a subscriber);

The initiating subscriber shall receive an indication if the FM registration request was accepted or rejected by the network.

As an operator's option additional information (such as passwords) for registration may be required from the initiating subscriber. The registration procedure shall transport this information from the initiating subscriber to the network of the remote party. This information shall be coded as a USSD string with a length not exceeding 30 characters. The content of this information and the use of it are out of scope of this specification.

NOTE 1: The Follow Me feature may, at an instant, be registered to an initiating subscriber with respect to several remote parties. Conversely, a remote party can be registered only to one initiating subscriber at a time.

## 6.4 Erasure

A previous FM registration can be erased in either of the following ways:

    a) The initiating subscriber can specifically erase a previous registration with an appropriate control procedure.

    b) In case the remote party corresponds to a subscriber the remote party

    can erase any previous registration with an appropriate control procedure.

    EDITOR's Note: The possibility for erasure by third parties is FFS. It may be necessary to have the following:
        c.) A third party subscriber can erase any previous registration to any remote party with an appropriate control procedure. These third parties shall be authorised by the network operator.

The subscriber who initiates the FM erase request shall be informed of the outcome of the request by the network.

As an operator's option additional information (such as passwords) for erasure may be required from the subscriber. The registration procedure shall transport this information from the subscriber to the network of the remote party. This

information shall be coded as a USSD string with a length not exceeding 30 characters. The content of this information and the use of it are out of scope of this specification.

## 6.5     Activation

Follow Me is activated by registration.

## 6.6     Deactivation

Follow Me is deactivated by erasure.

## 6.7     Invocation

Follow Me is automatically invoked by the network if it was previously registered. If Follow Me is registered all incoming calls to the remote party will be forwarded to the initiating subscriber by network invocation.

When Follow Me is active and operative and if the remote party is a subscriber, the ability of the remote party to originate calls is not affected.

## 6.8     Interrogation

An initiating subscriber shall be able to interrogate the Follow Me data of any remote party, for which she is authorised to become initiating subscriber.

In case the remote party corresponds to a subscriber the remote party shall be able to interrogate her own Follow Me data stored in the network.

The network shall return the basic MSISDN of the initiating subscriber for which the remote party is registered to Follow Me.

As an operator's option additional information (such as passwords) for interrogation may be required from the subscriber. The registration procedure shall transport this information from the subscriber to the network of the remote party. This information shall be coded as a USSD string with a length not exceeding 30 characters. The content of this information and the use of it are out of scope of this specification.

# 7          Exceptional procedures or unsuccessful outcome

## 7.1     Registration

If the system cannot accept a registration request, the initiating subscriber shall receive a notification that Follow Me registration was not successful. Possible causes are:

- insufficient information;

- feature not provisioned to initiating subscriber;

- feature not provisioned to remote party (in case the remote party is a subscriber);

- conflicting situation with supplementary services (e.g. incoming call barring has been activated);

– remote party already registered to a different initiating subscriber

– insufficient authorisation for initiating subscriber or remote party

## 7.2    Erasure

If the network cannot accept a mobile initiating or remote subscriber's request  for erasure, cause will be returned to the subscriber, such as:

- insufficient information;

-  remote party not registered

– remote party registered to a different initiating subscriber

– insufficient authorisation for initiating subscriber or remote party

- feature not provisioned to initiating subscriber;

- feature not provisioned to remote party (in case the remote party is a subscriber);

## 7.3    Interrogation

If the network cannot accept a mobile initiating or remote subscriber's request  for interrogation, cause will be returned to the subscriber, such as:

- insufficient information;

– insufficient authorisation for initiating subscriber or remote party

– feature not provisioned to initiating subscriber;

- feature not provisioned to remote party (in case the remote party is a subscriber);

## 7.4    Invocation

Within a PLMN or different PLMNs the number of tandem forwarding connections (including call forwarding, call deflection, Follow Me) should be limited. The maximum number of tandem forwarding connections should be limited to a value between 1 and 5. This is to prevent infinite looping.

If the limit of successive forwardings of a call has already been reached, an unsuccessful call set up indication is sent backwards.

If the call cannot be completed to the Follow Me destination, then the network will clear the forwarded part of the call and an unsuccessful call set up indication is sent backwards.

# 8    Alternate procedures

None identified.

# 9    Charging requirements

None identified.

# 10    Interactions with supplementary services

Interactions of the Follow Me feature with supplementary services may occur only for the remote party.

The interactions of the Follow Me feature with supplementary services other than Call Forwarding Unconditional (CFU) are the same as the interactions of CFU with supplementary services (see TS 22.082 [5]).

NOTE:     The "served mobile subscriber" in TS 22.082 [5] corresponds to the "remote party" in this document. The "forwarded-to subscriber" in TS 22.082 [5] corresponds to the "initiating subscriber" in this document

## 10.1    Call Forwarding unconditional

Follow Me and the Call Forwarding Unconditional Supplementary Service are mutually exclusive. That is:

If Follow Me is registered with respect to a remote party, registration or activation of Call forwarding unconditional by the remote party is rejected. The remote party shall be informed of this incompatibility.

If Call forwarding unconditional is registered or active for the remote party, registration of Follow Me is rejected. The initiating subscriber shall be informed of this incompatibility.

# 11      Interaction with Operator Determined barring

Same as interaction between Operator Determined barring and call forwarding unconditional as defined in TS 22.041.

# 12      Interaction with Optimal Routeing

Same as interaction between Optimal Routeing and call forwarding unconditional as defined in TS 22.079.

# 13      Interaction with CAMEL

Same as interaction between CAMEL and call forwarding unconditional as defined in TS 22.078.

# 14      Interworking considerations

If a forwarded call due to invocation of Follow Me meets an interworking situation, then an interworking indication should be sent to the calling party. When interworking with non-PLMN or non-ISDN networks, tones and announcements will be required.

NOTE1:    The number of times a call has been forwarded once it has exited the PLMN or ISDN may not be limited.

NOTE2:    Tones and/or announcements should not be provided to the calling party if the information transfer capability is set to UDI.

# History

<table>
<tr><th colspan="3">Document history</th></tr>
<tr><td>V2.0.1</td><td>August 1999</td><td>Transferred to TSG SA at ETSI SMG#29.</td></tr>
<tr><td>V2.1.0</td><td>September 1999</td><td>Ch 4.1, 6,1: Warning added due to reduced security requirements.  (SMG10)</td></tr>
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