ETSI TS 122 097 V16.0.0 (2020-08)

TECHNICAL SPECIFICATION

Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
LTE;
Multiple Subscriber Profile (MSP) Phase 2;
Service description;
Stage 1
(3GPP TS 22.097 version 16.0.0 Release 16)

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

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

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1 Scope

The present document 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.

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]   3GPP TR 22.905: "Vocabulary for 3GPP Specifications".

[2]   3GPP TS 22.004: "General on supplementary services".

[3]   3GPP TS 22.030: " Man-machine Interface (MMI) of the mobile station (MS)".

[4]   3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".

[5]   3GPP TS 22.135: "Multicall".

[6]   3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN) ".

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 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 3GPP TS 21.905 [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 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 3GPP TS 22.004 [2].

5   Functional requirements

5.1   Handling of the MSP Service

This clause describes the normal procedures for the handling of the MSP service.

5.1.1   Provision

The MSP service shall be provided after prior arrangement with the service provider. If the MSP service is provisioned for the subscriber at the first time the subscriber shall also be provisioned with at least two profiles.

5.1.2   Withdrawal

Withdrawal of the MSP service shall be done by either the service provider at the subscriber's request or for administrative reasons. The MSP service shall be withdrawn when there is only one profile remaining.

5.1.3   Activation

The MSP service is activated by the service provider as a result of provision.

5.1.4   Deactivation

The MSP service is deactivated by the service provider as a result of withdrawal.

5.1.5 Invocation

The MSP service is invoked by mobile originated and mobile terminating calls.

5.2 Handling of the Profile

This subclause describes the normal procedures for selecting the registered profile for mobile originated calls, short messages and call independent supplementary service related activities. For mobile terminating activities the profile is selected automatically by association with the MSISDN addressed.

5.2.1 Provision

The provision of profiles (up to a maximum of four) is provided by prior arrangement with the service provider. The subscriber may select any provisioned profile on a per call basis or register one of them. The subscriber will nominate one of their provisioned profiles as the default profile to be used when roaming to non-supporting networks. The subscriber may subsequently nominate an alternative default (i.e. roaming) profile, nevertheless the default profile can only be changed by the service provider.

5.2.2 Withdrawal

The Service Provider shall be able to withdraw profiles. The registered profile shall never be withdrawn, and consequently if the registered profile needs to be withdrawn the service provider shall first register the subscriber onto another profile.

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 3GPP TS 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 3GPP 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 3GPP TS 22.030 [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 3GPP TS 22.030 [3].

Any activity that is normally chargeable shall be identified against the selected profile.

5.3.2 Mobile Terminating Calls

The MSISDN addressed shall be used to determine the profile to be used. If there are any active supplementary services, which are applicable to the telecommunication service within the profile, then those supplementary services shall apply. For example, if the MS is busy in a call, further incoming call attempts shall be rejected or busy, even if they were on a different profile. This shall not prevent the normal operation of Call Waiting or Call Forwarding if appropriate.

The serving network shall indicate the profile towards the mobile station done by changing the alerting pattern.

Any activity that is normally chargeable shall be identified against the profile used for the mobile terminating activity.

5.3.3 Mobile Originating Call Independent Supplementary Service Activities

The activity shall be handled according to the registered profile.

5.3.4 Call Related Supplementary Service Activities

The handling of call related supplementary service activities is described in clause 7.

5.4 Exceptional procedures or unsuccessful outcome

5.4.1 Roaming into networks not supporting MSP

The default profile shall be used for outgoing traffic when the subscriber roams to a non-supporting network.

Incoming calls and short messages to all profiles will still be received.

5.4.2 Registration or Selection of a profile that is already registered

If there is an attempt to register a profile that is already the registered profile, the registration shall continue uninterrupted and the user shall not be informed.

If there is an attempt to select a profile that is already the registered profile, the selection shall continue uninterrupted and the user shall not be informed.

5.4.3 Registration or Selection of a non-provisioned profile

If there is an attempt to register a profile that has not been provisioned, the registration attempt shall fail and the user shall be informed. The registered profile shall remain unchanged.

If there is an attempt to select a profile that has not been provisioned the selection and associated call activity shall fail. The user shall be informed. The registered profile shall remain unchanged.

5.4.4 Registration or Selection attempts where MSP is not provisioned

If there is an attempt by a subscriber who does not have MSP provisioned to register a profile, the registration attempt shall fail and subscriber shall be informed.

If there is an attempt by a subscriber who does not have MSP provisioned to select a profile, the selection attempt shall fail and subscriber shall be informed.

6 Interaction with supplementary services

The profile used when a supplementary service is invoked will be subject to the charging principles and invocation requirements relevant to that supplementary service. The service provider may decide which profiles to charge for the service provision.

6.1 Line Identification Services

The profile in use for the incoming or outgoing call shall be used for the line identification services.

The Line Identification services will be provisioned on a per subscriber basis. If provisioned, the Line Identification services shall apply over all profiles.

6.2 Call Hold (HOLD)

The HOLD service can only be invoked if the profile for that active call has the HOLD service provisioned.

6.3 Call Waiting (CW)

CW for an incoming call can only be invoked if the profile for the ongoing call has the CW service provisioned and active although the incoming call may be on any profile.

6.4 Call Forwarding

Call Forwarding will be available to the subscriber per-profile. An operator specific control procedure may be used by the subscriber to control the call forwarding service.

The subscriber shall be able to forward calls to from one profile to another profile.

6.5 Multi Party Service (MPTY)

The MPTY service can only be invoked or an MPTY call controlled or extended if MPTY is provisioned for the served subscriber for each profile(s) associated with the MPTY call leg(s).

6.6 Closed User Group (CUG)

An MO call shall be treated according to the rules of the CUG service if CUG is provisioned for the selected profile. An MT call shall be treated according to the rules of the CUG service if CUG is provisioned for the profile defined by the called MSISDN.

6.7 Advice of Charge (AoC)

If subscribed to, AoCI or AoCC shall be applicable to the selected profile. Each profile shall have a separate meter (ACM) and a separate upper limit (ACMmax) when AoCC is subscribed. There shall be an overall meter for all profiles, with its own upper limit for AoCC if subscribed. For normal operation both the individual meter applicable to the selected profile and the overall meter shall be incremented.

When roaming to a non-supporting network, only the overall meter shall be incremented.

6.8   Call Barring

Call Barring will be available to the subscriber per-profile. An operator specific control procedure may be used by the subscriber to control the call barring service.

6.9   Explicit Call Transfer (ECT)

ECT can only be invoked if the service is provisioned for each profile which governs a call leg to be joined by the ECT service.

6.10   CCBS

The CCBS service shall be provisioned per profile. The option not to be a target of CCBS requests shall also apply per profile. When the subscriber is informed of a CCBS recall, the profile in use when the CCBS request was activated shall be used for the CCBS call. If the subscriber activates a CCBS call request on a profile that is not the default profile and subsequently moves to a network not supporting MSP Phase 2, then if the CCBS recall matures, the corresponding CCBS request shall be suspended until the subscriber next registers on a network supporting MSP Phase 2.

The limit to the number of outstanding CCBS requests that can be activated by the subscriber shall apply regardless of the number of profiles.

The limit to the number of outstanding CCBS requests that can be activated against the subscriber shall apply regardless of the number of profiles.

6.11   eMLPP

eMLPP shall be provisioned per subscriber.

6.12   Multicall

The multicall supplementary service shall be provisioned on a per subscriber basis. If provisioned, Nbr_SN, Nbr_SB, and Nbr_user shall apply over all profiles. (See 3GPP TS 22.135 [5] "3.1 Definitions" for detailed information)

7   Interaction with other services

7.1   The Multi-Numbering Scheme

Each profile may employ the single-numbering scheme or the multi-numbering scheme. The multi-numbering scheme is described in 3GPP TS 22.001 [6]. For each of the profile(s) defined above, it shall be possible for the subscriber to be allocated different MSISDNs for different basic services.

7.2   The Short Message Service

The Short Message Service is described in 3GPP TS 23.040 [4]. It will not be possible to indicate the profile used for the MT case. All MO short messages will be sent from the default profile.

MO short messages can be sent from (and charged to) the registered profile or an explicitly selected profile.

Whilst roaming in a network not supporting MSP Phase 2, all MO short messages will be sent from and charged to the default profile.

7.3 Interactions with CAMEL

CAMEL based services can be provisioned either per subscriber or per profile depending on the operator specific implementation in the CSE.

For call independent supplementary service procedures for CAMEL based services, information to identify the registered profile shall be passed to the CAMEL server.

7.4 Interactions with OR

No interaction

NOTE: It is a HPLMN option to allow or deny OR of forwarded calls where the HPLMN recognises that the IPLMN does not support MSP. This is due to the requirement to include an indication of the profile ID in call detail records which may be raised in the IPLMN and sent to the HPLMN.

7.5 Operator Determined Barring

ODB shall apply either per subscriber or per profile.

7.6 Roaming restrictions

These will apply on a per subscriber basis.

8 Cross-Phase Compatibility

The default profile will be sent to the visited network and can be addressed by non-supporting networks.

Mobile terminated calls to a non-supporting MS shall still be accepted but the indication of profile may not be supported.

Annex A (informative): Change history

Change history											
TSG SA#	**SA Doc.**	**SA1 Doc**	**Spec**	**CR**	**Rev**	**Rel**	**Cat**	**Subject/Comment**	**Old**	**New**	**Work Item**
Jun 1999			GSM 02.97					Transferred to 3GPP SA1	7.1.0		
SA#04			22.097			R99		Transferred to 3GPP SA1		3.0.0	
SP-05	SP-99479	S1-99640	22.097	001		R99	D	Editorial changes for alignment	3.0.0	3.1.0	
SP-05	SP-99451	S1-99842	22.097	002		R99	B	MSP Phase2	3.0.0	3.1.0	
SP-09	SP-000375	S1-000584	22.097	003		R99	F	Interaction with Multicall	3.1.0	3.2.0	
SP-11	SP-010065	S1-010258	22.097			Rel-4		Transferred to 3GPP Release 4	3.2.0	4.0.0	
SP-15	SP-020045	S1-020457	22.097	004	-	Rel-4	F	Editorial CR to correct terms and references	4.0.0	4.1.0	CORRECT
SP-16	SP-020267	S1-021043	22.097			Rel-5		Updated from Rel-4 to Rel5	4.1.0	5.0.0	
SP-26	SP-040744	S1-040997	22.097			Rel-6		Updated from Rel-5 to Rel-6	5.0.0	6.0.0	
SP-36			22.097			Rel-7		Updated from Rel-6 to Rel-7	6.0.0	7.0.0	
SP-42	-	-				Rel-8		Updated from Rel-7 to Rel-8	7.0.0	8.0.0	
SP-46	-	-	-	-	-	-	-	Updated to Rel-9 by MCC	8.0.0	9.0.0	
2011-03	-	-	-	-	-	-	-	Update to Rel-10 version (MCC)	9.0.0	10.0.0	
2012-09	-	-	-	-	-	-	-	Updated to Rel-11 by MCC	10.0.0	11.0.0	
2014-10	-	-	-	-	-	-	-	Update to Rel-12 version (MCC)	11.0.0	12.0.0	
2015-12	-	-	-	-	-	-	-	Updated to Rel-13 by MCC	12.0.0	13.0.0	
2017-03	-	-	-	-	-	-	-	Updated to Rel-14 by MCC	13.0.0	14.0.0	
2018-06	-	-	-	-	-	-	-	Updated to Rel-15 by MCC	14.0.0	15.0.0	
SA#88e	-	-	-	-	-	-	-	Updated to Rel-16 by MCC	15.0.0	16.0.0	

History

Document history		
V16.0.0	August 2020	Publication