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TECHNICAL SPECIFICATION

Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
Advice of Charge (AoC) supplementary services;
Stage 1
(3GPP TS 22.086 version 18.0.1 Release 18)

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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (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 the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x   the first digit:

1   presented to TSG for information;

2   presented to TSG for approval;

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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 document.

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 supplementary services are given in TS 22.004 [2].

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 22.024 [3].

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. 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 TS 21.905: "Vocabulary for 3GPP Specifications".

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

[3]   3GPP TS 22.024: "Description of Charge Advice Information (CAI).

[4]   3GPP TS 22.135: "Multicall stage 1".

[5]   3GPP TS 23.172: "Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification; Stage 2".

0.2   Abbreviations

Abbreviations used in the present document are listed in TS 21.905 [1].

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 TS 22.024 [3].

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).

1.2.2 Applicability to telecommunication services

The applicability of this supplementary service is defined in TS 22.004 [2].

1.3 Normal procedures with successful outcome

1.3.1 Provision

This supplementary service will be provided after prearrangement with the service provider.

1.3.2 Withdrawal

This service will be withdrawn at the subscriber's request or for administrative reasons.

1.3.5 Activation

This supplementary service will be activated by the service provider as a result of provision.

1.3.6 Deactivation

This supplementary service will be deactivated by the service provider as a result of withdrawal.

1.3.7 Invocation

This supplementary service will be automatically invoked by the network for the use of all applicable telecommunications services.

1.3.8 Normal operation with successful outcome

For every applicable usage of telecommunications services, the served MS will be provided with charging information.

The MS shall send to the network a confirmation of receipt of this information.

1.4 Exceptional procedures or unsuccessful outcome

1.4.1 Operation in a PLMN that is unable to support AoC

Since AoC (Information) is used only to provide an indication to the user, even if the network is unable to support AoC, calls may still be set up as normal, only the AoC indication will not be given. For this reason charges incurred on a network that is unable to support AoC will not be shown on the AoC indicator.

1.4.2 AoC when MS is switched off or out of coverage

No AoC information is given by the network.

1.4.3 Operation with a MS unable to support AoC

Since AoC (Information) is used only to provide an indication to the user, even if the ME is unable to support AoC, calls may still be set up as normal, only no AoC information will be provided to the user.

1.5 Alternate procedures

None identified.

1.6 Interactions with other supplementary services

1.6.1 SCUDIF

When the MS requires a bearer change, e.g. from Audio to Video or vice versa, the SCUDIF Mode modify procedure is performed as described in TS 23.172 [5]. Depending on the operator's policy, the success of the procedure may trigger a Facility message to convey new values for the CAI parameters. On receipt of new CAI values triggered by a service change based on the SCUDIF supplementary service, the MS shall reset CDUR and continue incrementing the CCM using the new CAI parameters. The MS shall add initial units to the CCM and measure units on a time basis using the new values.

1.6.2 Other supplementary services

No interaction.

Invocation of this supplementary service does not prevent use of any other Supplementary Service.

8.2 Multicall

See TS 22.135 [4].

1.7 Interworking considerations

When interworking with PSPDN, a volume related charge may be incurred, as described in TS 22.024 [3].

2   Advice Of Charge (Charging) (AoCC)

2.1   Definition

This service provides the means by which the MS may indicate the charge that will be made for the use of telecommunication services. It is intended for applications where the user is generally not the subscriber but is known to the subscriber, and where the user pays the subscriber, rather than the Service Provider.

The charge information is based as closely as possible on the charge that will be levied on the subscriber's bill in the Home PLMN. Where this charge cannot be stored in the MS, use of the telecommunications service shall be prevented as described below.

2.2   Description

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 TS 22.024 [3].

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).

2.2.2   Applicability to telecommunication services

The applicability of this supplementary service is defined in TS 22.004 [2].

2.3   Normal procedures with successful outcome

2.3.1   Provision

This supplementary service will be provided after pre-arrangement with the service provider.

2.3.2   Withdrawal

This service will be withdrawn at the subscriber's request or for administrative reasons.

2.3.5   Activation

This supplementary service will be activated by the service provider as a result of provision.

2.3.6 Deactivation

This supplementary service will be deactivated by the service provider as a result of withdrawal.

2.3.7 Invocation

This supplementary service will be automatically invoked by the network for the use of all applicable telecommunications services.

2.3.8 Normal operation with successful outcome

For every applicable usage of telecommunication services, the served MS will be provided with charging information.

The MS shall send to the network a confirmation of receipt of this information.

2.4 Exceptional procedures or unsuccessful outcome

2.4.1 Operation in a PLMN that is unable to support the Charging Service

If the local PLMN is unable to support this service, all chargeable calls shall be prevented. This is determined either by the use of an HLR list of VPLMNs which support the service, or by the HLR interrogating the VPLMN. Prevention is achieved by refusing a Location Update Request to the VPLMN that does not support the service.

2.4.2 Charging when the MS is switched off or out of coverage

No AoC information is given by the network.

2.4.3 Operation with a MS unable to support AoC

If the MS does not support AoC, no advice of charge information will be provided to the user. Any calls attempted to be set up will be quickly terminated, once the network has failed to receive a positive acknowledgement of receipt of the Charge Advice Information, within a suitable time.

2.5 Alternate procedures

None identified.

2.6 Interactions with other supplementary services

2.6.1 SCUDIF

When the MS requires a bearer change, e.g. from Audio to Video or vice versa, the SCUDIF Mode modify procedure is performed as described in TS 23.172 [5]. Depending on the operator's policy, the success of the procedure may trigger a Facility message to convey new values for the CAI parameters. On receipt of new CAI values triggered by a service change based on the SCUDIF supplementary service, the MS shall reset CDUR and continue incrementing the CCM using the new CAI parameters. The MS shall add initial units to the CCM and measure units on a time basis using the new values.

2.6.2 Other supplementary services

No interaction.

Invocation of this supplementary service does not prevent use of any other Supplementary Service, but in certain cases no charging information will be indicated. In this case, the subscriber should not subscribe to those Supplementary Services which need to be charged for, thereby inhibiting their use by another user.

2.7   Interworking considerations

When interworking with PSPDN, a volume related charge may be incurred, as described in TS 22.024 [3].

Annex A (informative):
Change history

Change history											
TSG SA#	**SA Doc.**	**SA1 Doc**	**Spec**	**CR**	**Rev**	**Rel**	**Cat**	**Subject/Comment**	**Old**	**New**	**WI**
Jun 1999			GSM 02.86					Transferred to 3GPP SA1	7.0.0		
SA#04			22.085			R99		Transferred to 3GPP SA1		3.0.0	
SP-05	SP-99479	S1-99633	22.086	001		R99	D	Editorial changes for alignment	3.0.0	3.1.0	Editorial changes
SP-11	SP-010065	S1-010258	22.085			Rel-4		Transferred to 3GPP Release 4	3.1.0	4.0.0	
SP-16	SP-020267	S1-021043	22.085			Rel-5		Updated from Rel-4 to Rel5	4.0.0	5.0.0	
SP-26	SP-040744	S1-040997	22.085			Rel-6		Updated from Rel-5 to Rel-6	5.0.0	6.0.0	
SP-28	SP-050212	S1-050399	22.086	004	-	Rel-6	A	AoC for SCUDIF	6.0.0	6.1.0	TEI
SP-36			22.086			Rel-7		Updated from Rel-6 to Rel-7	6.1.0	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	
2022-03	-	-	-	-	-	-	-	Updated to Rel-17 by MCC	16.0.0	17.0.0	
2024-03	-	-	-	-	-	-	-	Updated to Rel-18 by MCC (and issue with v.18.0.0 upload)	17.0.0	18.0.1	

History

Document history		
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