Technical Specification Group Services and System Aspects **TSGS#27(05) 0226**
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TSG-SA WG1 #28 **S1-050467**
Beijing, China, 04 April - 08 April 2005 **Agenda Item:**

Presentation of Specification to TSG

Presentation to:	**TSG SA Meeting #28**
Document for presentation:	**TS 22.279, Version 1.0.1**
Presented for:	**Information & Approval**

Abstract of document:

TS 22.279 specifies service requirements for Combining CS and IMS services (CSICS), using a CS speech or CS multimedia call in association with an IMS session. The IMS session may consist of one or more IMS services.

Requirements for the following capabilities are included:

- Radio capability exchange.
- Terminal capability exchange.
- E.164 number exchange.
- Adding IMS session to an ongoing CS call.
- Adding a CS call to an ongoing IMS session.
- Supplementary services as they relate to CSICS.

It is intended that the capabilities defined for CSICS shall support interoperability between different operator networks, and roaming.

Changes since last presentation to TSG-SA:

This is the first time the TS is presented to TSG SA.

Outstanding Issues:

None

Contentious Issues:

None

3GPP TS 22.279 V1.0.1 (2005-03)

Technical Specification

3rd Generation Partnership Project; Technical Specification Group Services and Systems Aspects; Combined CS Calls and IMS Sessions; Stage 1 (Release 7)

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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;
  - 3 or greater 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 document.

1 Scope

The present document specifies service requirements for Combining CS and IMS services using a CS speech or CS multimedia call in association with an IMS session. The IMS session may consist of one or more IMS services.

Requirements for the following capabilities are included:

- Radio capability exchange.
- Terminal capability exchange.
- E.164 number exchange.
- Adding IMS session to an ongoing CS call.
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- Supplementary services as they relate to CSICS.

It is intended that the capabilities defined herein for CSICS shall support interoperability between different operator networks, and roaming.

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 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TR 22.979: "Feasibility study on Combined CS Calls and IMS Sessions".

[3] 3GPP TS 22.228: "Service requirements for the Internet Protocol (IP) multimedia core network subsystem"

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Combinational Service: A combinational service is created by adding one or more IP multimedia component(s) to a CS call (or vice versa). The CS and IMS components are established between the same participants.

Combinational call: this is the name given to the service in which a circuit switched speech teleservice is enriched by adding an IMS session where both services (session and CS call) are originated in one single UE and are terminated in another single UE.

Combinational Session: this is the name given to the service in which an ongoing IMS session between two users is enriched by adding a circuit switched based call. The individual service instances that form the combinational session are originated in a single UE and terminated in another single UE.

CSICS capable UE: UE that supports Combinational Service.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply. Additional applicable abbreviations can be found in TR 21.905 [1].

CSICS Circuit Switched IMS Combinational Service

4 Introduction to Combinational Service

Combinational services are applicable to both UTRAN and GERAN and enables the unidirectional or bi-directional exchange of PS data within the context of an IMS session

A specific subscription for combinational services is not necessary. However, both users A and B must have valid subscriptions for voice calls as well as for accessing the IMS.

The existing address context is reused when the combined service is established, which makes the combined service simple to invoke for the user.

5 General Requirements

In addition to the existing IMS requirements [3], the following general requirements apply for CSICS:

It shall be possible to establish a combinational call between two users within the same PLMN or within different PLMNs.

It shall be possible to establish a combinational call between two users camped on identical or different RATs.

It shall be possible to establish a combinational call when roaming, assuming the visited operator supports GPRS roaming.

The user (A or B party) shall only need to know one address in order to establish the combinational service.

It shall be possible to add an IMS session to a CS speech call, thereby creating a combinational call.

It shall be possible to add a CS speech call to an IMS session, thereby creating a combinational session.

It shall be possible to add an IMS session to a CS Multimedia call, thereby creating a combinational call.

It shall be possible to add a CS Multimedia call to an IMS session, thereby creating a combinational session.

The following two service modes will exist in regards to IMS registration depending on different UE implementations:

1) IMS pre established state: the CSICS capable UE performs the IMS registration at switch on.

2) IMS on demand state: the CSICS capable UE performs the IMS registration:

   - to start the communication, or

   - to add a IMS component to an existing CS call.

Interoperability between UEs that implement such different approaches shall be enabled.

During a CS call it shall be possible to request establishment of the IMS session whether the invited UE is IMS registered or not. The invited user shall be able to accept or reject the IMS registration request.

A combinational service shall enable both unidirectional and bi-directional exchange of PS data within the context of the IMS session.

6 User experience of combinational services

When one of the participating users terminates the CS call of a combinational service, the IMS session may continue.

When one of the participating users terminates the IMS component of a combinational service, the CS call may continue.

When the user A sends media to a user B, the user B can accept or reject the media (confirmation from the receiving party is needed) and vice versa.

It shall be possible to initiate a combinational service with user perceived simultaneous setup of IMS session and CS call. The CS and IMS components can be established sequentially and on the failure of any of the setups the user may be prompted to decide whether to continue. The terminating user shall be able to accept or reject each component independently.

7 Service Capability Detection

The Service Capability Detection may indicate to the user that the UEs have interoperable CSICS capability and that the access network(s) have the necessary network functionality to carry the combinational service.

The detection of the capabilities of the recipient terminal and the operators' networks shall ensure that information is updated in case of change of terminal.

An operator should have the mechanism to inhibit the capability check, or at least indicate to UE that it should not be performed.

Note: An operator may want to inhibit the capability check for CSICS in order to optimise the usage of radio resources.

It shall be possible for the (CSICS capable) UEs to have the information, prior to initiating a combinational service, regarding the type of capabilities, which are jointly supported by both UEs, without user intervention.

Due to the handover of the participating users to an access network which does not support combinational services, service capability detection may be needed during a CS call to notify the user of the service availability.

8 Impacts on IMS

8.1 Service behaviour during a Combinational Session

There is no standardised supplementary service defined for IMS session, however mechanisms exist (service capabilities) to emulate the behaviour of some of the most common supplementary services that exist in the circuit switched domain. The intention in this section is NOT to define "supplementary services" for IMS, just to explain the service behaviour during a combinational session for some specific cases as indicated below:

- **IMS session hold**: In an ongoing combinational service, the user may decide to suspend the IMS session. When this service is invoked the user should be able to decide whether the CS call of the combinational service should also be put on hold.

- **IMS session waiting**: In an ongoing combinational service, the user should be able to receive an alert of an incoming IMS session towards his UE. Subject to the capability of the UE, the user should be provided with the option to switch between the ongoing session and the new incoming one, or accept the new one in parallel with the existing one. The CS call of the combinational service should continue during the alerting of the subscriber and the user may decide to put the CS call on hold when switching to the new IMS session.

- **IMS session redirect:** It should be possible to add CS call to a redirected IMS session, subject to the capability of the recipient UE.
- **Identity presentation:** Existing Session Originator Identity Presentation rules apply to IMS components.
- **Identity restriction:** Existing Session Originator Identity Presentation Suppression rules apply to IMS components, even if this results in the called party being unable to establish a combinational session.

9 Impacts on Supplementary Services

9.1 Supplementary services during a combinational call

The following supplementary services should be provided. The expected behaviour of the IMS session forming the combinational call is also described:

CS call hold: In an ongoing combinational service, when the user decides to place the circuit switched call on hold, the user should be able to decide whether the IMS session of the combinational service should be suspended. If the IMS session is suspended it may be resumed once the circuit switched call is resumed

CS call waiting: In an ongoing combinational service, the user should be able to receive an indication and provided with the option to switch between one call and the new incoming call. The IMS session should continue during the alerting of the subscriber and the user may decide to put the IMS session on hold when switching to the new CS.

Calling line identity restriction: Existing CLIR rules apply, even if this results in the called party being unable to establish a combinational call.

Connected line identity restriction: Existing COLR rules apply, even if this results in the called party being unable to establish a combinational call.

Call forwarding unconditional, subscriber busy, no reply, not reachable: It should be possible to add IMS components to a CS call that has been forwarded, subject to the capability of recipient UE.

10 Impacts on Teleservices

10.1 Support of Teleservices during a combinational call

It should be possible to receive an SMS while engaged in a combinational call.

11 Charging aspects for Combinational Service

For combinational services, it must be possible to charge as follows:

It shall be possible to provide charging information on the CS call and IMS session for correlation purposes in order to allow off-line charging.

The charging information shall continue to be produced for any remaining multimedia components or the CS call when a multimedia component or the CS call drops during the communication between the two parties.

Note: The below requirement will presumably not be feasible within rel-7 timeframe, but may be considered in rel-8.

The home operator should be able to correlate charged media components and CS call in order to introduce dedicated charging schemes, e.g. discounts. This applies to on-line charging as well as off-line charging.

12 Provisioning

The combinational service should not place additional provisioning requirement on the operator.

Annex A (informative): Change history

Change history											
TSG SA#	SA Doc.	SA1 Doc	Spec	CR	Rev	Rel	Cat	Subject/Comment	Old	New	WI
2005-01	-	-	22.279	-	-	Rel-7	-	First Draft		0.0.0	CSICS
2005-04			22.279	-	-	Rel-7	-	Output from SA1 #28 Beijing	0.0.0	1.0.0	CSICS
SP-28	SP-050226	S1-050466	22.279	-	-	Rel-7	-	Revised Output from SA1 #28 Beijing	1.0.0	1.0.1	CSICS