# 3GPP TSG CN Plenary Meeting #21 17th - 19th September 2003. Frankfurt, Germany.

NP-030406

Source: TSG CN WG 1

Title: CR to R99 (with mirror CRs) on Work Item Multimedia towards

24.008

Agenda item: 7.12

**Document for: APPROVAL** 

#### **Introduction:**

This document contains 4 CRs, R99 to Work Item "Multimedia", that have been agreed by TSG CN WG1 in CN1#31 meeting, and are forwarded to TSG CN Plenary meeting #21 for approval.

TDoc#	Tdoc Title	Spec	CR#	Rev	CAT	C_Version	Rel
N1- 031317	Clarification of BC negotiation for multimedia calls	24.008	804	2	F	3.16.0	R99
N1- 031318	Clarification of BC negotiation for multimedia calls	24.008	805	2	A	4.11.0	Rel-4
N1- 031319	Clarification of BC negotiation for multimedia calls	24.008	806	2	А	5.8.0	Rel-5
N1- 031320	Clarification of BC negotiation for multimedia calls	24.008	807	2	А	6.1.0	Rel-6

# 3GPP TSG-CN1 Meeting #31 Sophia-Antipolis, France, 25 – 29 August 2003

**Tdoc N1-031317** 

(rev of Tdoc N1-031221)

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- 1) Fill out the above form. The symbols above marked \( \mathbb{X} \) contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

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# 5.3.6 Support of multimedia calls

#### 5.3.6.1 Service description

The GSM-UMTS circuit-switched multimedia call is based on the 3G-324M [26.111], which is a 3GPP-variant of the ITU-T H.324 recommendation. CS Multimedia telephony is a Bearer Service, which utilizes the Synchronous Transparent Data service (BS30) [3].

At the multimedia call setup the required call type, 3G-324M, is indicated, for the network to be able to invoke appropriate interworking functionality. In the peer end the H.324 information is used to invoke the terminal application. In addition to H.324 indication the terminal must select Information Transfer Capability (ITC) for the multimedia call. The 'correct' ITC depends on the peer end and the transporting networks; an all-ISDN call is a UDI/RDI call, and a call, which involves PSTN, is an analog '3.1 kHz audio' call.

For the case when the setup of a multimedia call is not successful, fallback to speech is specified.

#### 5.3.6.2 Call establishment

For both mobile originating and mobile terminating calls, the normal call establishment procedures apply, with the exceptions specified in the following clauses.

For further description of the function of MSC/IWF in the following clauses, see 3GPP TS 29.007 [38].

#### 5.3.6.2.1 Mobile originated multimedia call establishment

At call setup the required call type, 3G-324M, is indicated by the originating MS in the SETUP message, with the bearer capabilityIE parameter Other Rate Adaptation set to 'H.223 and H.245'. The support of a fallback to speech is requested by including also a bearer capabilityIE 2 with speech indication in the SETUP message. The network shall examine each mode described in the bearer capability IEs included in the SETUP message by performing compatibility checking as defined in Annex B. If as a result of this compatibility checking the network decides to reject the call, then the network shall initiate call clearing as specified in clause 5.4 with the following causes:

- a) #57 "bearer capability not authorized"
- b) #58 "bearer capability not presently available"
- c) #65 "bearer service not implemented"
- d) #70 "only restricted digital information bearer capability is available"

If the MS requested for a multimedia call with fallback to speech, and the network accepts the call, the network has the following options for the inclusion of *bearer capability IEs* in the CALL PROCEEDING message:

- if the network accepts the requested multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;
- if the network accepts a multimedia (only) call, a multimedia bearer capability IE shall be included;
- if the network accepts a speech (only) call, a speech bearer capability IE shall be included.

If the MS requested for a multimedia call only, and the network accepts the call, the network shall always include a single multimedia *bearer capability IE* in the CALL PROCEEDING message.

The originating user shall determine (possibly by pre-configuration of the terminal) whether a digital connection is required or if the call will be an analog modem call. If the call is expected to be digital the *bearer capability* IE parameter ITC is set to UDI/RDI. In an analog call the *bearer capability* IE parameter ITC is set to '3.1kHz audio ex PLMN'. Additionally required modem type is indicated (Other Modem Type = V.34).

#### 5.3.6.2.1.1 Fallback to speech

If the network, during setup of an analogue H.324-call, detects that the called end does not support a H.324 call, then network initiates the in-call modification procedure (see clause 5.3.4.3) towards the MS to modify the call mode to speech, if the MS had included a speech *bearer capability IE* in the SETUP message.

NOTE: fallback from digital (UDI) H.324-call to speech is not supported.

#### 5.3.6.2.2 Mobile terminating multimedia call

At call setup the required call type, 3G-324M, is indicated by the network in the SETUP message, with the *bearer capability IE* parameter Other Rate Adaptation set to 'H.223 and H.245'. ITC is either '3.1kHz audio ex PLMN' or 'UDI/RDI'. If the network supports fallback to speech, and if the subscriber has subscription to speech, a *bearer capability* IE 2 with speech indication is included in the SETUP message. *The bearer capabilityIE(s)* may (in the case of the single numbering scheme) be missing from the SETUP-message.

The MS shall perform the compatibility checking as defined in Annex B for the required mode(s) if indicated in the SETUP message. If as a result of compatibility checking the MS decides to reject the call, the MS shall initiate call clearing according to the procedures of clause 5.4 with one of the following causes:

- a) #57 "bearer capability not authorized"
- b) #58 "bearer capability not presently available"
- c) #65 "bearer service not implemented"
- d) #88 "incompatible destination"

The MS shall indicate the supported call type(s) in the CALL\_CONFIRMED-message, which is the acknowledgement to SETUP. If the network offered a multimedia call with fallback to speech, Tthe MS has the following options for the inclusion of bearer capability IEs in the CALL\_CONFIRMED message:

- if the MS/user accepts the offered multimedia call, and supports speech fallback both multimedia and speech bearer capability IEs shall be included;
- if the MS/user accepts the offered multimedia call, but does not support speech fallback, only a multimedia bearer capability IE shall be included;
- if the MS/user wishes a speech (only) call a speech bearer capability IE shall be is included.

If the network offered a multimedia call only, and the MS/user accepts the call, the MS shall always include a single multimedia *bearer capability IE* in the CALL CONFIRMED message.

If the SETUP contained no *bearer capability IE* the network shall perform compatibility checking of the CALL CONFIRMED message in the same way as the compatibility checking of the SETUP message in the mobile originating call case, described in clause 5.3.6.2.1.

If modem handshaking fails (in a modem call) the call mode will be modified to speech. The modem signalling is inband, so the call must have reached the active state, when these conclusions about the presence of modems can be done. The call modifications are realized through the in-call modification procedure, by which the network requests the MS to modify the call mode (see clause 5.3.4.3).

NOTE: Fallback from digital (UDI) H.324-call to speech is not supported.

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#### 9.3.2 Call confirmed

This message is sent by the called mobile station to confirm an incoming call request.

See table 9.56/3GPP TS 24.008.

Message type: CALL CONFIRMED

Significance: local

Direction: mobile station to network

Table 9.56/3GPP TS 24.008: CALL CONFIRMED message content

IEI	Information element	Type / Reference	Presence	Format	Length
	Call control	Protocol discriminator	M	V	1/2
	protocol discriminator	10.2			
	Transaction identifier	Transaction identifier	M	V	1/2
		10.3.2			
	Call confirmed	Message type	M	V	1
	message type	10.4			
D-	Repeat Indicator	Repeat Indicator	С	TV	1
		10.5.4.22			
04	Bearer capability 1	Bearer capability	0	TLV	3-16
		10.5.4.5			
04	Bearer capability 2	Bearer capability	0	TLV	3-16
		10.5.4.5			
08	Cause	Cause	0	TLV	4-32
		10.5.4.11			
15	CC Capabilities	Call Control Capabilities	0	TLV	4
		10.5.4.5a			
2D	Stream Identifier	Stream Identifier	0	TLV	3
		10.5.4.28			

#### 9.3.2.1 Repeat indicator

The *repeat indicator* information element shall be included if *bearer capability 1* information element and *bearer capability 2* IE are both included in the message.

#### 9.3.2.2 Bearer capability 1 and bearer capability 2

The bearer capability 1 information element shall be included if and only if at least one of the following six cases holds:

- the mobile station wishes another bearer capability than that given by the *bearer capability 1* information element of the incoming SETUP message;
- the bearer capability 1 information element is missing or not fully specified in the SETUP message;
- the *bearer capability 1* information element received in the SETUP message is accepted and the "radio channel requirement" of the mobile station is other than "full rate support only mobile station";
- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports CTM text telephony;
- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports other speech versions than GSM version 1; Except in the case of UMTS speech where default UMTS AMR speech version shall be assumed.
- the *bearer capability 1* information element received in the SETUP message included the "fixed network user rate" parameter.

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rules apply to both *bearer capability 1* IE and bearer capability 2 IE. Except those cases identified in 3GPP TS 27.001, if either *bearer capability* needs to be included, both shall be included.

Furthermore, both *bearer capability* information elements may be present if the mobile station wishes to reverse the order of occurrence of the *bearer capability* information elements (which is referred to in the *repeat indicator* information element, see clause 10.5.4.22) in cases identified in 3GPP TS 27.001.

If the mobile station wishes to indicate capability for an altenative call mode, which can be entered during the call through in-call modification, this is indicated by adding a *bearer capability information ele*ment (bearer capability) 2 element (see clause 5.3.6).

#### 9.3.2.3 Cause

This information element is included if the mobile station is compatible but the user is busy.

#### 9.3.2.4 CC Capabilities

This information element may be included by the mobile station to indicate its call control capabilities.

#### 9.3.2.5 Stream Identifier

This information element shall be included by the mobile station supporting multicall.

### 9.3.3 Call proceeding

This message is sent by the network to the calling mobile station to indicate that the requested call establishment information has been received, and no more call establishment information will be accepted.

See table 9.57/3GPP TS 24.008.

Message type: CALL PROCEEDING

Significance: local

Direction: network to mobile station

Table 9.57/3GPP TS 24.008: CALL PROCEEDING message content

IEI	Information element	Type / Reference	Presence	Format	Length
	Call control	Protocol discriminator	М	V	1/2
	protocol discriminator	10.2			
	Transaction identifier	Transaction identifier 10.3.2	М	V	1/2
	Call proceeding message type	Message type 10.4	М	V	1
D-	Repeat Indicator	Repeat Indicator 10.5.4.22	С	TV	1
04	Bearer capability 1	Bearer capability 10.5.4.5	0	TLV	3-16
04	Bearer capability 2	Bearer capability 10.5.4.5	0	TLV	3-16
1C	Facility	Facility 10.5.4.15	0	TLV	2-?
1E	Progress indicator	Progress indicator 10.5.4.21	0	TLV	4
8-	Priority granted	Priority Level 10.5.1.11	0	TV	1
2F	Network Call Control Capabilities	Network Call Control cap. 10.5.4.29	0	TLV	3

#### 9.3.3.1 Repeat indicator

This information element is included if and only if bearer capability 1 IE and bearer capability 2 IE are both contained in the message.

### 9.3.3.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element is included if the network has to specify at least one of the negotiable parameters described in 3GPP TS 27.001, or if the *bearer capability 1* information element received in the SETUP message included the "fixed network user rate" parameter.

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rule applies to both *bearer capability 1* IE and *bearer capability 2* IE. Except those cases identified in 3GPP TS 27.001, if either *bearer capability* needs to be included, both shall be included.

#### 9.3.3.3 Facility

This information element may be used for functional operation of supplementary services.

#### 9.3.3.4 Progress Indicator

This information element may be included:

- in order to pass information about the call in progress e.g. in the event of interworking; and/or
- to make the MS attach the user connection for speech.

#### 9.3.3.5 Priority granted

The priority field is provided by the network in the case that eMLPP is supported.

### 9.3.3.6 Network Call Control Capabilities

This information shall be included by the network to indicate its call control capabilities if the network supports multicall.and there are no other ongoing calls to the MS.

# 3GPP TSG-CN1 Meeting #31 Sophia-Antipolis, France, 25 – 29 August 2003

**Tdoc N1-031318** 

(rev of Tdoc N1-031222)

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# 5.3.6 Support of multimedia calls

#### 5.3.6.1 Service description

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At the multimedia call setup the required call type, 3G-324M, is indicated, for the network to be able to invoke appropriate interworking functionality. In the peer end the H.324 information is used to invoke the terminal application. In addition to H.324 indication the terminal must select Information Transfer Capability (ITC) for the multimedia call. The 'correct' ITC depends on the peer end and the transporting networks; an all-ISDN call is a UDI/RDI call, and a call, which involves PSTN, is an analog "3.1 kHz audio" call.

For the case when the setup of a multimedia call is not successful, fallback to speech is specified.

#### 5.3.6.2 Call establishment

For both mobile originating and mobile terminating calls, the normal call establishment procedures apply, with the exceptions specified in the following subclauses.

For further description of the function of MSC/IWF in the following clauses, see 3GPP TS 29.007 [38].

#### 5.3.6.2.1 Mobile originated multimedia call establishment

At call setup the required call type, 3G-324M, is indicated by the originating MS in the SETUP message, with the bearer capabilityIE parameter Other Rate Adaptation set to "H.223 and H.245". The support of a fallback to speech is requested by including also a bearer capabilityIE 2 with speech indication in the SETUP message. The network shall examine each mode described in the bearer capability IEs included in the SETUP message by performing compatibility checking as defined in annex B. If as a result of this compatibility checking the network decides to reject the call, then the network shall initiate call clearing as specified in subclause 5.4 with the following causes:

- a) #57 "bearer capability not authorized";
- b) #58 "bearer capability not presently available";
- c) #65 "bearer service not implemented";
- d) #70 "only restricted digital information bearer capability is available".

If the MS requested for a multimedia call with fallback to speech, and the network accepts the call, the network has the following options for the inclusion of *bearer capability IEs* in the CALL PROCEEDING message:

- if the network accepts the requested multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;
- if the network accepts a multimedia (only) call, a multimedia bearer capability IE shall be included;
- if the network accepts a speech (only) call, a speech bearer capability IE shall be included.

If the MS requested for a multimedia call only, and the network accepts the call, the network shall always include a single multimedia *bearer capability IE* in the CALL PROCEEDING message.

The originating user shall determine (possibly by pre-configuration of the terminal) whether a digital connection is required or if the call will be an analog modem call. If the call is expected to be digital the *bearer capability* IE parameter ITC is set to UDI/RDI. In an analog call the *bearer capability* IE parameter ITC is set to "3,1 kHz audio ex PLMN". Additionally required modem type is indicated (Other Modem Type = V.34).

#### 5.3.6.2.1.1 Fallback to speech

If the network, during setup of an analogue H.324-call, detects that the called end does not support a H.324 call, then network initiates the in-call modification procedure (see subclause 5.3.4.3) towards the MS to modify the call mode to speech, if the MS had included a speech *bearer capability IE* in the SETUP message.

NOTE: fallback from digital (UDI) H.324-call to speech is not supported.

#### 5.3.6.2.2 Mobile terminating multimedia call

At call setup the required call type, 3G-324M, is indicated by the network in the SETUP message, with the *bearer capability IE* parameter Other Rate Adaptation set to 'H.223 and H.245'. ITC is either '3,1 kHz audio ex PLMN' or 'UDI/RDI'. If the network supports fallback to speech, and if the subscriber has subscription to speech, a *bearer capability* IE 2 with speech indication is included in the SETUP message. *The bearer capabilityIE(s)* may (in the case of the single numbering scheme) be missing from the SETUP-message.

The MS shall perform the compatibility checking as defined in Annex B for the required mode(s) if indicated in the SETUP message. If as a result of compatibility checking the MS decides to reject the call, the MS shall initiate call clearing according to the procedures of subclause 5.4 with one of the following causes:

- a) #57 "bearer capability not authorized";
- b) #58 "bearer capability not presently available";
- c) #65 "bearer service not implemented";
- d) #88 "incompatible destination".

The MS shall indicate the supported call type(s) in the CALL\_CONFIRMED-message, which is the acknowledgement to SETUP. If the network offered a multimedia call with fallback to speech, Tthe MS has the following options for the inclusion of bearer capability IEs in the CALL\_CONFIRMED message:

- if the MS/user accepts the offered multimedia call, and supports speech fallback both multimedia and speech *bearer capability IEs* shall be included;
- if the MS/user accepts the offered multimedia call, but does not support speech fallback, only a multimedia *bearer capability IE* shall be included;
- if the MS/user wishes a speech (only) call a speech bearer capability IE shall be is included.

If the network offered a multimedia call only, and the MS/user accepts the call, the MS shall always include a single multimedia *bearer capability IE* in the CALL CONFIRMED message.

If the SETUP contained no *bearer capability IE* the network shall perform compatibility checking of the CALL CONFIRMED message in the same way as the compatibility checking of the SETUP message in the mobile originating call case, described in subclause 5.3.6.2.1.

If modem handshaking fails (in a modem call) the call mode will be modified to speech. The modem signalling is inband, so the call must have reached the active state, when these conclusions about the presence of modems can be done. The call modifications are realized through the in-call modification procedure, by which the network requests the MS to modify the call mode (see subclause 5.3.4.3).

NOTE: Fallback from digital (UDI) H.324-call to speech is not supported.

# 3GPP TSG-CN1 Meeting #31 Sophia-Antipolis, France, 25 – 29 August 2003

Tdoc N1-031319

(rev of Tdoc N1-031223)

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		Use <u>one</u>	of the following categorie	s:		Use <u>one</u> of	the following releases:
		<b>F</b> (c	correction)			2	(GSM Phase 2)
		<b>A</b> (0	corresponds to a correction	n in a	n earlier release	) R96	(Release 1996)
		<b>B</b> (8	addition of feature),			R97	(Release 1997)
		<b>C</b> (t	functional modification of	featur	e)	R98	(Release 1998)
		<b>D</b> (6	editorial modification)			R99	(Release 1999)

Reason for change: # 1) The description of the different network options for returning 1 or 2 BC IEs in the mobile originated case is missing in subclause 5.3.6.2.1.

Rel-4

Rel-5

Rel-6

(Release 4)

(Release 5)

(Release 6)

- 2) In the mobile terminating case, subclause 5.3.6.2.2, a statement is missing that the options for the MS to to return 1 or 2 BC IEs only apply, if the network offered a multimedia call with fallback to speech.
- 3) With the introduction of SCUDIF in Rel-5, it was allowed for the MS to accept an analogue multimedia call with fallback to speech or a UDI/RDI multimedia call with fallback and service change by returning a CALL CONFIRMED message without BC IE (see subclause 5.3.6.2.2).

This is not consistent with the fact that

Detailed explanations of the above categories can

be found in 3GPP TR 21.900.

- a BC IE for a multimedia call always has to contain the parameter 'fixed network user rate' (octet 6d), and therefore,
- according to 9.3.2.2, the BC IE has to be included in the CALL CONFIRMED message.

Besides, if the rules for analogue multimedia calls with fallback to speech are changed between Rel-4 and Rel-5, there are possible interworking problems: when an MS, implemented according to TS 24.008, Rel-5, clause 5, tries to accept an analogue multimedia call with fallback to speech by returning a CALL CONFIRMED message without BC IE, it may be rejected by an MSC, implemented according to TS 24.008, Rel-4, or implemented according to Rel-5, clause 9.3.2.2.

#### Summary of change: %

1+2) The missing descriptions are added, and for both mobile originated and mobile terminating multimedia calls without fallback to speech the BC negotiation is clarified.

3) The option to accept a mobile terminated multimedia call with 2 BC IEs in the SETUP message by returning a CALL CONFIRMED message without BC IE is deleted.

# Consequences if not approved:

★ Possible interworking problems:

- 1) If the network does not support a multimedia call with fallback to speech then, according to TS 29.007, it may reply with a CALL PROCEEDING message including a multimedia bearer capability only. If the MS is not prepared for this reply, since this behaviour is not described in TS 24.008 and TS 27.001, the call will fail.
- 2) If the MS sends a CALL CONFIRMED containing 2 BC IEs, when the SETUP message included only a multimedia BC, the call will fail, since according to TS 27.001, "if the set-up message requests a "single service", the MS must not answer in the call confirmed message requesting a "dual service ...".
- 3) Inconsistency between clause 5 and clause 9 of TS 24.008. Possible interworking problems between Rel-5 and Rel-4 implementations for the analogue multimedia call with fallback to speech with the result that the call setup fails (see 'reason for change').

Clauses affected:	<b>%</b> 5.3.6.2.1, 5.3.6.2.2, 9.3.2.2, 9.3.3.2
Other specs affected:	Y N  X Other core specifications Test specifications O&M Specifications
Other comments:	<b>x</b>

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- 1) Fill out the above form. The symbols above marked \( \mathbb{X} \) contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <a href="ftp://ftp.3gpp.org/specs/">ftp://ftp.3gpp.org/specs/</a> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* FIRST MODIFIED SECTION \*\*\*\*\*\*\*\*\*\*\*\*\*\*

# 5.3.6 Support of multimedia calls

#### 5.3.6.1 Service description

The GSM-UMTS circuit-switched multimedia call is based on the 3G-324M [26.111], which is a 3GPP-variant of the ITU-T H.324 recommendation. CS Multimedia telephony is a Bearer Service, which utilizes the Synchronous Transparent Data service (BS30) [3].

At the multimedia call setup the required call type, 3G-324M, is indicated, for the network to be able to invoke appropriate interworking functionality. In the peer end the H.324 information is used to invoke the terminal application. In addition to H.324 indication the terminal must select Information Transfer Capability (ITC) for the multimedia call. The 'correct' ITC depends on the peer end and the transporting networks; an all-ISDN call is a UDI/RDI call, and a call, which involves PSTN, is an analog "3.1 kHz audio" call.

For the case when the setup of a multimedia call is not successful, fallback to speech is specified.

Users may also request a service change between UDI/RDI multimedia and speech modes during a call (see 3GPP TS 23.172 [97]).

#### 5.3.6.2 Call establishment

For both mobile originating and mobile terminating calls, the normal call establishment procedures apply, with the exceptions specified in the following subclauses.

For further description of the function of MSC/IWF in the following clauses, see 3GPP TS 29.007 [38].

#### 5.3.6.2.1 Mobile originated multimedia call establishment

At call setup the required call type, 3G-324M, is indicated by the originating MS in the SETUP message, with the *bearer capability IE* parameter Other Rate Adaptation set to "H.223 and H.245".

For analogue multimedia, the support of a fallback to speech is requested by including two *bearer capability IEs*, multimedia first and speech as the second BC in the SETUP message. The MS shall indicate fallback to speech by these two BC IEs and the associated Repeat Indicator set to "support of fallback".

For UDI/RDI multimedia, the support of a fallback and service change is requested by including two *bearer capability IEs*, with the first BC as the preferred service in the SETUP message. The MS shall indicate service change and fallback by these two BC IEs and the associated Repeat Indicator set to "support of service change and fallback".

The bearer compatibility checking in the network is according to 5.3.4.2.1.

If the MS requested for an analogue multimedia call with fallback to speech, or for a UDI/RDI multimedia call with fallback and service change, and the network accepts the call, the network has the following options for the inclusion of bearer capability IEs in the CALL PROCEEDING message:

- if the network accepts the requested analogue multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;
- if the network accepts the requested UDI/RDI multimedia call and supports fallback and service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the *bearer capability* IEs determines the preferred service, and the network may reverse the order of these IEs (see 3GPP TS 23.172 [97], subclause 4.2.1);
- if the network accepts a multimedia (only) call, a multimedia bearer capability IE shall be included;
- if the network accepts a speech (only) call, a speech bearer capability IE shall be included;
- for a UDI/RDI multimedia call, if the network accepts the requested speech call and supports service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the *bearer capability IEs* determines the preferred service, and the network may reverse the order of these IEs (see 3GPP TS 23.172 [97], subclause 4.2.1);

- if the network received a UDI/RDI multimedia *bearer capability* IE with FNUR equal to 32kbit/s and a speech *bearer capability* IE in the SETUP message, the network shall not release the call, but shall reply with one *bearer capability* IE only, as specified in 3GPP TS 23.172 [97].

NOTE: Service change and fallback for UDI/RDI multimedia calls is not supported with Fixed Network User Rate set to 32 kbit/s (see 3GPP TS 23.172 [97]).

If the MS requested for a multimedia call only, and the network accepts the call, the network shall always include a single multimedia *bearer capability IE* in the CALL PROCEEDING message.

The originating user shall determine (possibly by pre-configuration of the terminal) whether a digital connection is required or if the call will be an analog modem call. If the call is expected to be digital the multimedia *bearer capability* IE parameter ITC is set to UDI/RDI. In an analog call the multimedia *bearer capability* IE parameter ITC is set to "3,1 kHz audio ex PLMN". Additionally required modem type is indicated (Other Modem Type = V.34).

#### 5.3.6.2.1.1 Fallback

If the network, during the setup of an H.324-call, detects that the transit network or the called end does not support an H.324 call (*e.g.* because of a failure in the modem handshaking in case of an analogue multimedia call), then the network initiates the in-call modification procedure (see subclause 5.3.4.3) towards the MS to modify the call mode to speech, if the MS had included a speech *bearer capability IE* in the SETUP message.

In case of a UDI/RDI multimedia call with service change and fallback, if the network detects that the called end does not support speech, then it initiates an in-call modification procedure towards the MS to modify the call mode to multimedia, if the first *bearer capability IE* was for a speech call.

#### 5.3.6.2.2 Mobile terminating multimedia call

At call setup the required call type, 3G-324M, is indicated by the network in the SETUP message, with the *bearer capability IE* parameter. Other Rate Adaptation set to 'H.223 and H.245'. ITC is either '3,1 kHz audio ex PLMN' or 'UDI/RDI'.

For analogue multimedia, if the network supports fallback to speech and the subscriber has subscription to speech, two *bearer capability* IEs, multimedia first and speech as the second BC are included in the SETUP message. The network shall indicate fallback to speech by these two BC IEs and the associated Repeat Indicator set to "support of fallback".

For UDI/RDI multimedia, if the network supports fallback and service change, and the subscriber has subscription to speech, two *bearer capability IEs*, with the first BC as the preferred service are included in the SETUP message. The network shall indicate service change and fallback by these two BC IEs and the associated Repeat Indicator set to "service change and fallback".

The bearer capability IE(s) may (in the case of the single numbering scheme) be missing from the SETUP message.

The bearer compatibility checking in the MS is according to 5.3.4.2.2.

The MS shall indicate the supported call type(s) in the CALL CONFIRMED message, which is the acknowledgement to SETUP. If the network offered an analogue multimedia call with fallback to speech, or a UDI/RDI multimedia call with fallback and service change, The MS has the following options for the inclusion of bearer capability IEs in the CALL CONFIRMED message:

- if the MS/user accepts the offered analogue multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;
- if the MS/user accepts the offered <u>UDI/RDI</u> multimedia call, and supports fallback (analogue) or and service change (<u>UDI/RDI</u>), none or both multimedia and speech *bearer capability IEs* shall be included. In the case of <u>UDI/RDI</u>, tThe order of the BC IEs determines the preferred service, and the MS/user may reverse the order of these IEs;
- if the MS/user accepts the offered multimedia call, but does not support fallback or service change, only a multimedia *bearer capability IE* shall be included;
- if the MS/user wishes a speech (only) call a speech bearer capability IE is included;

- <u>for a UDI/RDI multimedia call</u>, if the MS/user accepts the offered speech call in ease of a UDI/RDI multimedia call, and supports service change, none or both speech and multimedia bearer capability IEs shall be included. The order of the BC IEs determines the preferred service, and the MS/user may reverse the order of these IEs.

If the network offered a multimedia call only, and the MS/user accepts the call, the MS shall always include a single multimedia *bearer capability IE* in the CALL CONFIRMED message.

If the SETUP contained no *bearer capability IE* the network shall perform compatibility checking of the CALL CONFIRMED message in the same way as the compatibility checking of the SETUP message in the mobile originating call case, described in subclause 5.3.6.2.1.

#### 5.3.6.2.2.1 Fallback to speech

If modem handshaking fails (in a modem call), the call mode will be modified to speech if a speech *bearer capability IE* was included. The modem signalling is inband, so the call must have reached the active state, when these conclusions about the presence of modems can be done. The call modifications are realized through the in-call modification procedure, by which the network requests the MS to modify the call mode (see subclause 5.3.4.3).

NOTE: Fallback from digital (UDI) H.324-call to speech after call setup is not a valid case at the terminating side.

### 

### 9.3.2 Call confirmed

This message is sent by the called mobile station to confirm an incoming call request.

See table 9.56/3GPP TS 24.008.

Message type: CALL CONFIRMED

Significance: local

Direction: mobile station to network

Table 9.56/3GPP TS 24.008: CALL CONFIRMED message content

IEI	Information element	Type/Reference	Presence	Format	Length
	Call control	Protocol discriminator	M	V	1/2
	protocol discriminator	10.2			
	Transaction identifier	Transaction identifier	M	V	1/2
		10.3.2			
	Call confirmed	Message type	M	V	1
	message type	10.4			
D-	Repeat Indicator	Repeat Indicator 10.5.4.22	С	TV	1
04	Bearer capability 1	Bearer capability 10.5.4.5	0	TLV	3-16
04	Bearer capability 2	Bearer capability 10.5.4.5	0	TLV	3-16
08	Cause	Cause 10.5.4.11	0	TLV	4-32
15	CC Capabilities	Call Control Capabilities 10.5.4.5a	0	TLV	4
2D	Stream Identifier	Stream Identifier 10.5.4.28	0	TLV	3
40	Supported Codecs	Supported Codec List 10.5.4.32	0	TLV	5-n

#### 9.3.2.1 Repeat indicator

The *repeat indicator* information element shall be included if *bearer capability 1* information element and *bearer capability 2* IE are both included in the message.

#### 9.3.2.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element shall be included if and only if at least one of the following six cases holds:

- the mobile station wishes another bearer capability than that given by the *bearer capability 1* information element of the incoming SETUP message;
- the bearer capability 1 information element is missing or not fully specified in the SETUP message;
- the *bearer capability 1* information element received in the SETUP message is accepted and the "radio channel requirement" of the mobile station is other than "full rate support only mobile station";
- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports CTM text telephony;
- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports other GSM codecs than GSM speech version 1;-
- the *bearer capability 1* information element received in the SETUP message included the "fixed network user rate" parameter.

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rules apply to both *bearer capability 1* IE and bearer capability 2 IE. Except those cases identified in 3GPP TS 27.001, if either *bearer capability* needs to be included, both shall be included.

Furthermore, both *bearer capability* information elements may be present if the mobile station wishes to reverse the order of occurrence of the *bearer capability* information elements (which is referred to in the *repeat indicator* information element, see subclause 10.5.4.22) in cases identified in 3GPP TS 27.001 [36].

If the mobile station wishes to indicate capability for an alternative call mode, which can be entered during the call through in-call modification, this is indicated by adding a *bearer capability information ele*ment (bearer capability) 2 information element, (see subclause 5.3.6).

#### 9.3.2.3 Cause

This information element is included if the mobile station is compatible but the user is busy.

#### 9.3.2.4 CC Capabilities

This information element may be included by the mobile station to indicate its call control capabilities.

#### 9.3.2.5 Stream Identifier

This information element shall be included by the mobile station supporting multicall.

#### 9.3.2.6 Supported Codecs

This information element shall be included for speech calls, if the mobile station supports UMTS radio access.

# 9.3.3 Call proceeding

This message is sent by the network to the calling mobile station to indicate that the requested call establishment information has been received, and no more call establishment information will be accepted.

See table 9.57/3GPP TS 24.008.

Message type: CALL PROCEEDING

Significance: local

Direction: network to mobile station

Table 9.57/3GPP TS 24.008: CALL PROCEEDING message content

IEI	Information element Type/Reference		Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	М	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	М	V	1/2
	Call proceeding message type	Message type 10.4	М	V	1
D-	Repeat Indicator	Repeat Indicator 10.5.4.22	С	TV	1
04	Bearer capability 1	Bearer capability 10.5.4.5	0	TLV	3-16
04	Bearer capability 2	Bearer capability 10.5.4.5	0	TLV	3-16
1C	Facility	Facility 10.5.4.15	0	TLV	2-?
1E	Progress indicator	Progress indicator 10.5.4.21	0	TLV	4
8-	Priority granted	Priority Level 10.5.1.11	0	TV	1
2F	Network Call Control Capabilities	Network Call Control cap. 10.5.4.29	0	TLV	3

# 9.3.3.1 Repeat indicator

This information element is included if and only if *bearer capability 1* IE and *bearer capability 2 IE* are both contained in the message.

#### 9.3.3.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element <u>shall beis</u> included if the network has to specify at least one of the negotiable parameters described in 3GPP TS 27.001, or if the *bearer capability 1* information element received in the SETUP message included the "fixed network user rate" parameter.

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rule applies to both *bearer capability 1* IE and *bearer capability 2* IE. Except those cases identified in 3GPP TS 27.001 [36], if either *bearer capability* needs to be included, both shall be included.

#### 9.3.3.3 Facility

This information element may be used for functional operation of supplementary services.

#### 9.3.3.4 Progress Indicator

This information element may be included:

- in order to pass information about the call in progress e.g. in the event of interworking; and/or
- to make the MS attach the user connection for speech.

#### 9.3.3.5 Priority granted

The priority field is provided by the network in the case that eMLPP is supported.

# 9.3.3.6 Network Call Control Capabilities

This information shall be included by the network to indicate its call control capabilities if the network supports multicall.and there are no other ongoing calls to the MS.

# 3GPP TSG-CN1 Meeting #31 Sophia-Antipolis, France, 25 – 29 August 2003

Tdoc N1-031320

(rev of Tdoc N1-031224)

Date: 第 28/08/2003

CHANGE REQUEST						
*	24.008 CR 807	≋rev	<b>2</b> *	Current version:	6.1.0	¥
For <u>HELP</u>	on using this form, see bottom	of this page or	look at tl	ne pop-up text over	the <b>%</b> syr	nbols.

Proposed change affects:		UICC apps <b></b>		ME X Radio Access Network			Co	Core Network X		
Title:	Ж	Clarifica	ation of BC negotiat	ion for m	nultimedia	calls				
Source:	æ	Siemen	s AG							

Category: Release: # Rel-6 Use one of the following categories:

Use one of the following releases: **F** (correction) 2 (GSM Phase 2) R96 A (corresponds to a correction in an earlier release) (Release 1996) **B** (addition of feature), R97 (Release 1997) **C** (functional modification of feature) R98 (Release 1998) **D** (editorial modification) (Release 1999) R99

Detailed explanations of the above categories can Rel-4 (Release 4) be found in 3GPP TR 21.900. Rel-5 (Release 5) Rel-6 (Release 6)

#### Reason for change: #

Work item code: 第

Multimedia

- 1) The description of the different network options for returning 1 or 2 BC IEs in the mobile originated case is missing in subclause 5.3.6.2.1.
- 2) In the mobile terminating case, subclause 5.3.6.2.2, a statement is missing that the options for the MS to to return 1 or 2 BC IEs only apply, if the network offered a multimedia call with fallback to speech.
- 3) With the introduction of SCUDIF in Rel-5, it was allowed for the MS to accept an analogue multimedia call with fallback to speech or a UDI/RDI multimedia call with fallback and service change by returning a CALL CONFIRMED message without BC IE (see subclause 5.3.6.2.2).

This is not consistent with the fact that

- a BC IE for a multimedia call always has to contain the parameter 'fixed network user rate' (octet 6d), and therefore,
- according to 9.3.2.2, the BC IE has to be included in the CALL CONFIRMED message.

Besides, if the rules for analogue multimedia calls with fallback to speech are changed between Rel-4 and Rel-5, there are possible interworking problems: when an MS, implemented according to TS 24.008, Rel-5, clause 5, tries to accept an analogue multimedia call with fallback to speech by returning a CALL CONFIRMED message without BC IE, it may be rejected by an MSC, implemented according to TS 24.008, Rel-4, or implemented according to Rel-5, clause 9.3.2.2.

#### Summary of change: %

1+2) The missing descriptions are added, and for both mobile originated and mobile terminating multimedia calls without fallback to speech the BC negotiation is clarified.

3) The option to accept a mobile terminated multimedia call with 2 BC IEs in the SETUP message by returning a CALL CONFIRMED message without BC IE is deleted.

# Consequences if not approved:

★ Possible interworking problems:

- 1) If the network does not support a multimedia call with fallback to speech then, according to TS 29.007, it may reply with a CALL PROCEEDING message including a multimedia bearer capability only. If the MS is not prepared for this reply, since this behaviour is not described in TS 24.008 and TS 27.001, the call will fail.
- 2) If the MS sends a CALL CONFIRMED containing 2 BC IEs, when the SETUP message included only a multimedia BC, the call will fail, since according to TS 27.001, "if the set-up message requests a "single service", the MS must not answer in the call confirmed message requesting a "dual service ...".
- 3) Inconsistency between clause 5 and clause 9 of TS 24.008. Possible interworking problems between Rel-5 and Rel-4 implementations for the analogue multimedia call with fallback to speech with the result that the call setup fails (see 'reason for change').

Clauses affected:	<b>%</b> 5.3.6.2.1, 5.3.6.2.2, 9.3.2.2, 9.3.3.2
Other specs affected:	Y N  X Other core specifications Test specifications O&M Specifications
Other comments:	<b>x</b>

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- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

# 

# 5.3.6 Support of multimedia calls

#### 5.3.6.1 Service description

The GSM-UMTS circuit-switched multimedia call is based on the 3G-324M [26.111], which is a 3GPP-variant of the ITU-T H.324 recommendation. CS Multimedia telephony is a Bearer Service, which utilizes the Synchronous Transparent Data service (BS30) [3].

At the multimedia call setup the required call type, 3G-324M, is indicated, for the network to be able to invoke appropriate interworking functionality. In the peer end the H.324 information is used to invoke the terminal application. In addition to H.324 indication the terminal must select Information Transfer Capability (ITC) for the multimedia call. The 'correct' ITC depends on the peer end and the transporting networks; an all-ISDN call is a UDI/RDI call, and a call, which involves PSTN, is an analog "3.1 kHz audio" call.

For the case when the setup of a multimedia call is not successful, fallback to speech is specified.

Users may also request a service change between UDI/RDI multimedia and speech modes during a call (see 3GPP TS 23.172 [97]).

#### 5.3.6.2 Call establishment

For both mobile originating and mobile terminating calls, the normal call establishment procedures apply, with the exceptions specified in the following subclauses.

For further description of the function of MSC/IWF in the following clauses, see 3GPP TS 29.007 [38].

#### 5.3.6.2.1 Mobile originated multimedia call establishment

At call setup the required call type, 3G-324M, is indicated by the originating MS in the SETUP message, with the *bearer capability IE* parameter Other Rate Adaptation set to "H.223 and H.245".

For analogue multimedia, the support of a fallback to speech is requested by including two *bearer capability IEs*, multimedia first and speech as the second BC in the SETUP message. The MS shall indicate fallback to speech by these two BC IEs and the associated Repeat Indicator set to "support of fallback".

For UDI/RDI multimedia, the support of a fallback and service change is requested by including two *bearer capability IEs*, with the first BC as the preferred service in the SETUP message. The MS shall indicate service change and fallback by these two BC IEs and the associated Repeat Indicator set to "support of service change and fallback".

The bearer compatibility checking in the network is according to 5.3.4.2.1.

If the MS requested for an analogue multimedia call with fallback to speech, or for a UDI/RDI multimedia call with fallback and service change, and the network accepts the call, the network has the following options for the inclusion of bearer capability IEs in the CALL PROCEEDING message:

- if the network accepts the requested analogue multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;
- if the network accepts the requested UDI/RDI multimedia call and supports fallback and service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the *bearer capability* IEs determines the preferred service, and the network may reverse the order of these IEs (see 3GPP TS 23.172 [97], subclause 4.2.1);
- if the network accepts a multimedia (only) call, a multimedia bearer capability IE shall be included;
- if the network accepts a speech (only) call, a speech bearer capability IE shall be included;
- for a UDI/RDI multimedia call, if the network accepts the requested speech call and supports service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the *bearer capability* IEs determines the preferred service, and the network may reverse the order of these IEs (see 3GPP TS 23.172 [97], subclause 4.2.1);

- if the network received a UDI/RDI multimedia *bearer capability* IE with FNUR equal to 32kbit/s and a speech *bearer capability* IE in the SETUP message, the network shall not release the call, but shall reply with one *bearer capability* IE only, as specified in 3GPP TS 23.172 [97].

NOTE: Service change and fallback for UDI/RDI multimedia calls is not supported with Fixed Network User Rate set to 32 kbit/s (see 3GPP TS 23.172 [97]).

If the MS requested for a multimedia call only, and the network accepts the call, the network shall always include a single multimedia *bearer capability IE* in the CALL PROCEEDING message.

The originating user shall determine (possibly by pre-configuration of the terminal) whether a digital connection is required or if the call will be an analog modem call. If the call is expected to be digital the multimedia *bearer capability* IE parameter ITC is set to UDI/RDI. In an analog call the multimedia *bearer capability* IE parameter ITC is set to "3,1 kHz audio ex PLMN". Additionally required modem type is indicated (Other Modem Type = V.34).

#### 5.3.6.2.1.1 Fallback

If the network, during the setup of an H.324-call, detects that the transit network or the called end does not support an H.324 call (*e.g.* because of a failure in the modem handshaking in case of an analogue multimedia call), then the network initiates the in-call modification procedure (see subclause 5.3.4.3) towards the MS to modify the call mode to speech, if the MS had included a speech *bearer capability IE* in the SETUP message.

In case of a UDI/RDI multimedia call with service change and fallback, if the network detects that the called end does not support speech, then it initiates an in-call modification procedure towards the MS to modify the call mode to multimedia, if the first *bearer capability IE* was for a speech call.

#### 5.3.6.2.2 Mobile terminating multimedia call

At call setup the required call type, 3G-324M, is indicated by the network in the SETUP message, with the *bearer capability IE* parameter. Other Rate Adaptation set to 'H.223 and H.245'. ITC is either '3,1 kHz audio ex PLMN' or 'UDI/RDI'.

For analogue multimedia, if the network supports fallback to speech and the subscriber has subscription to speech, two *bearer capability* IEs, multimedia first and speech as the second BC are included in the SETUP message. The network shall indicate fallback to speech by these two BC IEs and the associated Repeat Indicator set to "support of fallback".

For UDI/RDI multimedia, if the network supports fallback and service change, and the subscriber has subscription to speech, two *bearer capability IEs*, with the first BC as the preferred service are included in the SETUP message. The network shall indicate service change and fallback by these two BC IEs and the associated Repeat Indicator set to "service change and fallback".

The bearer capability IE(s) may (in the case of the single numbering scheme) be missing from the SETUP message.

The bearer compatibility checking in the MS is according to 5.3.4.2.2.

The MS shall indicate the supported call type(s) in the CALL CONFIRMED message, which is the acknowledgement to SETUP. If the network offered an analogue multimedia call with fallback to speech, or a UDI/RDI multimedia call with fallback and service change, The MS has the following options for the inclusion of bearer capability IEs in the CALL CONFIRMED message:

- if the MS/user accepts the offered analogue multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;
- if the MS/user accepts the offered <u>UDI/RDI</u> multimedia call, and supports fallback (analogue) or and service change (<u>UDI/RDI</u>), none or both multimedia and speech *bearer capability IEs* shall be included. In the case of <u>UDI/RDI</u>, tThe order of the BC IEs determines the preferred service, and the MS/user may reverse the order of these IEs;
- if the MS/user accepts the offered multimedia call, but does not support fallback or service change, only a multimedia *bearer capability IE* shall be included;
- if the MS/user wishes a speech (only) call a speech bearer capability IE is included;

- <u>for a UDI/RDI multimedia call</u>, if the MS/user accepts the offered speech call in ease of a UDI/RDI multimedia call, and supports service change, none or both speech and multimedia bearer capability IEs shall be included. The order of the BC IEs determines the preferred service, and the MS/user may reverse the order of these IEs.

If the network offered a multimedia call only, and the MS/user accepts the call, the MS shall always include a single multimedia *bearer capability IE* in the CALL CONFIRMED message.

If the SETUP contained no *bearer capability IE* the network shall perform compatibility checking of the CALL CONFIRMED message in the same way as the compatibility checking of the SETUP message in the mobile originating call case, described in subclause 5.3.6.2.1.

#### 5.3.6.2.2.1 Fallback to speech

If modem handshaking fails (in a modem call), the call mode will be modified to speech if a speech *bearer capability IE* was included. The modem signalling is inband, so the call must have reached the active state, when these conclusions about the presence of modems can be done. The call modifications are realized through the in-call modification procedure, by which the network requests the MS to modify the call mode (see subclause 5.3.4.3).

NOTE: Fallback from digital (UDI) H.324-call to speech after call setup is not a valid case at the terminating side.

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### 9.3.2 Call confirmed

This message is sent by the called mobile station to confirm an incoming call request.

See table 9.56/3GPP TS 24.008.

Message type: CALL CONFIRMED

Significance: local

Direction: mobile station to network

Table 9.56/3GPP TS 24.008: CALL CONFIRMED message content

IEI	Information element	Type/Reference	Presence	Format	Length
	Call control	Protocol discriminator	M	V	1/2
	protocol discriminator	10.2			
	Transaction identifier	Transaction identifier	M	V	1/2
		10.3.2			
	Call confirmed	Message type	M	V	1
	message type	10.4			
D-	Repeat Indicator	Repeat Indicator 10.5.4.22	С	TV	1
04	Bearer capability 1	Bearer capability 10.5.4.5	0	TLV	3-16
04	Bearer capability 2	Bearer capability 10.5.4.5	0	TLV	3-16
08	Cause	Cause 10.5.4.11	0	TLV	4-32
15	CC Capabilities	Call Control Capabilities 10.5.4.5a	0	TLV	4
2D	Stream Identifier	Stream Identifier 10.5.4.28	0	TLV	3
40	Supported Codecs	Supported Codec List 10.5.4.32	0	TLV	5-n

#### 9.3.2.1 Repeat indicator

The *repeat indicator* information element shall be included if *bearer capability 1* information element and *bearer capability 2* IE are both included in the message.

#### 9.3.2.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element shall be included if and only if at least one of the following six cases holds:

- the mobile station wishes another bearer capability than that given by the *bearer capability 1* information element of the incoming SETUP message;
- the bearer capability 1 information element is missing or not fully specified in the SETUP message;
- the *bearer capability 1* information element received in the SETUP message is accepted and the "radio channel requirement" of the mobile station is other than "full rate support only mobile station";
- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports CTM text telephony;
- the *bearer capability 1* information element received in the SETUP message indicates speech and is accepted and the mobile station supports other GSM codecs than GSM speech version 1;-
- the *bearer capability 1* information element received in the SETUP message included the "fixed network user rate" parameter.

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rules apply to both *bearer capability 1* IE and bearer capability 2 IE. Except those cases identified in 3GPP TS 27.001, if either *bearer capability* needs to be included, both shall be included.

Furthermore, both *bearer capability* information elements may be present if the mobile station wishes to reverse the order of occurrence of the *bearer capability* information elements (which is referred to in the *repeat indicator* information element, see subclause 10.5.4.22) in cases identified in 3GPP TS 27.001 [36].

If the mobile station wishes to indicate capability for an alternative call mode, which can be entered during the call through in-call modification, this is indicated by adding a *bearer capability information ele*ment (bearer capability) 2 information element, (see subclause 5.3.6).

#### 9.3.2.3 Cause

This information element is included if the mobile station is compatible but the user is busy.

#### 9.3.2.4 CC Capabilities

This information element may be included by the mobile station to indicate its call control capabilities.

#### 9.3.2.5 Stream Identifier

This information element shall be included by the mobile station supporting multicall.

#### 9.3.2.6 Supported Codecs

This information element shall be included for speech calls, if the mobile station supports UMTS radio access.

# 9.3.3 Call proceeding

This message is sent by the network to the calling mobile station to indicate that the requested call establishment information has been received, and no more call establishment information will be accepted.

See table 9.57/3GPP TS 24.008.

Message type: CALL PROCEEDING

Significance: local

Direction: network to mobile station

Table 9.57/3GPP TS 24.008: CALL PROCEEDING message content

IEI	Information element	Type/Reference	Presence	Format	Length	
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2	
	Transaction identifier	Transaction identifier 10.3.2	М	V	1/2	
	Call proceeding message type	Message type 10.4	М	V	1	
D-	Repeat Indicator	Repeat Indicator 10.5.4.22	С	TV	1	
04	Bearer capability 1	Bearer capability 10.5.4.5	0	TLV	3-16	
04	Bearer capability 2	Bearer capability 10.5.4.5	0	TLV	3-16	
1C	Facility	Facility 10.5.4.15	0	TLV	2-?	
1E	Progress indicator	Progress indicator 10.5.4.21	0	TLV	4	
8-	Priority granted	Priority Level 10.5.1.11	0	TV	1	
2F	Network Call Control Capabilities	Network Call Control cap. 10.5.4.29	0	TLV	3	

# 9.3.3.1 Repeat indicator

This information element is included if and only if *bearer capability 1* IE and *bearer capability 2 IE* are both contained in the message.

#### 9.3.3.2 Bearer capability 1 and bearer capability 2

The *bearer capability 1* information element <u>shall beis</u> included if the network has to specify at least one of the negotiable parameters described in 3GPP TS 27.001, or if the *bearer capability 1* information element received in the SETUP message included the "fixed network user rate" parameter.

When the *bearer capability 1* information element is followed by the *bearer capability 2* IE in the SETUP, the above rule applies to both *bearer capability 1* IE and *bearer capability 2* IE. Except those cases identified in 3GPP TS 27.001 [36], if either *bearer capability* needs to be included, both shall be included.

#### 9.3.3.3 Facility

This information element may be used for functional operation of supplementary services.

#### 9.3.3.4 Progress Indicator

This information element may be included:

- in order to pass information about the call in progress e.g. in the event of interworking; and/or
- to make the MS attach the user connection for speech.

#### 9.3.3.5 Priority granted

The priority field is provided by the network in the case that eMLPP is supported.

# 9.3.3.6 Network Call Control Capabilities

This information shall be included by the network to indicate its call control capabilities if the network supports multicall.and there are no other ongoing calls to the MS.