3GPP TSG-CN Meeting #26 **NP-040515**
8th – 10th December 2004. Athens, Greece.

Source: **TSG CN WG1**

Title: **CRs to Rel-6 WI "TEI6" for TS 43.068, TS 43.069 and TS 44.064**

Agenda item: **9.21**

Document for: **APPROVAL**

This document contains **10 CRs on Rel-6 Work Item "TEI6"**, that have been agreed by TSG CN WG1 CN#36 meeting and forwarded to TSG CN Plenary meeting #26 for approval.

TDoc #	Tdoc Title	Spec	CR #	Rev	CAT	C_Version	WI	Rel
N1-042061	Addition of VGCS reconfiguration procedure	43.068	021	1	C	6.2.0	TEI6	Rel-6
N1-042075	Group Call Reference handling by the MSC during VGCS call establishment	43.068	022	2	F	6.2.0	TEI6	Rel-6
N1-041768	Notification Response procedure	43.068	023		D	6.2.0	TEI6	Rel-6
N1-041769	Clarification on Immediate Setup procedure	43.068	024		D	6.2.0	TEI6	Rel-6
N1-041803	USIM based ciphering on dedicated channels	43.068	027		B	6.2.0	TEI6	Rel-6
N1-042077	USIM based ciphering on dedicated channels	43.069	015	1	B	6.0.0	TEI6	Rel-6
N1-042042	Broadcast call reference handling by the MSC during VBS call establishment	43.069	016	1	F	6.0.0	TEI6	Rel-6
N1-041827	Notification Response procedure	43.069	017		D	6.0.0	TEI6	Rel-6
N1-041828	Clarification on Immediate Setup procedure	43.069	018		D	6.0.0	TEI6	Rel-6
N1-041940	Improvement of the suspension duration due to a cell update	44.064	008		F	5.1.0	TEI6	Rel-6

3GPP TSG-CN WG1 Meeting #36 ***N1-041768***

Seoul, KOREA. 15th to 19th November 2004. **Agenda item 7.8**

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.068** **CR** **023** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Notification Response procedure
Source:	⌘	Alcatel
Work item code:	⌘	TEI6
Date:	⌘	14/10/2004
Category:	⌘	**D**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	According to 24.008-A183 (R99), 04.08-A716 (R96), 04.08-A718 (R97), 04.08-A720 (R98), 04.18-A080 (R99); 04.08-A1009 (R96), 04.08-A1011 (R97), 04.08-A1013 (R98); 08.08-A195 (R96), 08.08-A196 (R97) and 08.08-A198 (R99), NOTIFICATION RESPONSE procedure has been moved from MM to GSM RR. As a consequence, the core network has no knowledge about Notification Response. Thus the dedicated connection established for the notification response procedure can not be connected to the conference bridge, as indicated in section 7.2.
Summary of change:	⌘	The reference to the conference brigde in clause 7.2 is deleted.
Consequences if not approved:	⌘	Inconsistency between 3GPP TS.

Clauses affected:	⌘	7.2

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

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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 ftp://ftp.3gpp.org/specs/ 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 ******

7.2 Radio channels

In each cell of the group call area one voice group call channel may be established consisting of a downlink received by all service subscriber's mobile stations and an uplink which shall be used by the talking subscriber's mobile station only.

The calling subscriber's mobile station shall use a dedicated standard uplink/downlink which is connected to the conference bridge up to the instant where the network decides that the mobile station shall join the voice group call channel and the dedicated connection is released.

The network may decide to switch a talking subscriber's mobile station from the voice group call channel to a dedicated standard uplink/downlink at any time. This dedicated connection shall then be maintained up to the instance where the network decides that the mobile station shall join the voice group call channel again and the dedicated connection is released.

A listening subscriber's mobile station which responds to a notification because no description of the voice group call channel was provided in the notification may be assigned a dedicated standard uplink/downlink ~~which is connected to the conference bridge~~ up to the instant where the radio access network decides that the mobile station shall join the voice group call channel and the dedicated connection is released.

Voice group call channels shall be standard full rate or half rate speech channels. A specific voice group call can have cells in the group call area where the voice group call channels are either only half rate speech or only full rate speech or there are cells with half rate speech and cells with full rate speech. Those implementations are optional for the network operator.

Mobile station using the uplink are in group transmit mode. Signalling for this RR mode is specified in 3GPP TS 44.018. Mobile stations not using the uplink and not in dedicated mode shall ignore any signalling concerned only with uplink usage.

Full standard duplex channels shall be provided to all dispatchers listed in the GCR. These may be provided either via GSM, or via an external network. The links to the dispatchers are connected to the conference bridge.

The mobile station of the talking service subscriber will transmit on the uplink related to the downlink of the voice group call channel. The downlink of this channel which is also received by the mobile station using the uplink will typically echo the uplink unless one or more dispatchers are talking simultaneously. The mobile station of the talking service subscriber shall mute the downlink speech unless more than one speaker is talking. In this case, an indication shall be provided to the mobile station, and the mobile station shall no longer mute the downlink. When the downlink is not muted it is acceptable for the talking subscriber to hear an echo, and possibly other distortions which may occur, as the intention is to alert the talking subscriber to the fact that someone else is talking, rather than allow them to hear the message from the dispatcher. If no dispatcher is talking anymore and the talking service subscriber still has access to the uplink, an indication shall be provided to the mobile station, and the mobile station shall mute the downlink again.

3GPP TSG-CN WG1 Meeting #36 ***N1-041769***

Seoul, KOREA. 15th to 19th November 2004. **Agenda item 7.8**

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.068** **CR** **024** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Clarification on Immediate Setup procedure
Source:	⌘	Alcatel
Work item code:	⌘	TEI6
Date:	⌘	05/11/2004
Category:	⌘	**D**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	According to 48.008, clause 3.2.1.32, the BSS will forward the IMMEDIATE SETUP to MSC via the SCCP CR (COMPLETE LAYER 3 INFORMATION) message..
Summary of change:	⌘	Modify Figure 7a
Consequences if not approved:	⌘	Misunderstanding of Figure 7a: • CR (Immediate Setup) means that Immediate Setup message (TS 44.068) is piggybacked in the data field of SCCP Connection Request message. Note that in this case the core network does not get the Cell Id that it needs for the Group Call Reference calculation. • CR (COMPLETE LAYER 3 INFORMATION (Immediate_setup)) means that COMPLETE LAYER 3 INFORMATION message (TS 48.008) is piggybacked in the data field of SCCP Connection Request message. Note that in this case the "IMMEDIATE SETUP is piggybacked in the Layer 3 Information field of COMPLETE LAYER 3 INFORMATION message. The core network can then get the Cell Id that it needs for the Group Call Reference calculation.

Clauses affected:	⌘	11.3.8

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	

	X	O&M Specifications

Other comments: ⌘

How to create CRs using this form:

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1) Fill out the above form. The symbols above marked ⌘ 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 ftp://ftp.3gpp.org/specs/ 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 ******

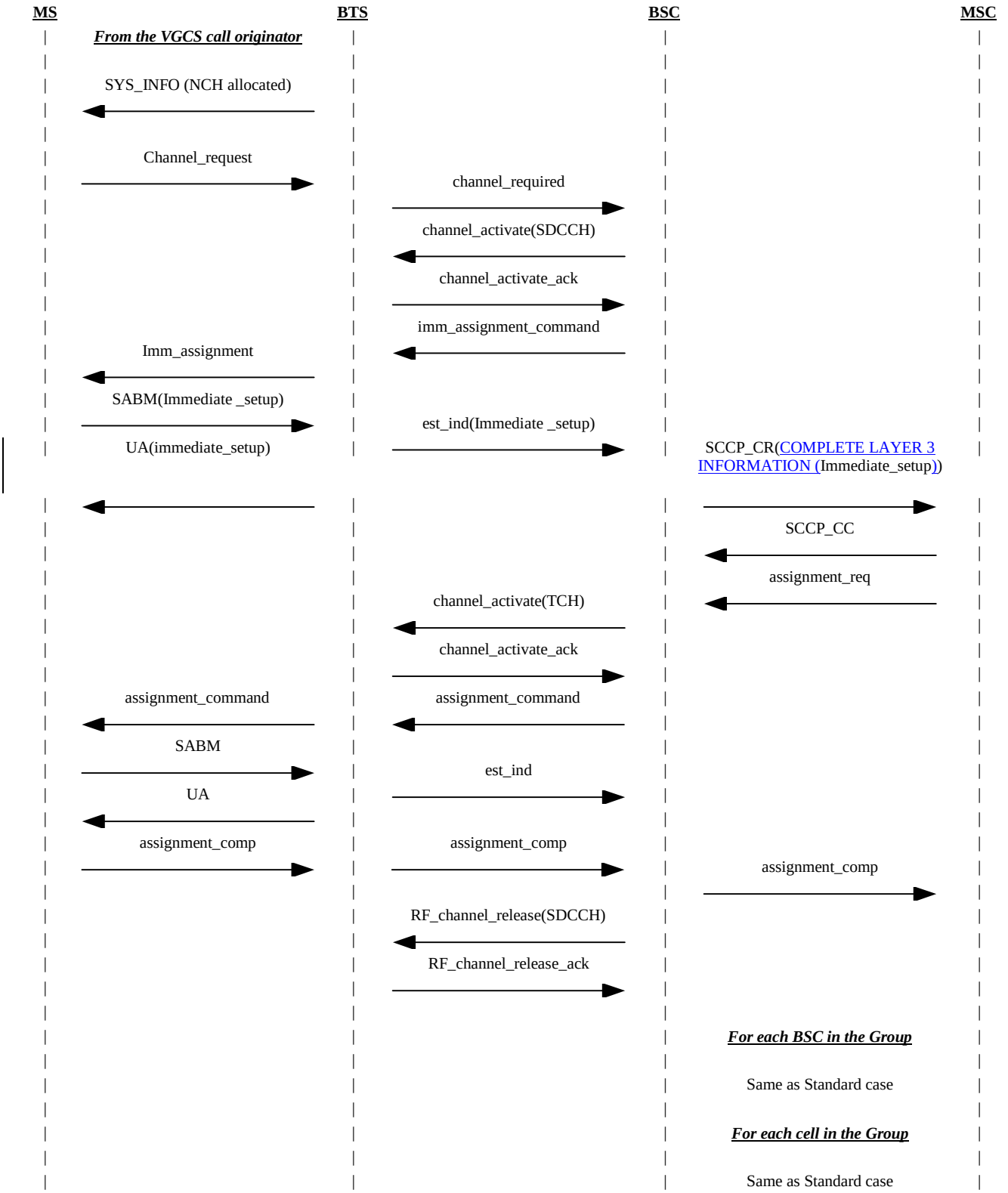

Figure 7a: Signalling information required for establishing voice group calls by a service subscriber using immediate setup

3GPP TSG-CN1 Meeting #36
Seoul, Korea, 15-19 November 2004

Tdoc N1-041803

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.068** **CR** **027** ⌘ **rev** **-** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [X]

Title:	⌘	USIM based ciphering on dedicated channels
Source:	⌘	Siemens AG
Work item code:	⌘	TEI6
Date:	⌘	8/11/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The current specification describes which ciphering key is to be used on the group call channel, but the case when the originator or subsequent talker is on a dedicated channel is not specified.
Summary of change:	⌘	For the originator or subsequent talker on a dedicated channel, i.e. in group mode dedicated channel, the individual ciphering key will be used. The same applies for mobile dispatchers.
Consequences if not approved:	⌘	Risk of different implementations. If one entity ciphers the data with the group call key and the other entity uses the individual key for deciphering or vice versa, the call will fail.
Clauses affected:	⌘	7.3

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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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.

7.3 Data confidentiality

Data confidentiality on the radio can be provided as a network option.

If data confidentiality is provided, both the uplink and the downlink of the voice group call channel within a cell of the group call area shall be ciphered using voice group ciphering keys derived from the same group key, see 3GPP TS 43.020 [10].

The group key is related to the group ID. For each group ID, there is a number of group keys stored on the USIM which are identified by a group key number. The group key number identifying the group key to be used for a particular voice group call is provided with the notification to the mobile stations. Mobile stations which have a dedicated connection shall be informed of the group key number before they join the voice group call channel.

USIM based VGCS ciphering uses a concept of short term keys where the short term key is derived by the GCR and the USIM from the group key and a RAND (random number) parameter. The actual voice group ciphering key is then derived by the BSS and the ME from the short term key, the cell global identifier, and a Cell Global Count parameter.

To include a subscriber into a voice group the required group data (including the 2 master group keys) shall be stored on the USIM, e.g. during the personalisation process or via OTA (over-the-air). To exclude a subscriber from a voice group the group data shall be deleted from the USIM. If a USIM is lost or stolen, all USIMs of the remaining members of the voice groups that this USIM is a member of need to be changed (e.g. via OTA or manual provisioning).

Details on data confidentiality for voice group calls are provided in 3GPP TS 42.009 [9]and 3GPP TS 43.020 [10].

NOTE 1: USIM based VGCS ciphering is not compatible with SIM based VGCS ciphering which has not been completely specified. The SIM specifications contain no support for the storage of the group keys. A pre-Rel-6 VGCS capable mobile station will be able to participate in an un-ciphered group call, if it is part of that group.

If data confidentiality is provided, then for a mobile station in group mode dedicated channel the uplink and the downlink of the dedicated channel shall be ciphered using the individual ciphering key of the service subscriber.

NOTE 2: The individual ciphering key is the key generated during a previous authentication procedure.

In order to start the ciphering, the MSC serving the mobile station shall initiate a cipher mode control procedure. When ciphering was started successfully, the mobile station shall apply the individual ciphering key in group mode dedicated channel and also after each subsequent handover from group transmit mode to group mode dedicated channel, until the mobile station returns to group receive mode or idle mode, or a new cipher mode control procedure is performed successfully.

If data confidentiality is provided, then for a mobile dispatcher the uplink and the downlink of the dedicated channel shall be ciphered using the individual ciphering key of the dispatcher.

3GPP TSG-CN WG1 Meeting #36 ***N1-041827***

Seoul, KOREA. 15th to 19th November 2004. **Agenda item 7.8**

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.069** **CR** **017** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Notification Response procedure
Source:	⌘	Alcatel
Work item code:	⌘	TEI6
Date:	⌘	05/11/2004
Category:	⌘	**D**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	According to 24.008-A183 (R99), 04.08-A716 (R96), 04.08-A718 (R97), 04.08-A720 (R98), 04.18-A080 (R99); 04.08-A1009 (R96), 04.08-A1011 (R97), 04.08-A1013 (R98); 08.08-A195 (R96), 08.08-A196 (R97) and 08.08-A198 (R99), NOTIFICATION RESPONSE procedure has been moved from MM to GSM RR. As a consequence, the core network has no knowledge about Notification Response. Thus the dedicated connection established for the notification response procedure cannot be connected to the distribution function, as indicated in section 7.2.
Summary of change:	⌘	The reference to the distribution function in clause 7.2 is deleted.
Consequences if not approved:	⌘	Inconsistency between 3GPP TS.

Clauses affected:	⌘	7.2

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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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.

****** First Modified Section ******

7.2 Radio channels

In each cell of the group call area one voice broadcast channel may be established consisting of a downlink received by all service subscriber's mobile stations.

The calling subscriber's mobile station shall use a dedicated standard uplink/downlink which is connected as input to the distribution function.

A listening subscriber's mobile station which responds to a notification because no description of the voice broadcast channel was provided in the notification may be assigned a dedicated standard link ~~which is connected to the distribution function~~ up to the instant where the radio access network decides that the mobile station shall join the voice broadcast channel and the dedicated connection is released.

Voice broadcast channels shall be standard full rate or half rate speech channels. A specific voice broadcast call can have cells in the group call area where the voice broadcast channels are either only half rate speech or only full rate speech or there are cells with half rate speech and cells with full rate speech. Those implementations are optional for the network operator.

Full standard duplex channels shall be provided to all dispatchers listed in the GCR as for normal calls and connected to the distribution function although their speech shall not be added to the speech of the calling subscriber in the distribution function if they are destination subscribers. The links may be provided either via GSM, or via an external network.

Simplex downlink radio channels are to be provided to all destination service subscribers, with one common downlink per cell.

A separate standard duplex channel is to be provided to the calling service subscriber.

3GPP TSG-CN WG1 Meeting #36 ***N1-041828***

Seoul, KOREA. 15th to 19th November 2004. **Agenda item 7.8**

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.069** **CR** **018** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Clarification on Immediate Setup procedure
Source:	⌘	Alcatel
Work item code:	⌘	TEI6
Date:	⌘	05/11/2004
Category:	⌘	**D**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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Use one of the following releases:

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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	According to 48.008, clause 3.2.1.32, the BSS will forward the IMMEDIATE SETUP to MSC via the SCCP CR (COMPLETE LAYER 3 INFORMATION) message.
Summary of change:	⌘	Modify Figure 4a
Consequences if not approved:	⌘	Misunderstanding of Figure 4a: • CR (Immediate Setup) means that Immediate Setup message (TS 44.068) is piggybacked in the data field of SCCP Connection Request message. Note that in this case the core network does not get the Cell Id that it needs for the Group Call Reference calculation. • CR (COMPLETE LAYER 3 INFORMATION (Immediate_setup)) means that COMPLETE LAYER 3 INFORMATION message (TS 48.008) is piggybacked in the data field of SCCP Connection Request message. Note that in this case the "IMMEDIATE SETUP is piggybacked in the Layer 3 Information field of COMPLETE LAYER 3 INFORMATION message. The core network can then get the Cell Id that it needs for the Group Call Reference calculation.

Clauses affected:	⌘	11.3.8			
		Y	**N**		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	

	X	O&M Specifications

Other comments: ⌘

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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.

****** First Modified Section ******

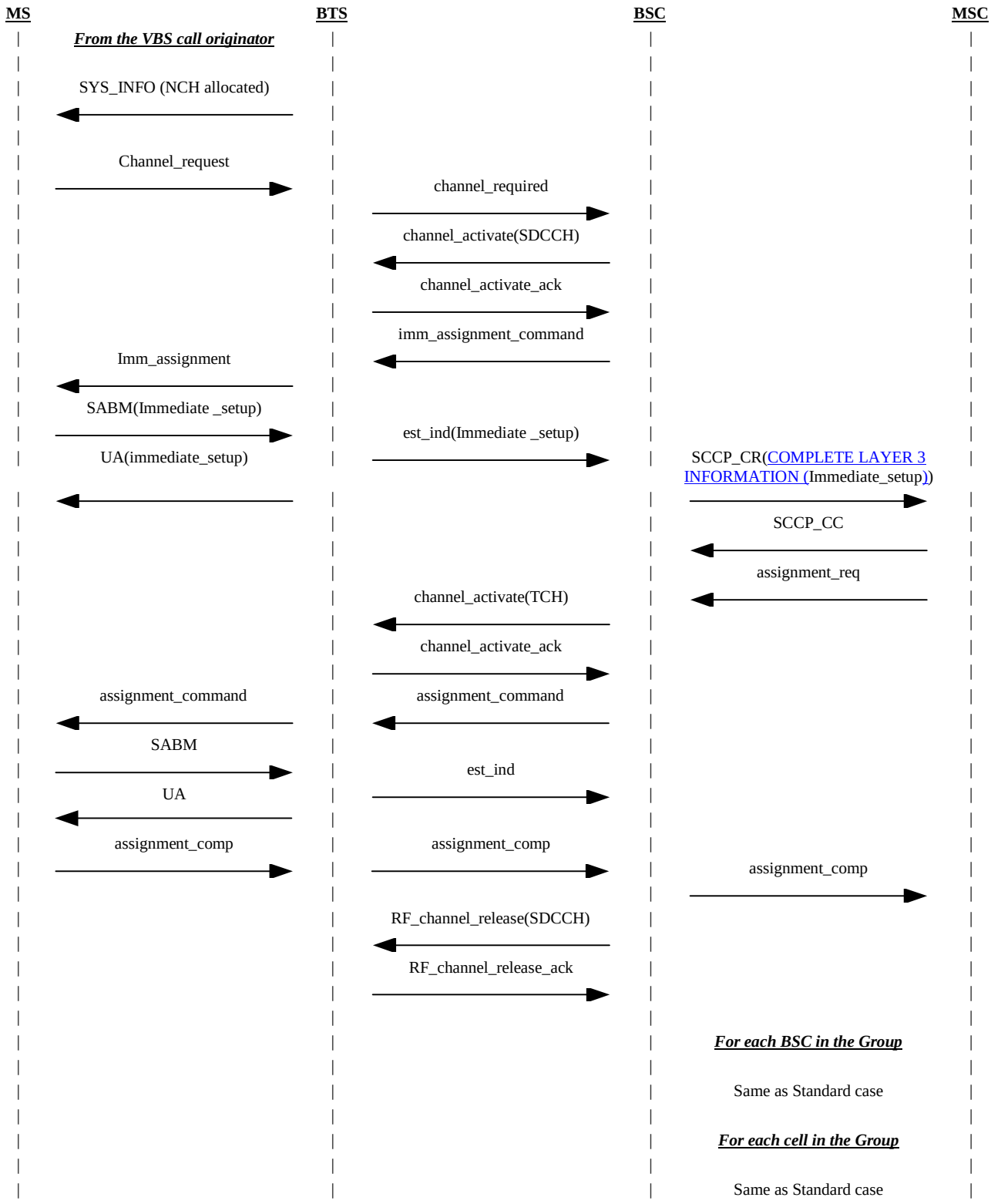


Figure 4a: Signalling information required for establishing voice broadcast calls by a service subscriber using immediate setup

3GPP TSG-CN1 Meeting #36
Seoul, Korea, 15-19 November 2004

Tdoc N1-041940

CR-Form-v7.1

CHANGE REQUEST

⌘ **44.064** **CR** **008** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [ ]

Title:	⌘	Improvement of the suspension duration due to a cell update
Source:	⌘	Infineon, Siemens
Work item code:	⌘	TEI6
Date:	⌘	11/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	As suggested by GERAN WG2 in their LS on "Improvement of the suspension duration due to a cell update", it is proposed to allow the option for the MS to always send a "UI frame with no information field" as initial LLC PDU for the cell update, in order to reduce the suspension time in the DL traffic upon a cell change.
Summary of change:	⌘	It is proposed to allow the option for the MS to always send a "UI frame with no information field" as initial LLC PDU for the cell update.
Consequences if not approved:	⌘	Unnessecarry delay of the resumption of the DL PS traffic if a large user plane LLC PDU is sent as initial LLC PDU in order to perform the cell update.

Clauses affected:	⌘	7.2.1.3

Other specs affected: ⌘	Y	N		⌘	
		X	Other core specifications		51.010, TC 42.4.2.3.1
	X		Test specifications		
		X	O&M Specifications		

Other comments: ⌘

7.2.1.3 LLGMM-TRIGGER

LLGMM-TRIGGER-REQ shall be used in the MS to order LLC to transmit any single frame.

If there is a frame waiting to be transmitted in the MS, then this frame shall be transmitted on the corresponding SAPI or optionally a UI frame with no information field shall be transmitted on any SAPI. Otherwise if Cause indicates Cell Update and if Cell Notification is indicated by the SGSN (see 3GPP TS 24.008 [8a]), then a NULL frame with P=0 shall be transmitted on any SAPI. Otherwise, and if the LLE is in ABM state, a supervisory frame shall be transmitted according to subclause 8.6.4.1 or optionally a UI frame with no information field shall be transmitted on any SAPI. ~~, Or~~ Otherwise, and if the LLE is in ADM state a UI frame with no information field shall be transmitted. There is only need to transmit ~~a~~ one frame on one SAPI. ~~Which SAPI to choose is implementation dependent.~~

LLGMM-TRIGGER-REQ is normally used for cell updates or for page responses, and the reason shall be indicated in the Cause parameter. If Cause indicates page response, then the GRR-DATA-REQ Cause parameter shall also indicate page response.

3GPP TSG-CN WG1 Meeting #36 ***N1-042042***

Seoul, KOREA. 15th to 19th November 2004. **(Revision of N1-041826)**

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.069** **CR** **016** ⌘**rev** **1** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Broadcast call reference handling by the MSC during VBS call establishment
Source:	⌘	Alcatel
Work item code:	⌘	TEI6
Date:	⌘	5/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
Ph2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)
Rel-7 (Release 7)

Reason for change: ⌘
- For a VBS call originated in a relay MSC, the call identity used by the relay MSC to perform a second GCR interrogation when the anchor MSC sets up the link to the relay MSC is wrongly specified in section 9.2.
- Few I-interface (MSC-GCR) message names in Figures 2 and 3 are not consistent with the description of clause 12.3.
- The conditions defining when the Broadcast Call Reference, Group ID and Originating Cell ID shall be sent in the GCR Interrogation message are incompletely specified in section 12.3.1
- The GCR Interrogation Ack field shall include the Broadcast Call Reference IE, which is not the case in section 12.3.2.

Summary of change: ⌘
- Section 9.2 is corrected to cover the case mentioned above
- The names of I-interface (MSC-GCR) messages Figures 2 and 3 of subclause 11.3.8 are corrected.
- The description of the GCR Interrogation is precised
- The Broadcast Call Reference IE is added in the answer from the GCR to the MSC.

Consequences if not approved: ⌘ —Inconsistency between different subclauses of the TS.

Clauses affected: ⌘ 9.2, 11.3.8, 12.3.1, 12.3.2

☒ Y ☐ N

Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ 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 ftp://ftp.3gpp.org/specs/ 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 ******

9.2 Use of identities in the network

For each voice broadcast call the identifications as defined in the following shall be used within the network for the related purpose mentioned.

For voice broadcast services which are to operate in more than one PLMN, group identities have to be co-ordinated between the network operators involved.

a) Identities used for GCR requests for service subscriber originated voice broadcast calls

In case of a service subscriber originated call, the identity of the call used by the MSC in which the call is originated to interrogate the GCR shall consist of the originating serving cell identity as defined in 3GPP TS 48.008 and the group ID as defined in subclause 9.1.

Originating cell ID	Group ID

A service subscriber initiating a voice broadcast call has to call the wanted group ID. The MSC in which the call is originated shall accumulate from the BSS the called group ID and the originating cell ID.

If the group call area exceeds one MSC area, the identity used to interrogate the GCR by an MSC in which the call was not originated shall consist of the broadcast call reference as defined in subclause 9.1.

If the group call area exceeds one MSC area and the call was originated in a relay MSC, this relay MSC will perform a second GCR interrogation when the anchor MSC sets up the link to the relay MSC (see subclause 11.5). The relay MSC shall use the broadcast call reference as defined in subclause 9.1 as the identity for the second GCR interrogation.

b) Identities used for GCR requests for dispatcher originated voice broadcast calls

In case of dispatcher originated call the identity used by the MSC to interrogate the GCR shall consist of the broadcast call references defined in subclause 9.1.

c) Identities used for notifications

Identities used for notification messages shall consist of the broadcast call reference as defined in subclause 9.

d) Identities used by dispatchers for voice broadcast call establishment

For dispatcher originated calls an MSISDN is dialled. The Country Code (CC) and National Destination Code (NDC) are used as normal for routing purposes. The numbering scheme is according to ITU-T Recommendation E.164. The Subscriber Number (SN) is used to indicate:

- the request of a broadcast call by use of a prefix. The length of the prefix shall be 1 to 2 digits [tbc];
- the wanted broadcast call reference as defined in subclause 9.1.

CC	NDC	Prefix	Broadcast call reference

e) Identities used for VLR requests for service subscriber originated broadcast calls

The group ID shall be used on the B-Interface for VLR requests.

f) Anchor MSC address for routing of service subscriber originated calls from Relay MSC to anchor MSC

For service subscriber located in Relay MSCs originated calls an anchor MSC address is used as called party address to route the call to the anchor MSC. The anchor MSC address structure is the same as for dispatcher originated calls (see subclause d)) The Country Code (CC) and National Destination Code (NDC) are used as normal for routing purposes.

The numbering scheme is according to ITU-T Recommendation E.164. The Subscriber Number (SN) is used to indicate:

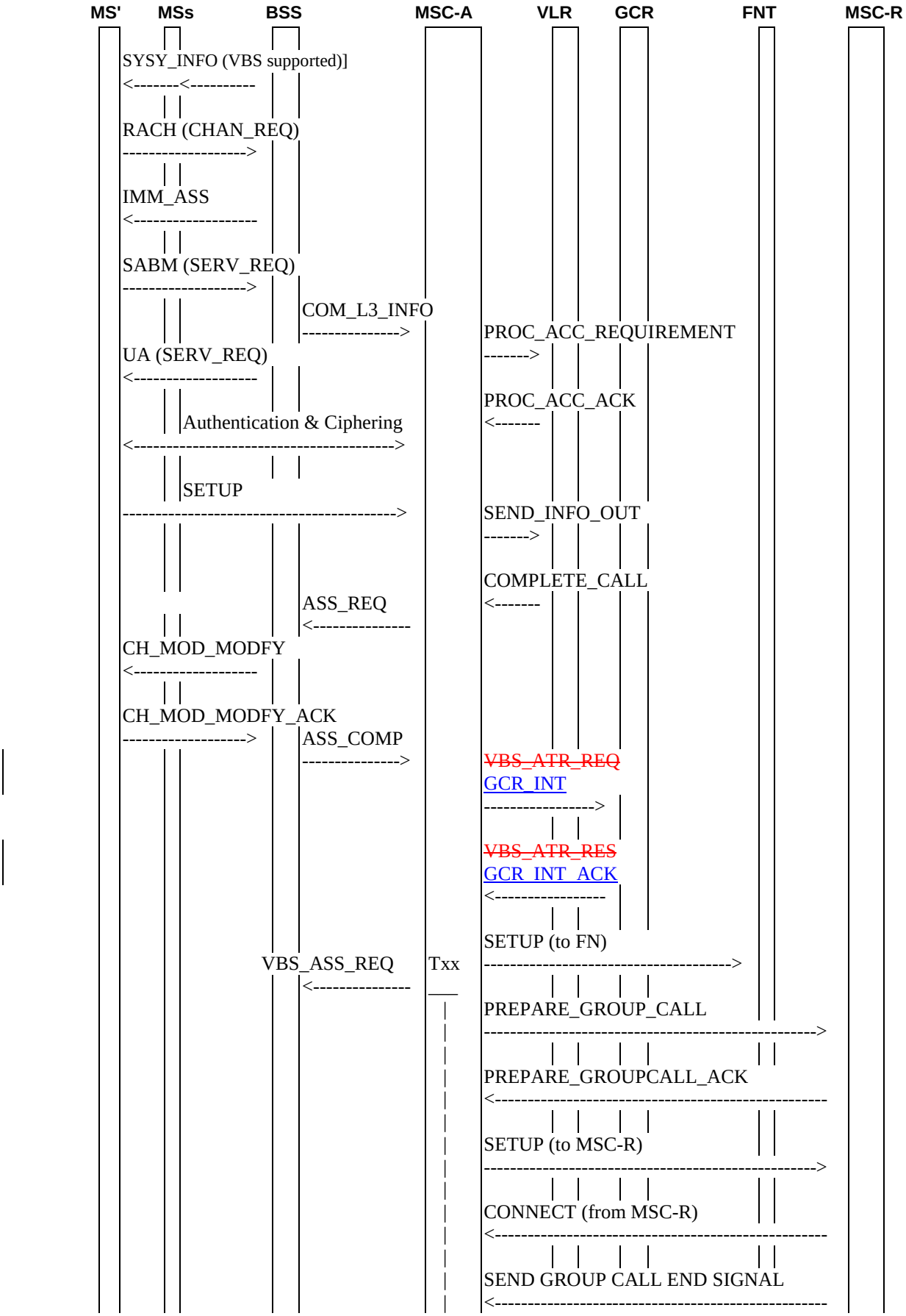
- the request of a group call by use of a prefix. The length of the prefix shall be 1 to 2 digits; the actual value of the prefix may be different than the one dialled by dispatchers;
- the wanted group call reference as defined in subclause 9.1.

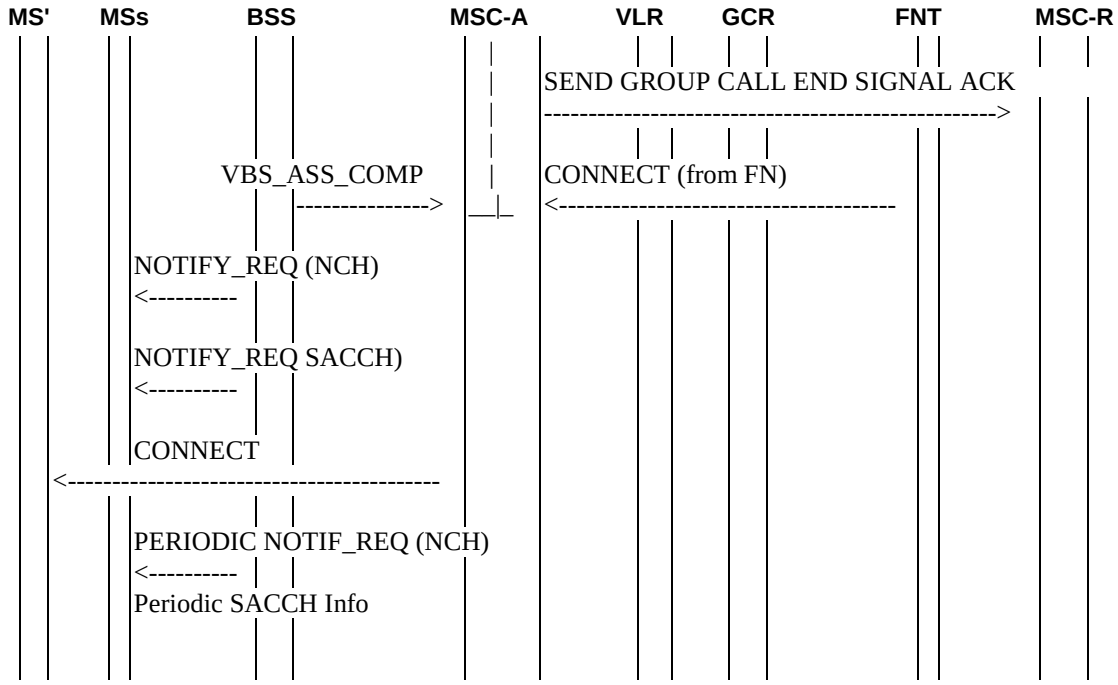
CC	NDC	Prefix	Group call reference

11.3.8 Overview of signalling

In this overview, the messages required to implement the specified concept are identified, and brief details are given of each message.

A diagrammatic representation of the voice broadcast call message structure proposed and actions required is given in figures 2 to 4d.


MS'
MSs
BSS
MSC-A
VLR
GCR
FNT
MSC-R
SYSY_INFO (VBS supported)]
RACH (CHAN_REQ)
IMM_ASS
SABM (SERV_REQ)
COM_L3_INFO
PROC_ACC_REQUIREMENT
UA (SERV_REQ)
PROC_ACC_ACK
Authentication & Ciphering
SETUP
SEND_INFO_OUT
COMPLETE_CALL
ASS_REQ
CH_MOD_MODFY
CH_MOD_MODFY_ACK
ASS_COMP
VBS_ATR_REQ
GCR_INT
VBS_ATR_RES
GCR_INT_ACK
SETUP (to FN)
VBS_ASS_REQ
Txx
PREPARE_GROUP_CALL
PREPARE_GROUPCALL_ACK
SETUP (to MSC-R)
CONNECT (from MSC-R)
SEND GROUP CALL END SIGNAL



NOTE: MS' calling subscriber mobile station;
Mss destination subscriber mobile stations
FNT fixed network user terminal
MSC-A anchor MSC;
MSC-R relay MSC.

Figure 2: Signalling information required for establishing voice broadcast calls by a service subscriber roaming in the anchor MSC area

SYS_INFO (VBS supported): Message used to indicate if the VBS establishment is supported in the cell and if voice broadcast channels and the corresponding paging/notification is supported in the cell.

Initial RACH CHAN_REQ: Standard message.

IMM_ASS: Standard message send on the PCH.

SERV_REQ (broadcast call): Modified form of the current call request message L3-MM CM SERVICE REQUEST sent on the allocated channel. Teleservice voice broadcast call is indicated.

UA (SERV_REQ): This message is used to acknowledge the layer 2 link and provide contention resolution of the service request.

COM_L3_INFO: The MSC is provided with initial information about the voice broadcast call.

NOTE 1: Messages flows for authentication and ciphering are not represented although performed as normal.

PROC_ACC_REQ: The MAP_PROCESS_ACCESS_REQUEST message is sent to the VLR to check the requested VBS teleservice against the subscription data.

PROC_ACC_ACK: The MAP_PROCESS_ACCESS_REQUEST ack message acknowledges the requested service.

Authentication & Ciphering: Authentication and Ciphering may be performed. Acknowledgement of the service request can also be performed by sending the CM SERVICE ACCEPT.

SETUP: The MSC is provided with details about the voice broadcast call.

NOTE 2: Alternatively, an IMMEDIATE_SETUP may have been send as the initial message including all details of the voice broadcast call. In this case no SETUP message must be sent.

SEND_INFO_OUT: The requested group ID is transferred to the VLR in the MAP_SEND_INFO_FOR_OUTGOING_CALL message.

COMPLETE_CALL: The VLR returns the MAP_COMPLETE_CALL confirming the use of the requested group ID.

ASSIGNMENT_REQUEST: Standard message.

CHAN_MOD_MODFY: Standard message to modify the channel mode in case of very early assignment.

CHAN_MOD_MODFY_ACK: Standard message to acknowledge the modification of the channel mode.

ASSIGNMENT_COMPLETE: Standard message.

NOTE 3: Alternatively, early assignment or OACSU procedures might be applied with the corresponding assignment messages not presented in figure 2.

GCR_INT~~VBS_ATR_REQ~~: The broadcast attributes are requested from the GCR.

GCR_INT_ACK~~VBS_ATR_RES~~: The requested information is returned from the GCR.

VBS_ASSIGNMENT_REQ: This message is sent from the MSC to all affected BSCs, [one dedicated message for every requested channel in a cell] including the broadcast call reference, the channel type and possibly the call priority and details on the ciphering.

NOTE 4: As an operator option the voice broadcast channels, the links to them and optionally also the links to dispatchers can already be established and permanently reserved in order to speed up the call set-up for emergency voice broadcast calls.

PREPARE_GROUP_CALL: The broadcast attributes are sent to every relay MSC and a Group Call number for call set-up to is requested.

PREPARE_GROUP_CALL_ACK: The Group Call number for call set-up is returned to the anchor MSC.

SETUP to MSC-R: The ISUP connection is set-up to the relay MSC.

CONNECT from MSC-R: Set-up of the ISUP connection to the relay MSC is confirmed.

SEND_GROUP_CALL_END_SIGNAL: Indicates to the anchor MSC that conversation can start.

SEND_GROUP_CALL_END_SIGNAL_ACK: The MAP dialogue to the relay MSC is closed.

VBS_ASSIGNMENT_COMPLETE: Acknowledgement message from the affected BSC in answer to the assignment request. If the assignment is not successful, a VBS_ASSIGNMENT_FAILURE message shall be sent instead.

SETUP to fixed network users: Based on the information determined about the users of external networks to be involved in the call, the MSC shall initiate calls to these users in the normal manner, depending on their mode of connection into the MSC, and shall connect them to the distribution function. Alternatively normal calls to GSM subscribers may be established for dispatchers being GSM subscribers which is not presented in the diagram.

Txx: Timer implemented in the MSC which is started with the incoming VBS SETUP message and stops with the outgoing paging message. If the timer expires before the MSC receives all of the expected CHAN_REQ_ACK from the BSCs and the CONNECT messages from the external networks, the VBS shall be established by the MSC to all available parts of the group call area.

NOTIF_REQ (NCH): Messages for notification which contain the broadcast call reference, the priority of the call if eMLPP is applied, and possibly the channel description of the voice broadcast channel to which the mobile stations shall listen and the number of the group key used for ciphering.

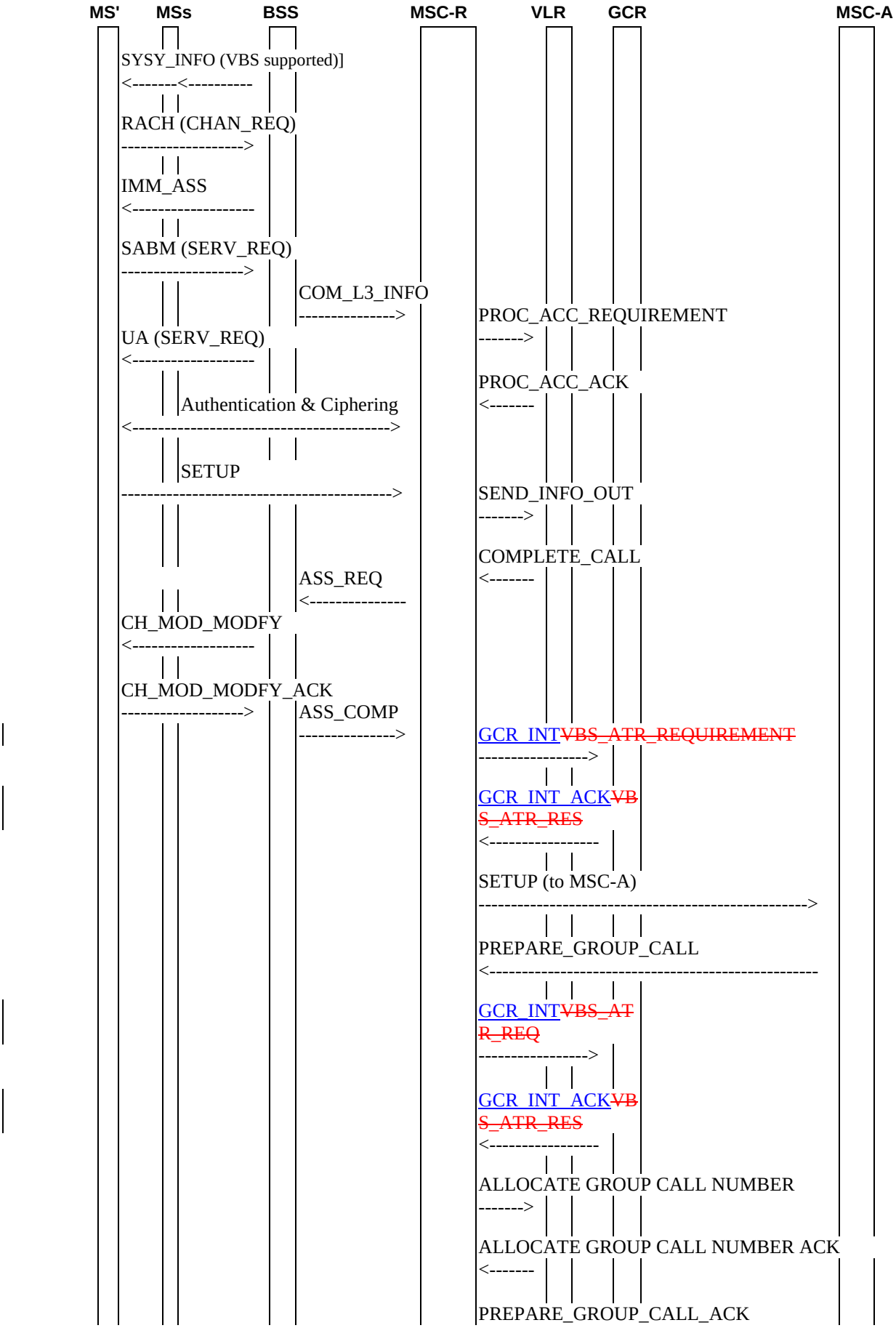
NOTIF_REQ (FACCH): Message for notification sent on the FACCH to the mobile stations currently involved in other calls. The notification on the FACCH can include the broadcast call reference, and the priority level and may also include the channel description and the group ciphering key numbers.

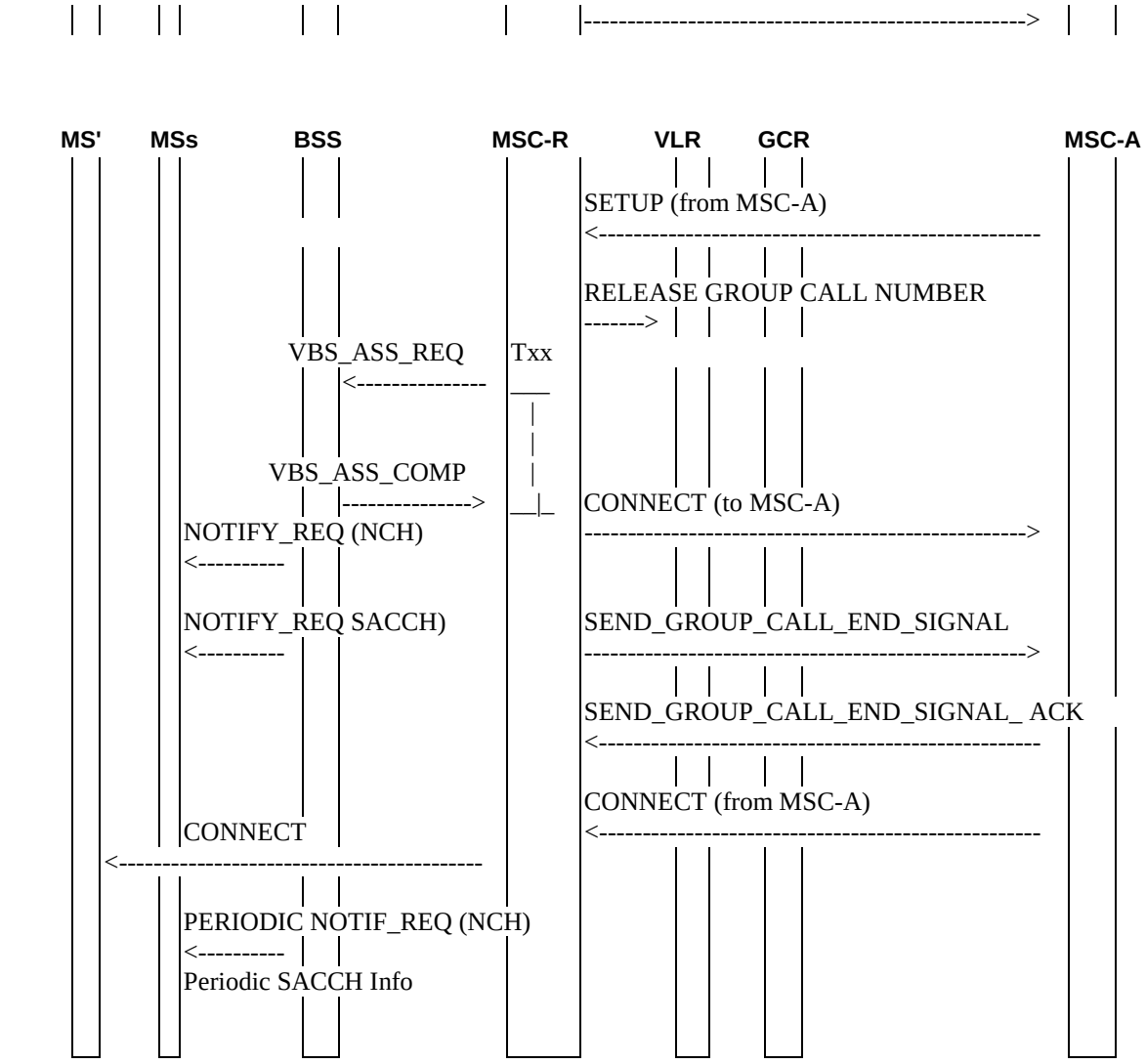
Periodic NOTIF_REQ (NCH): The notifications are sent periodically so that mobile stations moving into the area can join the voice broadcast call.

Periodic SACCH Info: Periodic messages sent on SACCH. This message may include:

- information of changes of notifications;
- information used for cell reselection.

CONNECT: Information to the mobile station of the calling subscriber that the VBS is established with the related broadcast call reference as the connected number.


MS'
MSs
BSS
MSC-R
VLR
GCR
MSC-A
SYSY_INFO (VBS supported)]
RACH (CHAN_REQ)
IMM_ASS
SABM (SERV_REQ)
COM_L3_INFO
PROC_ACC_REQUIREMENT
UA (SERV_REQ)
PROC_ACC_ACK
Authentication & Ciphering
SETUP
SEND_INFO_OUT
COMPLETE_CALL
ASS_REQ
CH_MOD_MODFY
CH_MOD_MODFY_ACK
ASS_COMP
GCR_INTVBS_ATR_REQUIREMENT
GCR_INT_ACKVBS_ATR_RES
SETUP (to MSC-A)
PREPARE_GROUP_CALL
GCR_INTVBS_ATR_REQ
GCR_INT_ACKVBS_ATR_RES
ALLOCATE GROUP CALL NUMBER
ALLOCATE GROUP CALL NUMBER ACK
PREPARE_GROUP_CALL_ACK



NOTE: MS' = calling subscriber mobile station;
Mss = destination subscriber mobile stations;
MSC-A = anchor MSC;
MSC-R = relay MSC.

Figure 3: Signalling information required for establishing voice group calls by a service subscriber roaming in the relay-MSC area

SYS_INFO (VBS supported): Message used to indicate if the VBS establishment is supported in the cell and if voice broadcast call channels and the corresponding notification is supported in the cell.

Initial RACH CHAN_REQ: Standard message.

IMM_ASS: Standard message send on the PCH.

SERV_REQ (voice broadcast call): Modified form of the current call request message L3-MM CM SERVICE REQUEST sent on the allocated channel. Teleservice Voice broadcast call is indicated.

UA (SERV_REQ): This message is used to acknowledge the layer 2 link and provide contention resolution of the service request.

COM_L3_INFO: The MSC is provided with initial information about the voice broadcast call.

NOTE 5: Messages flows for authentication and ciphering are not represented although performed as normal.

PROC_ACC_REQ: The MAP_PROCESS_ACC_REQ message is sent to the VLR to check the requested VBS teleservice against the subscription data.

PROC_ACC_ACK: The MAP_PROCESS_ACC_ACK message acknowledges the requested service.

Authentication & Ciphering: Authentication and Ciphering may be performed. Acknowledgement of the service request can also be performed by sending the CM SERVICE ACCEPT.

SETUP: The MSC is provided with details about the voice broadcast call.

NOTE 6: Alternatively, an IMMEDIATE_SETUP may have been send as the initial message including all details of the voice broadcast call. In this case no SETUP message must be sent.

SEND_INFO_OUT: The requested group ID is transferred to the VLR in the MAP_SEND_INFO_FOR_OUTGOING_CALL message.

COMPLETE_CALL: The VLR returns the MAP_COMPLETE_CALL message confirming the use of the requested group ID.

ASSIGNMENT_REQUEST: Standard message.

CHAN_MOD_MODFY: Standard message to modify the channel mode in case of very early assignment.

CHAN_MOD_MODFY_ACK: Standard message to acknowledge the modification of the channel mode.

ASSIGNMENT_COMPLETE: Standard message.

NOTE 7: Alternatively, early assignment or OACSU procedures might be applied with the corresponding assignment messages not presented in this figure.

GCR_INT~~VBS_ATR_REQ~~: The broadcast call attributes are requested from the GCR.

GCR_INT_ACK~~VBS_ATR_RES~~: The requested information (MSC-A address) is returned from the GCR.

SETUP to MSC-A: Based on information received from the GCR the relay MSC shall set-up a dedicated connection for the initiating service subscriber to the anchor MSC.

PREPARE_GROUP_CALL: The broadcast call attributes (parts) are received from the anchor MSC.

GCR_INT~~VBS_ATR_REQ~~: The broadcast call attributes are requested from the GCR.

GCR_INT_ACK~~VBS_ATR_RES~~: The requested information (cell list) is returned from the GCR.

ALLOCATE GROUP CALL NUMBER: The Group Call number is requested from the VLR.

ALLOCATE GROUP CALL NUMBER ACK: The Group Call number is returned from the VLR.

PREPARE_GROUP_CALL_ACK: The Group Call number is sent to MSC-A.

SETUP from MSC-A: The ISUP connection is set-up between MSC-A and MSC-R.

RELEASE GROUP CALL NUMBER: The VLR is requested to release the Group Call number.

VBS_ASSIGNMENT_REQ: This message is sent from the MSC to all affected BSCs, [one dedicated message for every requested channel in a cell,] including the broadcast call reference, the channel type and possibly the call priority and details on the ciphering.

NOTE 8: As an operator option the voice broadcast call channels, the links to them and optionally also the links to dispatchers can already be established and permanently reserved in order to speed up the call set-up for emergency voice broadcast calls.

VBS_ASSIGNMENT COMPLETE: Acknowledgement message from the affected BSC in answer to the assignment requests. If the assignment is not successful, a VBS_ASSIGNMENT_FAILURE message shall be sent instead.

CONNECT to MSC-A: Set-up of the ISUP connection from the anchor MSC is confirmed.

SEND_GROUP_CALL_END_SIGNAL: Indicates to the anchor MSC that conversation can start.

SEND_GROUP_CALL_END_SIGNAL_ACK: The MAP dialogue is terminated.

Txx: Timer implemented in the relay MSC which is started with the incoming SETUP message from the anchor MSC and stops with the outgoing paging message. If the timer expires before the MSC receives all of the expected CHAN_REQ_ACK from the BSCs, the VBS shall be established by the relay MSC to all available parts of the broadcast call area and the anchor MSC shall be informed that conversation can start.

NOTIF_REQ (NCH): Messages for notification which contain the broadcast call reference, the priority of the call if eMLPP is applied, and possibly the channel description of the voice broadcast call channel to which the mobile stations shall listen and the number of the group key used for ciphering.

NOTIF_REQ (SACCH): Message for notification sent on the SACCH or FACCH to the mobile stations currently involved in other calls. The notification on the SACCH shall include only the broadcast call reference, and the priority level. The notification on the FACCH may include also the channel description and the group ciphering key numbers.

Periodic NOTIF_REQ (NCH): The notifications are sent periodically so that mobile stations moving into the area can join the voice broadcast call.

Periodic SACCH Info: Periodic messages sent on the downlink of the SACCH. This message may include:

- information of changes of notifications;
- information used for cell reselection.

CONNECT (from MSC-A): Call set-up of the dedicated connection for the calling service subscriber is confirmed.

CONNECT: Information to the mobile station of the calling subscriber that the VBS is established with the related broadcast call reference as the connected number.

****** Next Modified Section ******

12.3 Messages on the I interface (MSC-GCR)

12.3.1 GCR Interrogation

The following information elements are required.

Information element name	Required	Description
Broadcast call reference	C	see clause 9. Must be present if the VBS call was initiated by a dispatcher or by a service subscriber in the relay MSC area and the receiving GCR is associated to the anchor MSC, or if the receiving GCR is associated to a relay MSC and the GCR interrogation was triggered by a Prepare Group Call message received from the anchor MSC.
Group ID	C	see clause 9. Must be present if the VBS call was initiated by a service subscriber in the own MSC area, except if the MSC is a relay MSC and the GCR interrogation was triggered by a Prepare Group Call message received from the anchor MSC.
Originating Cell ID	C	see clause 9. Must be present if the VBS call was initiated by a service subscriber in the own MSC area, except if the MSC is a relay MSC and the GCR interrogation was triggered by a Prepare Group Call message received from the anchor MSC.
CLI	C	Calling Line Identity of the initiating dispatcher, or VBS prefix plus broadcast call reference in case of service subscriber originated VBS call in the relay MSC. Must be present if the VBS call was not initiated by a service subscriber located in the own MSC area
Relay MSC indicator	M	A flag indicating whether the GCR interrogation was triggered from a Prepare Group Call message received from the anchor MSC

12.3.2 GCR Interrogation ack

The following information elements are required.

Information element name	Required	Description
Broadcast Call Reference	C	Must be present if the GCR receives an interrogation request containing a Group ID and an Originating Cell ID.
Cell List	C	A list of cells inside the MSC area into which the call is to be sent. Must be present if a) no anchor MSC address is present in the broadcast call reference record, or b) the relay MSC indicator was set in the GCR Interrogation message
Anchor MSC Address	C	E.164 number required to route the call from the relay MSC to the anchor MSC. Must be present if the anchor MSC Address is present in the broadcast call reference record
Relay MSC List	C	A list of relay MSCs into which the call is to be sent. Must be present if a relay MSC list is present in the broadcast call reference record
Group Key and Number	C	Information on the cipher algorithm and the group key to be used. Must be present if Group Key and Number is present in the broadcast call reference record
Codec Info	C	Information on the codecs allowed for the voice broadcast call. Must be present if Codec Info is present in the broadcast call reference record
Establish to Dispatcher List	C	A list of identities of dispatchers to which a dedicated link is to be established. Must be present if included in the broadcast call reference record. Note that the CLI possibly received with the GCR interrogation message must not be included
Release from Dispatcher List	C	A list of identities of dispatchers which are allowed to terminate the voice broadcast call. Must be present if included in the broadcast call reference record
Priority	C	The default priority level related to the voice broadcast call if eMLPP applies. Must be present if included in the broadcast call reference record

3GPP TSG-CN1 Meeting #36
Seoul, Korea, 15-19 November 2004

Tdoc N1-042061
Revision of Tdoc N1-041702

CR-Form-v7

CHANGE REQUEST

⌘ **43.068** **CR** **21** ⌘ **rev** **1** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Addition of VGCS reconfiguration procedure
Source:	⌘	Motorola
Work item code:	⌘	TEI6
Date:	⌘	18/11/2004
Category:	⌘	**C**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	In the event of a change to the channel allocation and/or frequency hopping parameters associated with an existing VGCS, mobiles in group receive mode or group transmit mode on this VGCS cannot be informed of the change in Group Channel Description. Any change to Group Channel Description results in mobiles returning to idle mode which results in a significant disruption of service. It is proposed to inform listeners and talker in group transmit mode of the change in VGCS channel description via a new VBS/VGCS reconfiguration procedure.
Summary of change:	⌘	Added new VGCS reconfiguration procedure to on-going group call to inform listeners and talker in group transmit mode of a change in Group Channel Description.
Consequences if not approved:	⌘	Not possible to support reconfiguration of an existing VGC Group Channel Description

Clauses affected:	⌘	Clause 4.2.2

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications
		X	O&M Specifications

⌘

Other comments: ⌘

****** First Modified Section ******

4.2.2 On-going group calls

4.2.2.1 Normal operation with successful outcome

Within each voice group call starting from the instant where the calling subscriber first becomes a listening service subscriber, one service subscriber has the access at any one time to the uplink of the voice group call channel and his speech is then broadcast on all voice group call channel downlinks accordingly. The mobile station of the talking service subscriber shall, while no dispatcher is talking, be commanded by the network to mute the downlink speech to avoid non intelligible echo's.

In case of one talking service subscriber plus a parallel talking dispatcher, the talking service subscriber's mobile station shall receive an indication by means of signalling from the network so that it can unmute the downlink. DTMF shall be used by dispatchers to trigger network signalling to mute and un-mute the downlink of a talking service subscriber as described in subclause 11.3.7.2.

If more than one service subscriber applies to the uplink, contention resolution shall be performed in the network. Contention resolution shall be performed in the group call anchor MSC.

Additionally, in order to speed up the uplink access procedure, the BSS may grant the uplink prior to contention resolution being performed by the group call anchor MSC. This would mean that more than one service subscriber may access to the uplink and the respective speech may be combined in the group call bridge and broadcast onto all voice group call downlink channels during a transitional period. The anchor MSC shall then select one of the talking subscribers and pre-empt the uplink use of the other talking subscribers.

Dispatchers voice involved shall be broadcast on the voice group call channel downlink at any time. Mobile dispatchers are provided with a standard link and thus with an dedicated permanent uplink different from the voice group call channel.

All non-dispatcher group call members are provided with an indication on the voice group call channel of whether the uplink is in use. When the uplink is not in use, any non-dispatcher group call member can request access to the uplink. Any speech from dispatchers is combined with any speech from a talking service subscriber.

The release of the uplink is triggered by the user and indicated by the mobile station to the network. The network shall then indicate to the listening mobile stations that the uplink is free.

Mobile stations in group receive mode use the group receive mode procedure (see 3GPP TS 43.022) to "camp-on" in a new cell to be able to listen to the group call channel. The mobile station may find the voice group call channel details of a new cell on the related NCH.

A network may decide not to establish voice group call channels in all cells. Instead, notifications containing no channel description may be provided. If a mobile station moves to such a cell, it must establish a dedicated connection and respond to the notification by use of the notification response procedure in order to receive the voice group call. The network may then establish a voice group call channel and inform the mobile station on the channel position.

A network may obtain knowledge on whether mobile stations are listening in a cell by sending an uplink access request in an uplink free message on the voice group call channel downlink when no talking service subscriber is present. Mobile stations receiving such a request shall use uplink reply procedure and send uplink access bursts on the voice group call channel uplink with the establishment cause "reply on uplink access request". If no uplink access bursts are received by the network, the network may decide to release the voice group call channel in that cell and then provide notifications containing no channel description.

NOTE: Concerning security aspects, whilst authentication and membership checking of mobile call originators and of mobile uplink users can be carried out, it is not possible to authenticate service subscribers in group receive mode if they have not before established a dedicated connection to responded to a notification. No equivalent of a group "TMSI" is provided to protect the "identity" of established voice group calls.

The network may decide to reconfigure an existing voice group call's physical channel configuration, frequencies and/or hopping sequences as well as the cell channel description. For the cell in which the group call is being reconfigured, the network informs any listeners in group receive mode and any talker in group transmit mode of the change in VGCS channel description by using the VGCS reconfiguration procedure (see 3GPP TS 44.018 [5]). Mobile stations on receipt of the VBS/VGCS reconfiguration messages shall remain on the existing group channel until indicated starting time and then apply the new configuration to the VGCS call that the mobile station is currently involved in.

****** End of Modified Section ******

3GPP TSG-CN WG1 Meeting #36 ***N1-042075***

Seoul, KOREA. 15th to 19th November 2004. **(Revision of N1-042041)**

CR-Form-v7.1

CHANGE REQUEST

⌘ **43.068** **CR** **022** ⌘ **rev** **2** ⌘ Current version: **6.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Group Call Reference handling by the MSC during VGCS call establishment
Source:	⌘	Alcatel, Siemens
Work item code:	⌘	TEI6
Date:	⌘	5/11/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change: ⌘

- For a VGCS call originated in a relay MSC, the call identity used by the relay MSC to perform a second GCR interrogation when the anchor MSC sets up the link to the relay MSC is wrongly specified in section 9.2.
- The MSC shall provide the BSS with the Group Call Reference in the dedicated channel assignment message in case of a voice group call initiated by a service subscriber (first talker). This is needed for proper VGCS operations in the BSS. For instance, the BSS needs to know that the dedicated channel is allocated to a voice group call service subscriber to indicate that the uplink VGCS channel is free when the radio contact is lost with the service subscriber.
  Consequently in case of a voice group calls initiated by a service subscriber, the MSC can only send the ASSIGNMENT REQUEST message after interrogating the GCR. Figures 2 and 3 of subclause 11.3.8 do not reflect this scenario for a service subscriber.
- Few I-interface (MSC-GCR) message names in Figures 2 and 3 are not consistent with the description of clause 12.3.
- The conditions defining when the Group Call Reference, Group ID and Originating Cell ID shall be sent in the GCR Interrogation message are incompletely specified in section 12.3.1
- The GCR Interrogation Ack field shall include the Group Call Reference IE, which is not the case in section 12.3.2.

Summary of change: ⌘

- Section 9.2 is corrected to cover the case mentioned above
- Figures 2 and 3 of subclause 11.3.8 are corrected : the MSC sends the ASSIGNMENT REQUEST message after interrogating the GCR ; the names of

		the I-interface (MSC-GCR) messages are corrected. • The description of the GCR Interrogation is precised • The Group Call Reference IE is added in the answer from the GCR to the MSC.
Consequences if not approved:	⌘	• In case of a voice group call initiated by a service subscriber, if the MSC does not provide the Group Call Reference, the BSS does not know that the dedicated standard uplink/downlink channel is allocated to the first talker of a voice group call. As a consequence, the voice group call channel cannot be established and handled correctly by the BSS. • Inconsistency between different subclauses of the TS.

Clauses affected:	⌘	9.2, 11.3.8, 12.3.1, 12.3.2			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ 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 ftp://ftp.3gpp.org/specs/ 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 ******

9.2 Use of identities in the network

For each voice group call the identifications as defined in the following shall be used within the network for the related purpose mentioned.

For voice group call services which are to operate in more than one PLMN, group identities have to be co-ordinated between the network operators involved.

a) Identities used for GCR requests for service subscriber originated voice group calls

In case of a service subscriber originated call, the identity of the call used by the MSC in which the call is originated to interrogate the GCR shall consist of the originating serving cell identity as defined in 3GPP TS 24.008 and the group ID as defined in subclause 9.1.

Originating cell ID	Group ID

A service subscriber initiating a voice group call has to call the wanted group ID. The MSC in which the call is originated shall accumulate from the BSS the called group ID and the originating cell ID.

If the group call area exceeds one MSC area, the identity used to interrogate the GCR by an MSC in which the call was not originated shall consist of the group call reference as defined in subclause 9.1.

If the group call area exceeds one MSC area and the call was originated in a relay MSC, this relay MSC will perform a second GCR interrogation when the anchor MSC sets up the link to the relay MSC (see subclause 11.5). The relay MSC shall use the group call reference as defined in subclause 9.1 as the identity for the second GCR interrogation.

b) Identities used for GCR requests for dispatcher originated voice group calls

In case of dispatcher originated call the identity used by the MSC to interrogate the GCR shall consist of the group call reference as defined in subclause 9.1.

c) Identities used for notifications

Identities used for notification messages shall consist of the group call reference as defined in subclause 9.1.

d) Identities used by dispatchers for voice group call establishment

For dispatcher originated calls an MSISDN is dialled. The Country Code (CC) and National Destination Code (NDC) are used as normal for routing purposes. The numbering scheme is according to ITU-T Recommendation E.164. The Subscriber Number (SN) is used to indicate:

- the request of a group call by use of a prefix. The length of the prefix shall be 1 to 2 digits;
- the wanted group call reference as defined in subclause 9.1.

CC	NDC	Prefix	Group call reference

e) Identities used for VLR requests for service subscriber originated group calls

The group ID shall be used on the B-Interface for VLR requests.

f) Anchor MSC address for routing of service subscriber originated calls from Relay MSC to anchor MSC

For service subscriber located in Relay MSCs originated calls an anchor MSC address is used as called party address to route the call to the anchor MSC. The anchor MSC address structure is the same as for dispatcher originated calls (see subclause d)) The Country Code (CC) and National Destination Code (NDC) are used as normal for routing purposes. The numbering scheme is according to ITU-T Recommendation E.164. The Subscriber Number (SN) is used to indicate:

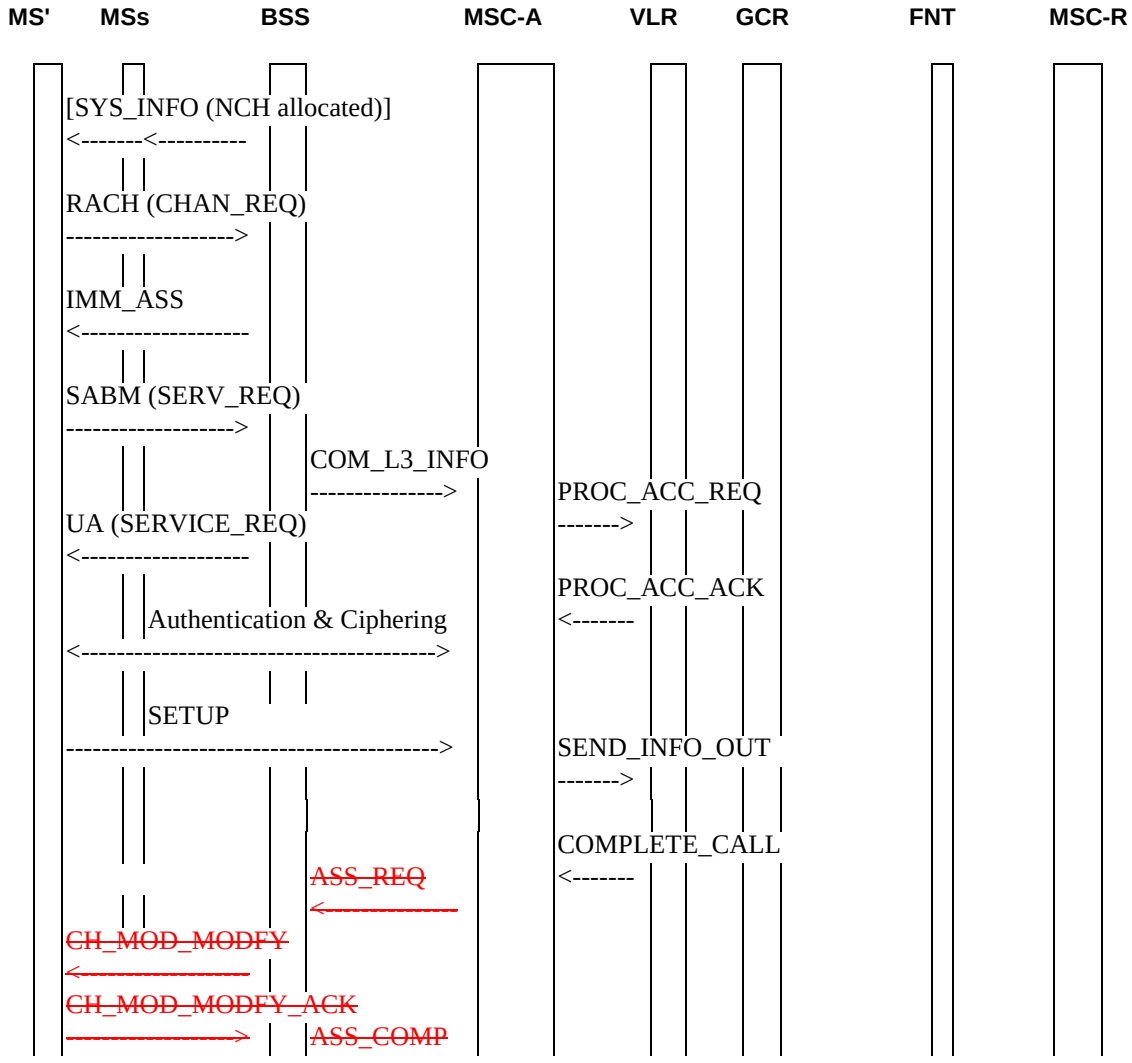
- the request of a group call by use of a prefix. The length of the prefix shall be 1 to 2 digits; the actual value of the prefix may be different than the one dialled by dispatchers.
- the wanted group call reference as defined in subclause 9.1.

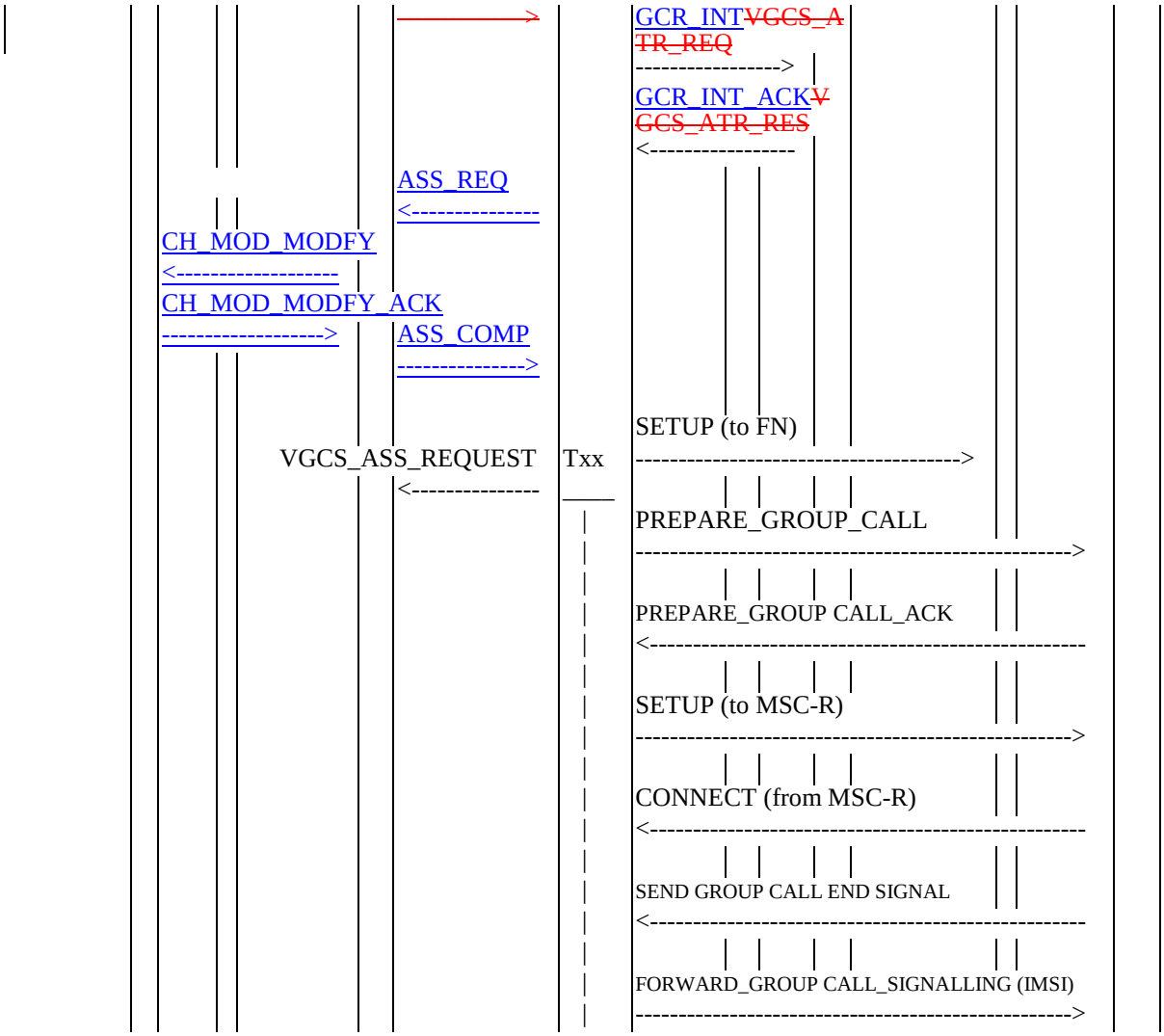
CC	NDC	Prefix	Group call reference

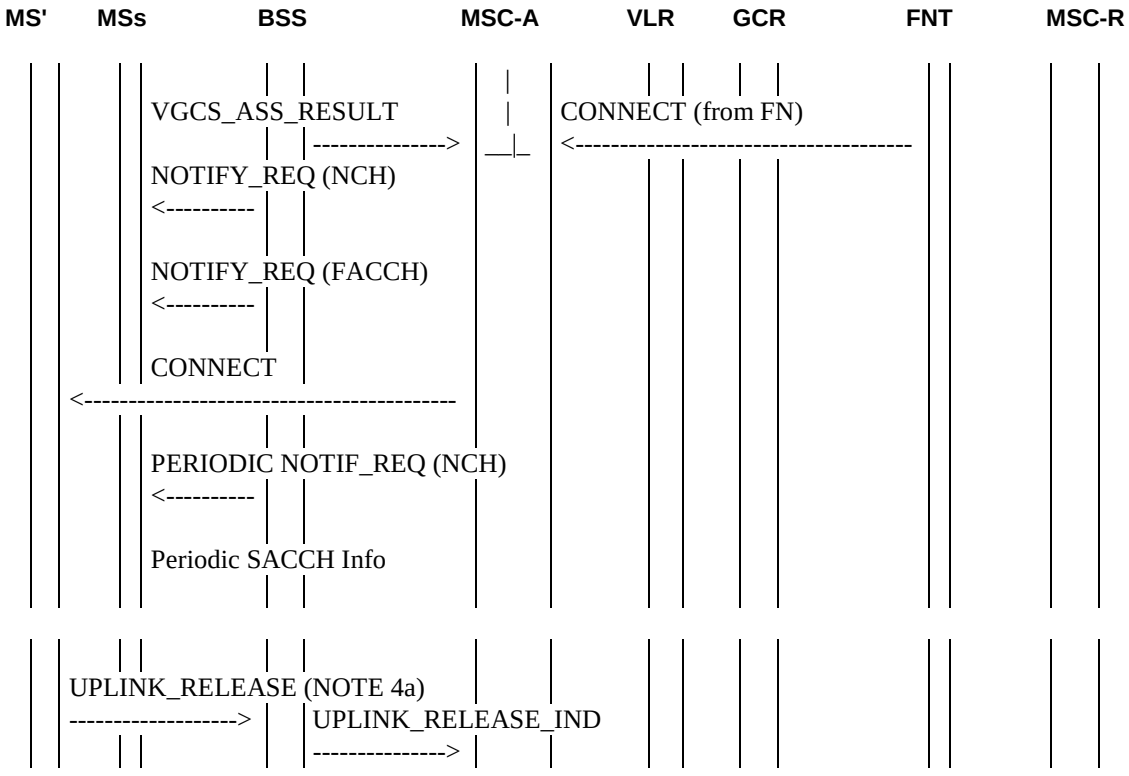
11.3.8 Overview of signalling

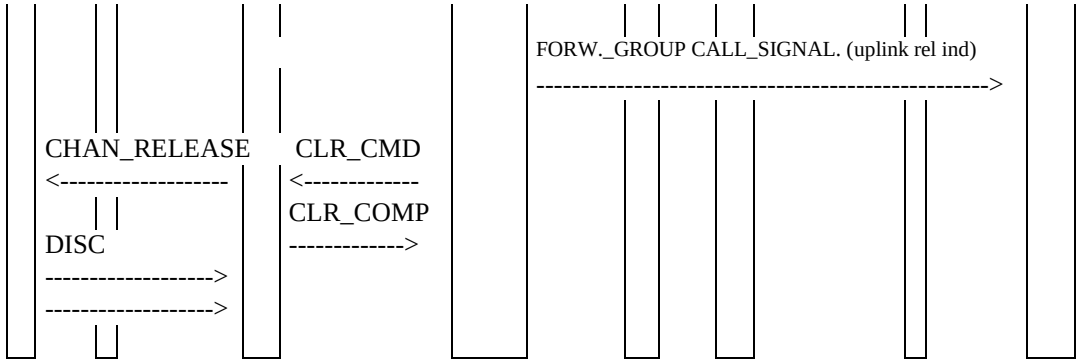
In this overview, the messages required to implement the specified concept are identified, and brief details are given of each message.

A diagrammatic representation of the voice group call message structure proposed and actions required is given in figures 2 to 7d.




GCR_INTVGCS_ATR_REQ
GCR_INT_ACKVGCS_ATR_RES
ASS_REQ
CH_MOD_MODFY
CH_MOD_MODFY_ACK
ASS_COMP
SETUP (to FN)
VGCS_ASS_REQUEST
Txx
PREPARE_GROUP_CALL
PREPARE_GROUP CALL_ACK
SETUP (to MSC-R)
CONNECT (from MSC-R)
SEND GROUP CALL END SIGNAL
FORWARD_GROUP CALL_SIGNALLING (IMSI)


MS'
MSs
BSS
MSC-A
VLR
GCR
FNT
MSC-R
VGCS_ASS_RESULT
CONNECT (from FN)
NOTIFY_REQ (NCH)
NOTIFY_REQ (FACCH)
CONNECT
PERIODIC NOTIF_REQ (NCH)
Periodic SACCH Info
UPLINK_RELEASE (NOTE 4a)
UPLINK_RELEASE_IND



NOTE: MS' = calling subscriber mobile station;
MSs = destination subscriber mobile stations;
FNT = fixed network user terminal;
MSC-A = anchor MSC;
MSC-R = relay MSC.

Figure 2: Signalling information required for establishing voice group calls by a service subscriber roaming in the anchor MSC area

SYS_INFO (NCH allocated): Message used to indicate if the NCH is allocated on the CCCH in the cell.

Initial RACH CHAN_REQ: Standard message.

IMM_ASS: Standard message send on the PCH.

SERV_REQ (voice group call): Modified form of the current call request message L3-MM CM SERVICE REQUEST sent on the allocated channel. Teleservice Voice group call is indicated.

UA (SERV_REQ): This message is used to acknowledge the layer 2 link and provide contention resolution of the service request.

COM_L3_INFO: The MSC is provided with initial information about the voice group call.

NOTE 1: Messages flows for authentication and ciphering are not represented although performed as normal.

PROC_ACC_REQ: The MAP_PROCESS_ACC_REQ message is sent to the VLR to check the requested VGCS teleservice against the subscription data.

PROC_ACC_ACK: The MAP_PROCESS_ACC_ACK message acknowledges the requested service.

Authentication and Ciphering: Authentication and Ciphering may be performed. Acknowledgement of the service request can also be performed by sending the CM SERVICE ACCEPT.

SETUP: The MSC is provided with details about the voice group call.

NOTE 2: Alternatively, an IMMEDIATE_SETUP may have been send as the initial message including all details of the voice group call. In this case no SETUP message must be sent.

SEND_INFO_OUT: The requested group ID is transferred to the VLR in the MAP_SEND_INFO_FOR_OUTGOING_CALL message.

COMPLETE_CALL: The VLR returns the MAP_COMPLETE_CALL message confirming the use of the requested group ID.

~~**ASSIGNMENT_REQUEST:** Standard message.~~

~~**CHAN_MOD_MODFY:** Standard message to modify the channel mode in case of very early assignment.~~

~~**CHAN_MOD_MODFY_ACK:** Standard message to acknowledge the modification of the channel mode.~~

~~**ASSIGNMENT_COMPLETE:** Standard message.~~

~~NOTE 3: Alternatively, early assignment or OACSU procedures might be applied with the corresponding assignment messages not presented in figure 2.~~

GCR_INT~~VGCS_ATR_REQ~~: The group call attributes are requested from the GCR through the GCR Interrogation message sent by the MSC.

GCR_INT_ACK~~VGCS_ATR_RES~~: The requested information is returned from the GCR in the GCR Interrogation Ack message.

ASSIGNMENT_REQUEST: Standard message.

CHAN_MOD_MODFY: Standard message to modify the channel mode in case of very early assignment.

CHAN_MOD_MODFY_ACK: Standard message to acknowledge the modification of the channel mode.

ASSIGNMENT_COMPLETE: Standard message.

NOTE 3: Alternatively, early assignment or OACSU procedures might be applied with the corresponding assignment messages not presented in figure 2.

VGCS_ASSIGNMENT_REQ: This message is sent from the MSC to all affected BSCs, [including the group call reference, the channel type and possibly the call priority and details on the ciphering.

NOTE 4: As an operator option the voice group call channels, the links to them and optionally also the links to dispatchers can already be established and permanently reserved in order to speed up the call set-up for emergency voice group calls.

VGCS_ASSIGNMENT RESULT: Acknowledgement message from the affected BSC in answer to the assignment requests. If the assignment is not successful, a VGCS_ASSIGNMENT_FAILURE message shall be sent instead.

SETUP to fixed network users: Based on the information determined about the users of external networks to be involved in the call, the MSC shall initiate calls to these users in the normal manner, depending on their mode of connection into the MSC, and shall connect them into the conference bridge. Alternatively normal calls to GSM subscribers may be established for dispatchers being GSM subscribers which is not presented in the diagram.

PREPARE_GROUP CALL: The group call attributes are sent to every relay MSC and a Group Call number for call set-up to is requested.

PREPARE_GROUP CALL ACK: The Group Call number for call set-up is returned to the anchor MSC.

SETUP to MSC-R: The ISUP connection is set-up to the relay MSC.

CONNECT from MSC-R: Set-up of the ISUP connection to the relay MSC is confirmed.

SEND_GROUP CALL_END_SIGNAL: Indicates to the anchor MSC that conversation can start.

FORWARD_GROUP CALL_SIGNALLING (IMSI): The IMSI of the service subscriber who has established the voice group call and who is allowed to terminate the call is sent to every relay MSC.

Txx: Timer implemented in the MSC which is started with the incoming VGCS SETUP message and stops with the outgoing paging message. If the timer expires before the MSC receives all of the expected CHAN_REQ_ACK from the BSCs and the CONNECT messages from the external networks and SEND_GROUP CALL_END_SIGNALs from the relay MSCs, the VGCS shall be established by the MSC to all available parts of the group call area.

NOTIF_REQ (NCH): Messages for notification which contain the group call reference, the priority of the call if eMLPP is applied, and possibly the channel description of the voice group call channel to which the mobile stations shall listen and the number of the group key used for ciphering.

NOTIF_REQ (FACCH): Message for notification sent on the FACCH to the mobile stations currently involved in other calls. The notification on the FACCH shall include the group call reference, and the priority level and may also include the channel description and the group ciphering key numbers.

Periodic NOTIF_REQ (NCH): The notifications are sent periodically so that mobile stations moving into the area can join the voice group call.

Periodic SACCH Info: Periodic messages sent on SACCH. This message may include:

- information of changes of notifications;
- information used for cell re-selection.

CONNECT: Information to the mobile station of the calling subscriber that the VGCS is established with the related group call reference as the connected number.

UPLINK_RELEASE: When the calling service subscriber wants to become a listening service subscriber for the first time, a message indicating release of the uplink is required to be sent from the MS to the BSS in order to set the uplink free.

NOTE 4a: For different cases of uplink release and the related message flows refer to Figure 6.1 to 6.6.

UPLINK_RELEASE_INDICATION: The BSS informs the MSC on the uplink release.

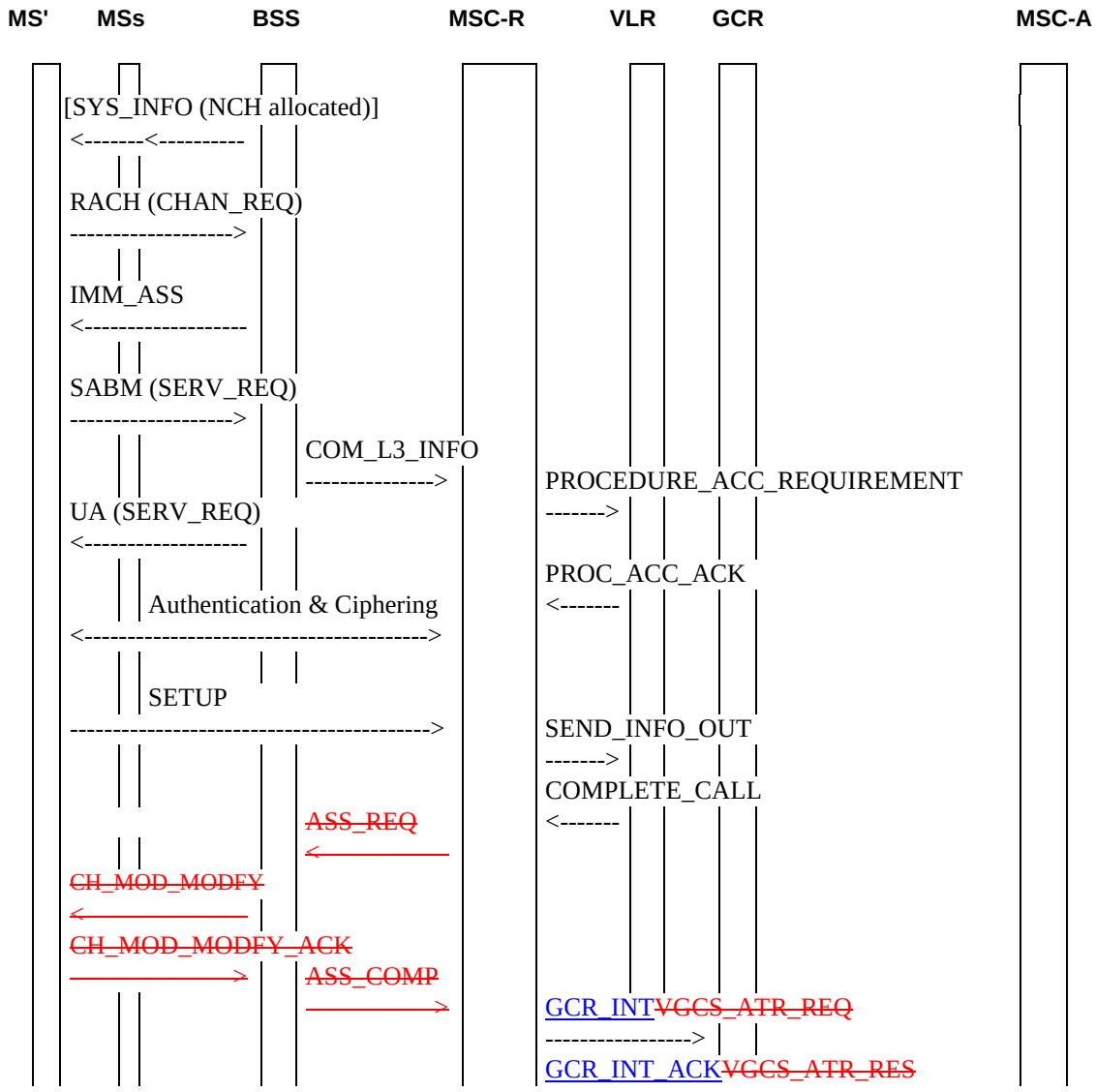
FORWARD_GROUP CALL_SIGNALLING (uplink release indication): This message is sent to every relay MSC to indicate that the uplink is free.

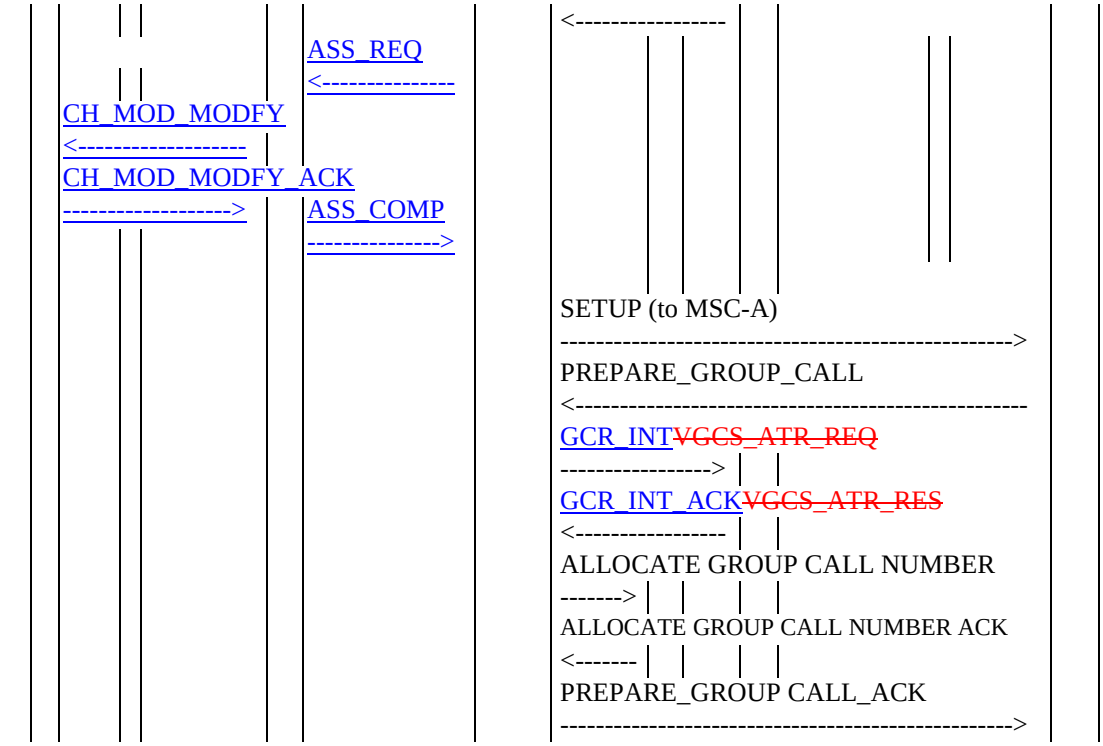
CLEAR COMMAND : The MSC requests the BSS to clear radio and terrestrial resources associated with originator dedicated link if not already done.

CHAN_RELEASE: The BSS sends a channel release message to the calling service subscriber's mobile station including the channel description of the voice group call channel to which the mobile station shall tune to.

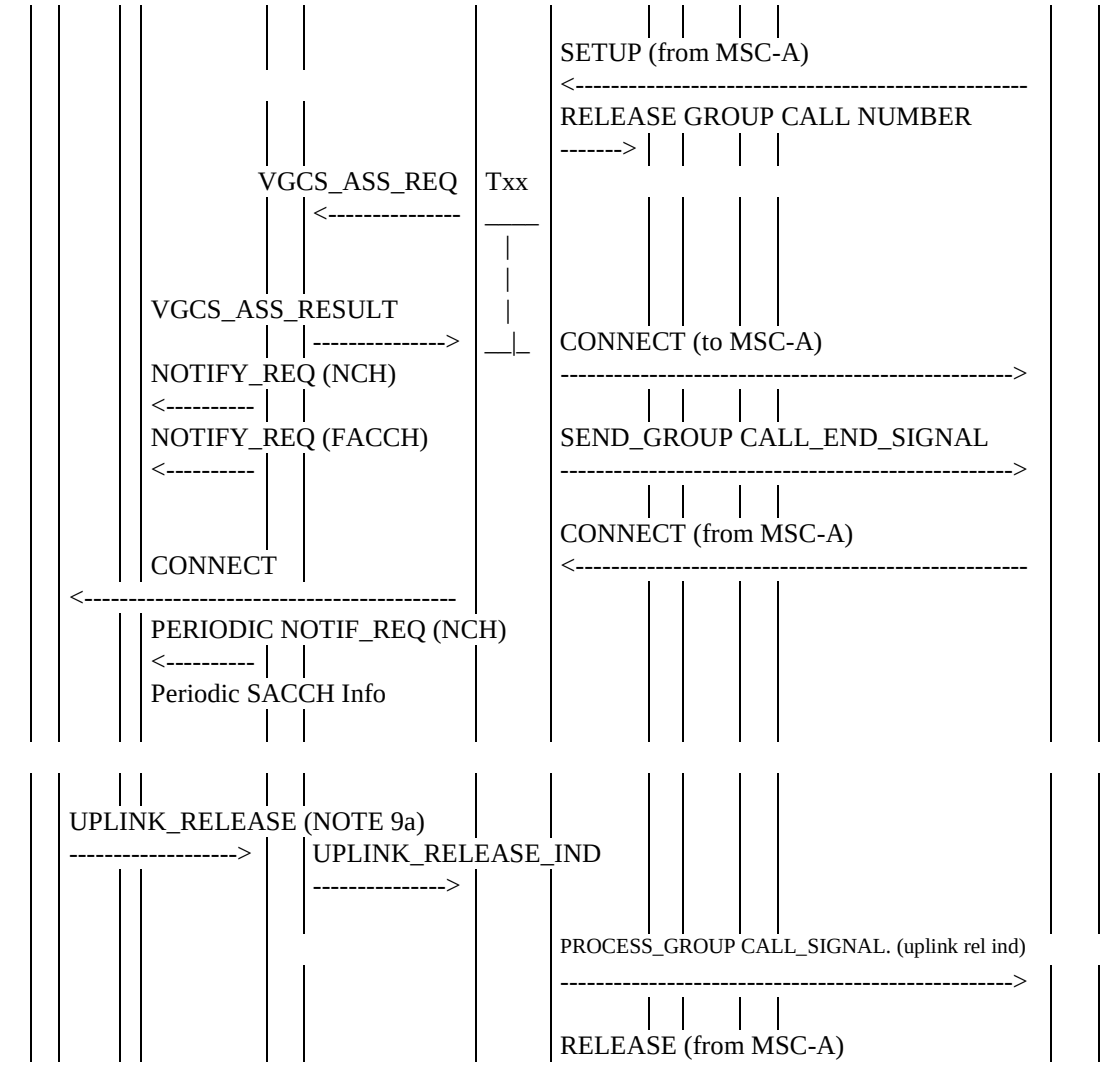
NOTE 5: Alternatively, if no UPLINK_RELEASE has been sent to the network by the mobile station, the network may transfer the mobile station to the voice group call channel by the channel mode modify procedure or by an assignment procedure or by a handover procedure.

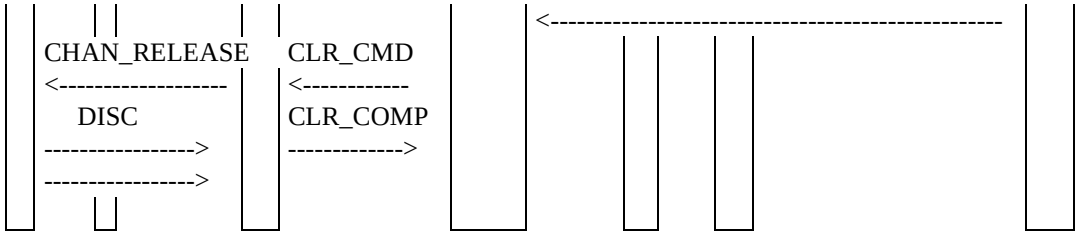
DISC: Two layer 2 disconnect messages shall be sent by the mobile station to the network.





MS' MSs BSS MSC-R VLR GCR MSC-A





NOTE: MS' = calling subscriber mobile station;
MSs = destination subscriber mobile stations;
MSC-A = anchor MSC;
MSC-R = relay MSC

Figure 3: Signalling information required for establishing voice group calls by a service subscriber roaming in the relay MSC area

SYS_INFO (NCH allocated): Message used to indicate if the NCH is allocated on the CCCH in the cell.

Initial RACH CHAN_REQ: Standard message.

IMM_ASS: Standard message send on the PCH.

SERV_REQ (voice group call): Modified form of the current call request message L3-MM CM SERVICE REQUEST sent on the allocated channel. Teleservice Voice group call is indicated.

UA (SERV_REQ): This message is used to acknowledge the layer 2 link and provide contention resolution of the service request.

COM_L3_INFO: The MSC is provided with initial information about the voice group call.

NOTE 6: Messages flows for authentication and ciphering are not represented although performed as normal.

PROC_ACC_REQ: The MAP_PROCESS_ACC_REQ message is sent to the VLR to check the requested VGCS teleservice against the subscription data.

PROC_ACC_ACK: The MAP_PROCESS_ACC_ACK message acknowledges the requested service.

Authentication & Ciphering: Authentication and Ciphering may be performed. Acknowledgement of the service request can also be performed by sending the CM SERVICE ACCEPT.

SETUP: The MSC is provided with details about the voice group call.

NOTE 7: Alternatively, an IMMEDIATE_SETUP may have been send as the initial message including all details of the voice group call. In this case no SETUP message must be sent.

SEND_INFO_OUT: The requested group ID is transferred to the VLR in the MAP_SEND_INFO_FOR_OUTGOING_CALL message.

COMPLETE_CALL: The VLR returns the MAP_COMPLETE_CALL message confirming the use of the requested group ID.

~~**ASSIGNMENT_REQUEST:** Standard message.~~

~~**CHAN_MOD_MODFY:** Standard message to modify the channel mode in case of very early assignment.~~

~~**CHAN_MOD_MODFY_ACK:** Standard message to acknowledge the modification of the channel mode.~~

~~**ASSIGNMENT_COMPLETE:** Standard message.~~

~~NOTE 8: Alternatively, early assignment or OACSU procedures might be applied with the corresponding assignment messages not presented in figure 3.~~

GCR_INT~~VGCS_ATR_REQ~~: The group call attributes are requested from the GCR through the GCR Interrogation message sent by the MSC.

GCR_INT_ACK~~VGCS_ATR_RES~~: The requested information (MSC-A address) is returned from the GCR in the GCR Interrogation Ack message.

ASSIGNMENT_REQUEST: Standard message.

CHAN_MOD_MODFY: Standard message to modify the channel mode in case of very early assignment.

CHAN_MOD_MODFY_ACK: Standard message to acknowledge the modification of the channel mode.

ASSIGNMENT_COMPLETE: Standard message.

NOTE 8: Alternatively, early assignment or OACSU procedures might be applied with the corresponding assignment messages not presented in figure 3.

SETUP to MSC-A: Based on information received from the GCR the relay MSC shall set-up a dedicated connection for the initiating service subscriber to the anchor MSC.

PREPARE_GROUP CALL: The group call attributes (parts) are received from the anchor MSC.

GCR_INT~~VGCS_ATR_REQ~~: The group call attributes are requested from the GCR through the GCR Interrogation message sent by the MSC.

GCR_INT_ACK~~VGCS_ATR_RES~~: The requested information (cell list) is returned from the GCR in the GCR Interrogation Ack message.

ALLOCATE GROUP CALL NUMBER: The Group Call number is requested from the VLR.

ALLOCATE GROUP CALL NUMBER ACK: The Group Call number is returned from the VLR.

PREPARE_GROUP_CALL_ACK: The Group Call number is sent to MSC-A.

SETUP from MSC-A: The ISUP connection is set-up between MSC-A and MSC-R.

RELEASE GROUP CALL NUMBER: The VLR is requested to release the Group Call number.

VGCS_ASSIGNMENT_REQ: This message is sent from the MSC to all affected BSCs, [one dedicated message for every requested channel in a cell,] including the group call reference, the channel type and possibly the call priority and details on the ciphering.

NOTE 9: As an operator option the voice group call channels, the links to them and optionally also the links to dispatchers can already be established and permanently reserved in order to speed up the call set-up for emergency voice group calls.

VGCS_ASSIGNMENT RESULT: Acknowledgement message from the affected BSC in answer to the assignment requests. If the assignment is not successful, a VGCS_ASSIGNMENT_FAILURE message shall be sent instead.

CONNECT to MSC-A: Set-up of the ISUP connection from the anchor MSC is confirmed.

SEND_GROUP CALL_END_SIGNAL: Indicates to the anchor MSC that conversation can start. In addition the IMSI of service subscriber who has established the voice group call and who is allowed to terminate the call is included.

Txx: Timer implemented in the relay MSC which is started with the incoming SETUP message from the anchor MSC and stops with the outgoing paging message. If the timer expires before the MSC receives all of the expected CHAN_REQ_ACK from the BSCs, the VGCS shall be established by the relay MSC to all available parts of the group call area and the anchor MSC shall be informed that conversation can start.

NOTIF_REQ (NCH): Messages for notification which contain the group call reference, the priority of the call if eMLPP is applied, and possibly the channel description of the voice group call channel to which the mobile stations shall listen and the number of the group key used for ciphering.

NOTIF_REQ (FACCH): Message for notification sent on the FACCH to the mobile stations currently involved in other calls. The notification on the FACCH shall include the group call reference, and the priority level and may include also the channel description and the group ciphering key numbers.

Periodic NOTIF_REQ (NCH): The notifications are sent periodically so that mobile stations moving into the area can join the voice group call.

Periodic SACCH Info: Periodic messages sent on the downlink of the SACCH informing mobile stations of:

- information of changes of notifications;
- information used for cell re-selection.

CONNECT (from MSC-A): Call set-up of the dedicated connection for the calling service subscriber is confirmed.

CONNECT: Information to the mobile station of the calling subscriber that the VGCS is established with the related group call reference as the connected number.

UPLINK_RELEASE: When the calling service subscriber wants to become a listening service subscriber for the first time, a message indicating release of the uplink is required to be sent from the MS to the BSS in order to set the uplink free.

NOTE 9a: For different cases of uplink release and the related message flows refer to Figure 6.1 to 6.6.

UPLINK_RELEASE_INDICATION: The BSS informs the MSC on the uplink release.

PROCESS_GROUP CALL_SIGNALLING (uplink release indication): To indicate to the anchor MSC that the uplink is free.

CLEAR COMMAND: The MSC requests the BSS to clear radio and terrestrial resources associated with originator dedicated link if not already done.

CHAN_RELEASE: The BSS sends a channel release message to the calling service subscriber's mobile station including the channel description of the voice group call channel to which the mobile station shall tune to.

NOTE 10: Alternatively, if no UPLINK_RELEASE has been sent to the network by the mobile station, the network may transfer the mobile station to the voice group call channel by the channel mode modify procedure or by an assignment procedure or by a handover procedure.

DISC: Two layer 2 disconnect messages shall be sent by the mobile station to the network.

RELEASE from MSC-A: The dedicated connection for the initiating service subscriber is released.

**** Next Modified Section ****

12.3 Messages on the I-interface (MSC-GCR)

12.3.1 GCR Interrogation

The following information elements are required.

Information element name	Required	Description
Group call reference	C	see clause 9. Must be present if the VGCS call was initiated by a dispatcher or by a service subscriber in the relay MSC area and the receiving GCR is associated to the anchor MSC, or if the receiving GCR is associated to a relay MSC and the GCR interrogation was triggered by a Prepare Group Call message received from the anchor MSC.
Group ID	C	see clause 9. Must be present if the VGCS call was initiated by a service subscriber in the own MSC area, except if the MSC is a relay MSC and the GCR interrogation was triggered by a Prepare Group Call message received from the anchor MSC.
Originating Cell ID	C	see clause 9. Must be present if the VGCS call was initiated by a service subscriber in the own MSC area, except if the MSC is a relay MSC and the GCR interrogation was triggered by a Prepare Group Call message received from the anchor MSC.
CLI	C	Calling Line Identity of the initiating dispatcher, or VGCS prefix plus group call reference in case of service subscriber originated VGCS call in the relay MSC. Must be present if the VGCS call was not initiated by a service subscriber located in the own MSC area
Relay MSC indicator	M	A flag indicating whether the GCR interrogation was triggered from a Prepare Group Call message received from the anchor MSC
IMSI	C	IMSI of the service subscriber who has initiated the VGCS call. Must be present if the VGCS call was initiated by a service subscriber in the own MSC area

12.3.2 GCR Interrogation ack

The following information elements are required.

Information element name	Required	Description
Group call reference	C	Must be present if the GCR receives an interrogation request containing a Group ID and an Originating Cell ID.
Cell List	C	A list of cells inside the MSC area into which the call is to be sent. Must be present if a) no anchor MSC address is present in the group call reference record, or b) the relay MSC indicator was set in the GCR Interrogation message
Anchor MSC Address	C	E.164 number required to route the call from the relay MSC to the anchor MSC. Must be present if the anchor MSC Address is present in the group call reference record
Relay MSC List	C	A list of relay MSCs into which the call is to be sent. Must be present if a relay MSC list is present in the group call reference record
Group Key and Number	C	Information on the cipher algorithm and the group key to be used. Must be present if Group Key and Number is present in the group call reference record
Codec Information	C	Information on the codecs allowed for the voice broadcast call. Must be present if Codec Info is present in the group call reference record
Establish to Dispatcher List	C	A list of identities of dispatchers to which a dedicated link is

		to be established. Must be present if included in the group call reference record. Note that the CLI possibly received with the GCR interrogation message must not be included
Release from Dispatcher List	C	A list of identities of dispatchers which are allowed to terminate the voice group call. Must be present if included in the group call reference record
Priority	C	The default priority level related to the voice group call if eMLPP applies. Must be present if included in the group call reference record
IMSI	C	IMSI of the service subscriber who has initiated the VGCS call. Must be present if the Relay MSC Indicator was set in the GCR interrogation message and the IMSI is present in the group call reference record
No Activity Time	C	The length of the time over which no activity is detected before the voice group call is automatically terminated

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CR-Form-v7.1

CHANGE REQUEST

⌘ **43.069** **CR** **015** ⌘ **rev** **1** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [X]

Title:	⌘	USIM based ciphering on dedicated channels
Source:	⌘	Siemens AG
Work item code:	⌘	TEI6
Date:	⌘	8/11/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

Ph2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	The current specification describes which ciphering key is to be used on the group call channel, but the case for the originator on a dedicated channel is not specified.
Summary of change:	⌘	For the originator on a dedicated channel, i.e. in originator in dedicated channel mode, the individual ciphering key will be used. The same applies for mobile dispatchers.
Consequences if not approved:	⌘	Risk of different implementations. If one entity ciphers the data with the group call key and the other entity uses the individual key for deciphering or vice versa, the call will fail.

Clauses affected:	⌘	7.3

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ 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 ftp://ftp.3gpp.org/specs/ 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.

7.3 Data confidentiality

Data confidentiality on the radio link can be provided as a network option.

If data confidentiality is provided, the downlink of the voice broadcast channel within cell of the group call area shall be ciphered using broadcast group ciphering keys derived from the same group key, see 3GPP TS 43.020 [4].

The group key is related to the group ID. For each group ID, there is a number of group keys stored on the SIM which are identified by a group key number. The group key number identifying the group key to be used for a particular voice broadcast call is provided with the notification to the mobile stations. Mobile stations which have a responded to a notification shall be informed of the group key number before they join the voice broadcast channel.

USIM based VBS ciphering uses a concept of short term keys where the short term key is derived by the GCR and the USIM from the group key and a RAND (random number) parameter. The actual broadcast group ciphering key is then derived by the BSS and the ME from the short term key, the cell global identifier, and a Cell Global Count parameter.

To include a subscriber into a voice group the required group data (including the 2 master group keys) shall be stored on the USIM, e.g. during the personalisation process or via OTA (over-the-air). To exclude a subscriber from a voice group the group data shall be deleted from the USIM. If a USIM is lost or stolen, all USIMs of the remaining members of the voice groups that this USIM is a member of need to be changed (e.g. via OTA or manual provisioning).

Details on data confidentiality for voice broadcast calls are provided in 3GPP TS 42.009 [2] and 3GPP TS 43.020 [4].

NOTE 1: USIM based VBS ciphering is not compatible with SIM based VBS ciphering which has not been completely specified. The SIM specifications contain no support for the storage of the group keys. A pre-Rel-6 VBS capable mobile station will be able to participate in an un-ciphered group call, if it is part of that group.

If data confidentiality is provided, then for a mobile station in originator in dedicated channel mode the uplink and the downlink of the dedicated channel shall be ciphered using the individual ciphering key of the service subscriber.

NOTE 2: The individual ciphering key is the key generated during a previous authentication procedure.

If data confidentiality is provided, then for a mobile dispatcher the uplink and the downlink of the dedicated channel shall be ciphered using the individual ciphering key of the dispatcher.