3GPP TSG CN Plenary Meeting #14 **NP-010619**
Kyoto, JAPAN, 12th -14th December 2001

Source: TSG CN WG4

Title: CRs on Rel-4 Bearer Independent architecture

Agenda item: 8.3

Document for: APPROVAL

Introduction:

This document contains 10 CRs on Rel-4 Work Item "CSSPLIT", that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #14 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.205	012		N4-011082	Rel-4	Correction of Handover/Relocation for Speech and Non-speech calls	F	4.2.0
23.205	014	2	N4-011427	Rel-4	New timer to support long paging in bearer independent network	F	4.2.0
23.205	016	1	N4-011361	Rel-4	Correction for Release of Network Bearer	F	4.2.0
29.232	11	1	N4-011184	Rel-4	Inclusion of H.248 Annex L, "Error Codes and Service Change Reason Description"	F	4.2.0
29.232	012		N4-011079	Rel-4	Removal of the Reuse Idle Package	F	4.2.0
29.232	014		N4-011083	Rel-4	Correction of Release Procedures	F	4.2.0
29.232	015		N4-011084	Rel-4	Clarification Of Use Of 3GUP package For PCM	F	4.2.0
29.232	016		N4-011278	Rel-4	Corrections to ABNF coding of PackageIDs	F	4.2.0
29.232	017		N4-011304	Rel-4	Correction of BICC packages	F	4.2.0
29.232	020	1	N4-011363	Rel-4	Correction of 3GUP package sub-list type	F	4.2.0

3GPP TSG-CN-WG4 Meeting #11 **N4-011304**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v5

CHANGE REQUEST

⌘ **29.232** **CR** **017** ⌘ **rev** **-** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction of BICC packages
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	14th November 2001
Category:	⌘	**F** Agreed by consensus
Release:	⌘	Rel-4

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)

Reason for change:	⌘	For TS 29.232 in Rel-4, only some of the available tone packages from ITU-T Q.1950 were supported. It is felt that more tone packages should be mentioned in order to avoid proprietary solutions.
Summary of change:	⌘	Q.1950 Annex A.11 “Expanded Services Tones Generation”, Annex A.12 “Intrusion Tones Generation” and Annex A.13 “Business Tones Generation” packages should be supported as optional BICC packages.
Consequences if not approved:	⌘	The current standardised tones might not be sufficient, leading to proprietary solutions.

Clauses affected:	⌘	13.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

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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

13 BICC packages

13.1 Mandatory BICC packages

The following BICC packages shall be supported:

- Bearer Characteristics Package (see ITU-T Recommendation Q.1950 Annex A.3);
- Bearer Network Connection Cut Through Package (see ITU-T Recommendation Q.1950 Annex A.4);
- Generic Bearer Connection Package (see ITU-T Recommendation Q.1950 Annex A.6).

13.2 Optional BICC packages

The following BICC packages shall be supported as required by the network services deployed in the network:

- Basic Call Progress Tones Generator with Directionality, (See ITU-T Recommendation Q.1950 Annex A.8);
- Expanded Call Progress tones Generator Package (See ITU-T Recommendation Q.1950 Annex A.9);
- Basic Services Tones Generation Package (See ITU-T Recommendation Q.1950 Annex A.10);
- Reuse Idle Package (see ITU-T Recommendation Q.1950 Annex A.5);
- Bearer Control Tunnelling Package (see ITU-T Recommendation Q.1950 Annex A.7);
- Expanded Services Tones Generation Package (see ITU-T Recommendation Q.1950 Annex A.11);
- Intrusion Tones Generation Package (see ITU-T Recommendation Q.1950 Annex A.12);
- Business Tones Generation Package (see ITU-T Recommendation Q.1950 Annex A.13).

14 H.248 standard packages

The following H.248 packages are used by this UMTS Capability Set:

- Generic v1 (see [10] Annex E.1);
- Base Root Package v1 (see [10] Annex E.2);
- Tone Generator Package v1 (see [10] Annex E.3);
- Tone Detection Package v1 (see [10] Annex E.4);
- Basic DTMF Generator Package v1 (see [10] Annex E.5);
- DTMF Detection Package v1 (see [10] Annex E.6);
- Call Progress Tones Generator Package v1 (see [10] Annex E.7);
- Generic Announcement Package v1 (see [10] Annex K);
- TDM Circuit Package v1 (see [10] Annex E.13).

End modified section

3GPP TSG-CN-WG4 Meeting #10 ***N4-011082***
Brighton, UK, 15th - 19th October 2001

CR-Form-v4

CHANGE REQUEST

⌘ **23.205 CR 012** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction of Handover/Relocation for Speech and Non-speech calls
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	5th October 2001
Category:	⌘	**F** (essential)
Release:	⌘	REL-4

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)

Reason for change:	⌘	In the clause 8 “Handover/Relocation”, the use of speech and non-speech parameters is not specified in certain clauses. In addition other clauses are missing the inclusion of MSC-B/MGW-B handling (e.g. 8.2.2), have additional use of multiple bearers (e.g. 8.1.3.1), incorrect figure reference (e.g.8.4.2.2), incorrect procedure name (e.g. 8.4.3.2) and wrong reference to call clearing (e.g. 8.2.3.1).
Summary of change:	⌘	The handling of speech coding for Speech Handover and PLMN BC/GSM channel coding for Data Handover is handled in consistent way. The use of MSC-B/MGW-B is described in consistent manner. References to call clearing clause, figures and procedure name have been corrected (where applicable).
Consequences if not approved:	⌘	In some GSM HO cases, the text incorrectly states that GSM channel coding would be sent for both speech and data calls, e.g. clause 8.2.3.1.

Clauses affected:	⌘	8.1.2.1, 8.1.2.2, 8.1.3.1, 8.2.1, 8.2.2.1, 8.2, 8.2.3.1, 8.3.1, 8.3.2.1, 8.3.3, 8.4.1, 8.4.2.1, 8.4.2.2, 8.4.3.1, and 8.4.3.2.
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
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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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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

8 Handover/Relocation

NOTE: All message sequence charts in this clause are examples. All valid handover/relocation message sequences can be derived from the example message sequences and associated message pre-conditions.

8.1 UMTS to UMTS

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8.1.2 Basic Inter-MSC SRNS Relocation

The procedures specified in 3GPP TS 23.009 [8] for 'Basic Relocation Procedure Requiring a Circuit Connection between 3G_MSC-A and 3G_MSC-B' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.1.2.1 MSC-A/MGW-A

Bearer establishment between MGW-A and MGW-B

The handling of the bearer establishment is as described for a Basic Mobile Originating Call, using either forward or backward bearer establishment. For speech calls, the MSC-A server shall provide the MGW-A with the speech coding information for the bearer. ~~The differences are that for~~ For non-speech calls, the MSC-A server ~~also provides~~shall provide MGW-A with the same PLMN Bearer Capability [4] as was provided at the last access bearer assignment. The MSC-A server also uses the Change Flow Direction procedure to request MGW-A to set the Handover Device to initial state (bullet 3 in figure 8.4/1).

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8.1.2.2 MSC-B/MGW-B

MGW selection

The MSC-B server selects an MGW when it receives Prepare Handover Request message (bullet 1 in figure 8.4/1).

Bearer establishment towards RNC-B

When the MSC-B server has selected MGW-B it requests MGW-B to provide a binding reference and a bearer address, using the Prepare Bearer procedure. For speech calls, the MSC-B server shall provide the MGW-B with the speech coding information for the bearer. The MSC-B server sends the Relocation Request message to the RNC-B containing the bearer addresses and binding references (bullet 2 in figure 8.4/1).

Bearer establishment between MGW-A and MGW-B

The handling of the bearer establishment is as described at Basic Mobile Terminating Call, using either forward or backward bearer establishment.

Next modified section

8.1.3 Subsequent Inter-MSC SRNS Relocation back to the Anchor MSC

The procedures specified in 3GPP TS 23.009 [8] for 'Subsequent Relocation from 3G_MSC-B to 3G_MSC-A requiring a Circuit Connection between 3G_MSC-A and 3G_MSC-B' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.1.3.1 MSC-A/MGW-A

Relocation Required

When the MSC-A server receives the Relocation Required message, it requests MGW-A to provide a binding reference and a bearer address ~~for each established bearer,~~ using the Prepare Bearer procedure. For speech calls, the MSC-A server shall provide the MGW-A with the speech coding information for the bearer. For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the same PLMN Bearer Capability [4] as was provided at the last access bearer assignment. The MSC-A server uses the Change Flow Direction procedure to request the MGW-A to set the Handover Device to initial state. The MSC-A server sends the Relocation Request message, containing the bearer address~~es~~ and the binding reference~~s~~, to RNC-B (bullet 1 in figure 8.6/1).

Relocation Command/Relocation Detect

When the MSC-A server sends the Relocation Command message or alternatively if it receives the Relocation Detect message, the MSC-A server uses the Change Flow Direction procedure to requests MGW-A to set the Handover Device to intermediate state (bullet 2 in figure 8.6/1).

Relocation Complete

When the MSC-A server receives the Relocation Complete message, it informs the MSC-B server about reception of this message. The MSC-A server then initiates call clearing towards the MSC-B server as described in subclause 7.3.

Interworking function

The interworking function used by MGW-A before relocation will also be used after relocation.

Codec handling

The MGW may include a speech transcoder based upon the speech coding information provided to each bearer termination.

Voice Processing function

Voice processing function(s) provided by MGW-A and MGW-B before relocation, may be continued or modified by MGW-A after relocation.

Handling of multiple bearers (multicall)

If the UE is engaged with multiple bearers all procedures related to the handling of bearers and terminations described for the relocation of a single bearer shall be repeated for each bearer.

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Next modified section

8.2 UMTS to GSM

8.2.1 Intra-MSC UMTS to GSM Handover

The procedures specified in 3GPP TS 23.009 [8] for 'Intra-3G_MSC Handover from UMTS to GSM' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

Relocation Required

When the MSC server receives the Relocation Required message, it requests the MGW to seize a TDM circuit, using the Reserve Circuit procedure. For non-speech calls the MSC server ~~also provides~~shall provide the MGW with the GSM Channel coding properties and the same PLMN Bearer Capability [4] as was provided at the last access bearer assignment. ~~For non-speech calls the MSC server also provides the MGW with the GSM Channel coding properties.~~ The MSC server uses the Change Flow Direction procedure to request the MGW to set the Handover Device to initial state. The MSC server sends the Handover Request message, containing the CIC, to BSC-B (bullet 1 in figure 8.8/1).

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Next modified section

8.2.2 Basic Inter-MSC UMTS to GSM Handover

The procedures specified in 3GPP TS 23.009 [8] for 'Basic Handover Procedure Requiring a Circuit Connection between 3G_MSC-A and MSC-B' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.2.2.1 MSC-A/ MGW-A

Bearer establishment between MGW-A and MGW-B

The handling of the bearer establishment between MGW-A and MGW-B is as described for a Basic Mobile Originating Call, using either forward or backward bearer establishment. ~~The differences are that for~~ For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the GSM Channel coding properties and the same PLMN Bearer Capability [4] as was provided at the last access bearer assignment. ~~For non-speech calls the MSC-A server also provides MGW-A with the GSM Channel coding properties.~~ The MSC-A server also uses the Change Flow Direction procedure to request MGW-A to set the Handover Device to initial state (bullet 3 in figure 8.10/1).

Relocation Command/Handover Detect

When the MSC-A server sends the Relocation Command message or alternatively if it receives the Handover Detect message, the MSC-A server uses the Change Flow Direction procedure to requests the MGW to set the Handover Device to intermediate state (bullet 2 in figure 8.10/1).

Handover Complete

When the MSC-A server receives the Relocation Complete message, it requests RNC-A to release the IU. The MSC-A also requests the MGW to set the Handover Device to its final state by removing the bearer termination towards RNC-A, using the Release Termination procedure (bullet 3 in figure 8.10/1).

Interworking function

The interworking function used by MGW-A before handover will also be used after handover.

Voice Processing function

Voice processing function(s) provided by MGW-A before handover, may be continued or modified by MGW-A and/or MGW-B after handover.

Handling of multiple bearers (multicall)

If the UE is engaged with multiple bearers then one bearer is selected to be handed over according to 3GPP TS 23.009 [8]. The calls carried by bearers that have not been selected will be cleared after the reception of Handover Complete message, as described in subclause 7.3.

Failure Handling in MSC server

When a procedure between the MSC-A server and MGW-A fails the MSC-A server shall handle the failure as an internal error in accordance with 3GPP TS 23.009 [8] and 3GPP TS 29.010 [23]. If MGW-A resources have been already seized for the bearer towards MGW-B then the resources shall be released using the Release Termination procedure. The call towards MSC-B server shall be cleared as described in subclause 7.3. If the original call is to be cleared, then it shall be handled as described in subclause 7.3.

8.2.2.2 MSC-B / MGW-B

MGW selection

The MSC-B server selects an MGW when it receives Prepare Handover Request message (bullet 1 in figure 8.10/1).

Bearer establishment towards BSC-B

When the MSC-B server has selected MGW-B it requests MGW-B to seize a TDM circuit, using the Reserve Circuit procedure. The MSC-B server sends the Handover Request message to the BSC-B containing the CIC (bullet 2 in figure 8.10/1).

Bearer establishment between MGW-A and MGW-B

The handling of the bearer establishment between MGW-A and MGW-B is as described for a Basic Mobile Terminating Call, using either forward or backward bearer establishment.

Voice Processing function

Voice processing function(s) provided by MGW-A before handover, may be continued or modified by MGW-B after handover.

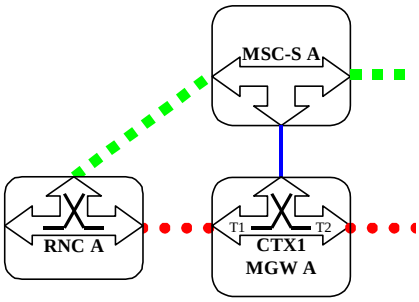
Failure Handling in MSC server

When a procedure between the MSC-B server and MGW-B fails the MSC-B server shall handle the failure as an internal error in accordance with 3GPP TS 23.009 [8] and 3GPP TS 29.010 [23]. If MGW-B resources have already been seized at the target access side then the resources shall be released using the Release Termination procedure. The call from MSC-A server shall be released as described at subclause 7.1.

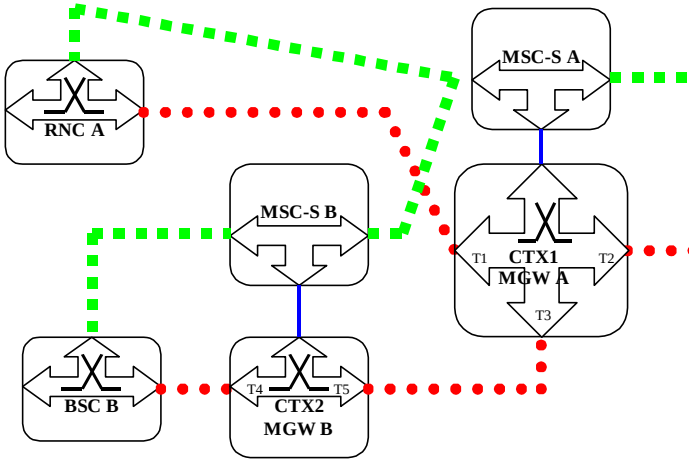
Example

Figure 8.9 shows the network model for the Basic Inter-MSC UMTS to GSM Handover. The 'squared' line represents the call control signalling. The 'dotted' line represents the bearer control signalling (not applicable in case of GSM access) and the bearer. In MGW-A the bearer termination T1 is used for the bearer towards RNC-A, bearer termination T3 is used for the bearer towards MGW-B, and the bearer termination T2 is used for the bearer towards the succeeding/preceding MGW. In MGW-B the bearer termination T4 is used for the bearer towards BSC-B, bearer termination T5 is used for the bearer towards MGW-A.

Before Handover:



During Handover:



After Handover:

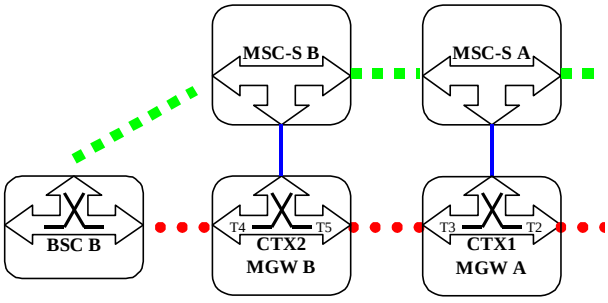


Figure 8.9 Basic Inter-MSC UMTS to GSM Handover (network model)

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Next modified section

8.2.3 Subsequent Inter-MSC UMTS to GSM Handover back to the Anchor MSC

The following handling shall be applied for a call that started as UMTS call. The procedures specified in 3GPP TS 23.009 [8] for 'Subsequent UMTS to GSM handover requiring a Circuit Connection between 3G_MSC-A and 3G_MSC-B, 3G_MSC-B to MSC-A' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.2.3.1 MSC-A

Relocation Required

When the Relocation Required message is received, the MSC-A server requests MGW-A to seize a TDM circuit, using the Reserve Circuit procedure. For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the GSM Channel coding properties and the same PLMN Bearer Capability ~~BC~~ [4] as was provided at the first~~last~~ access bearer assignment. ~~The MSC-A server also provides MGW-A with the GSM Channel coding properties.~~ The MSC-A server uses the Change Flow Direction procedure to request MGW-A to set the Handover Device to initial state. The MSC-A server sends the Handover Request message, containing the CIC, to BSC-B (bullet 1 in figure 8.12/1).

Handover Request Acknowledge

For non-speech calls after receiving the Handover Request Acknowledge message if the assigned GSM Channel coding properties differ from the previously provided ones the MSC-A server ~~provides~~shall provide MGW-A with the assigned GSM Channel coding properties using the Modify Bearer Characteristics procedure (bullet 2 in figure 8.12/1).

Relocation Command/Handover Detect

When the MSC-A server sends the Relocation Command message or alternatively if it receives the Handover Detect message, the MSC-A server uses the Change Flow Direction procedure to requests MGW-A to set the Handover Device to intermediate state (bullet 3 in figure 8.12/2).

Handover Complete

When the MSC-A server receives the Handover Complete message, it informs the MSC-B server about reception of this message (bullet 3 in figure 8.12/2). The MSC-A server then initiates call clearing towards the MSC-B server as described at 7.3~~2~~.

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Next modified section

8.3 GSM to UMTS

8.3.1 Intra-MSC GSM to UMTS Handover

The procedures specified in 3GPP TS 23.009 [8] for 'Intra-3G_MSC GSM to UMTS Handover' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

Handover Required

When the MSC server receives the Handover Required message, it requests the MGW to provide a binding reference and a bearer address using the Prepare Bearer procedure. For speech calls, the MSC server shall provide the MGW with the speech coding information for the bearer. For non-speech calls the MSC server ~~also provides~~shall provide the MGW with the same PLMN Bearer Capability [4] as was provided at the last channel assignment. The MSC server uses the Change Flow Direction procedure to request the MGW to set the Handover Device to initial state. The MSC server

sends the Relocation Request message to the RNC-B containing the bearer address and binding reference (bullet 1 in figure 8.14).

Handover Command/Relocation Detect

When the MSC server sends the Handover Command message or alternatively if it receives a Relocation Detect message, the MSC server uses the Change Flow Direction procedure to requests the MGW to set the Handover Device to intermediate state (bullet 2 in figure 8.14).

Relocation Complete

When the MSC server receives the Relocation Complete message, it releases the A-interface line towards BSC-A and requests the MGW to set the Handover Device to its final state by ~~releasing the bearer between the MSC server and the MGW~~ removing the bearer termination towards BSC-A, using Release Termination procedure (bullet 3 in figure 8.14).

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Next modified section

8.3.2 Basic Inter-MSC GSM to UMTS Handover

The following handling shall be applied for a call that started as UMTS call. The procedures specified in 3GPP TS 23.009 [8] for 'Basic Handover Procedure Requiring a Circuit Connection between MSC-A and 3G_MSC-B' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.3.2.1 MSC-A

Bearer establishment between MGW-A and MGW-B

The handling of the bearer establishment between MGW-A and MGW-B is as described for a Basic Mobile Originating Call, using either forward or backward bearer establishment. For speech calls, the MSC-A server shall provide the MGW-A with the speech coding information for the bearer. ~~The differences are that for~~For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the same PLMN Bearer Capabilities [4] as were provided at the last access bearer assignment. The MSC-A server also uses the Change Flow Direction procedure to request MGW-A to set the Handover Device to initial state (bullet 3 in figure 8.16/1).

Handover Command/Handover Detect

When the MSC-A server sends the Handover Command message or alternatively if it receives the Handover Detect message, the MSC-A server uses the Change Flow Direction procedure to requests MGW-A to set the Handover Device to intermediate state (bullet 4 in figure 8.16/2).

Handover Complete

When the MSC-A server receives the Handover Complete message, it releases the A-interface line towards BSC-A and requests MGW-A to set the Handover Device to its final state by ~~releasing the bearer between the MSC-A server and MGW-A~~ removing the bearer termination towards BSC-A, using Release Termination procedure (bullet 5 in figure 8.16/2).

Interworking function

The interworking function used by MGW-A before handover will also be used after handover.

Codec handling

The MGW may include a speech transcoder based upon the speech coding information provided to each bearer termination.

Voice Processing function

Voice processing function(s) provided by MGW-A before handover, may be modified or disabled by MGW-A after handover.

Failure Handling in MSC server

When a procedure between the MSC-A server and MGW-A fails the MSC-A server shall handle the failure as an internal error in accordance with 3GPP TS 23.009 [8] and 3GPP TS 29.010 [23]. ~~If MGW-A resources have already been seized for the bearer towards MGW-B then the resources shall be released using the Release Termination procedure. T~~If the call establishment towards MSC-B has already started then the call towards MSC-B server shall be cleared as described in subclause 7.3. If the original call is to be cleared, then it shall be handled as described in subclause 7.3.

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Next modified section

8.3.3 Subsequent Inter-MSC GSM to UMTS Handover back to the Anchor MSC

The following handling shall be applied for a call that started as UMTS call. The procedures specified in 3GPP TS 23.009 [8] for 'Subsequent Inter-MSC GSM to UMTS Handover back to the Anchor MSC' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.3.3.1 MSC-A

Handover Required

When the MSC-A server receives a Handover Required message from BSC-A (via MSC-B server), it requests the MGW-A to provide a binding reference and a bearer address using the Prepare Bearer procedure. For speech calls, the MSC-A server shall provide the MGW-A with the speech coding information for the bearer. For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the same PLMN Bearer Capability [4] as was provided at the last channel assignment. The MSC-A server uses the Change Flow Direction Procedure to request the MGW-A to set the Handover Device to initial state. The MSC-A server sends the Relocation Request message to the RNC-B containing the bearer address and binding reference (bullet 1 in figure 8.18/1).

Handover Command/Relocation Detect

When the MSC-A server sends the Handover Command message or alternatively if it receives a Relocation Detect message, the MSC-A server uses the Change Flow Direction procedure to requests the MGW-A to set the Handover Device to intermediate state (bullet 2 in figure 8.18/2).

Relocation Complete

When the MSC-A server receives a Relocation Complete message, it informs the MSC-B server about reception of this message. MSC-A server then initiates call clearing towards the MSC-B server as described in subclause 7.3.

Interworking function

The interworking function used by MGW-A before handover will also be used after handover.

Codec handling

The MGW may include a speech transcoder based upon the speech coding information provided to each bearer termination.

Voice Processing function

Voice processing function(s) provided by MGW-A and MGW-B before handover, may be continued or modified by MGW-A after handover.

Failure Handling in MSC server

When a procedure between the MSC-A server and the MGW fails the MSC-A server shall handle the failure as an internal error in accordance with 3GPP TS 23.009 [8] and 3GPP TS 29.010 [23]. If MGW resources have been already seized at the target access side then the resources shall be released using the Release Termination procedure. If the call is to be cleared, then it shall be handled as described in subclause 7.3.

8.3.3.2 MSC-B / MGW-B

Handover Complete

When the MSC-B server receives the Handover Complete message, it releases the A-interface line towards the BSC-A and requests the MGW-B to remove the bearer termination towards the BSC-A using the Release Termination procedure (bullet 3 in figure 8.18/2).

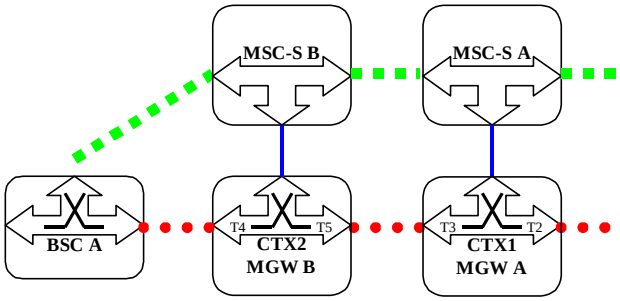
Release of bearer towards MGW-A

When the MSC-B server receives a call clearing indication from the MSC-A server, the MSC-B server handles it as described in subclause 7.3.

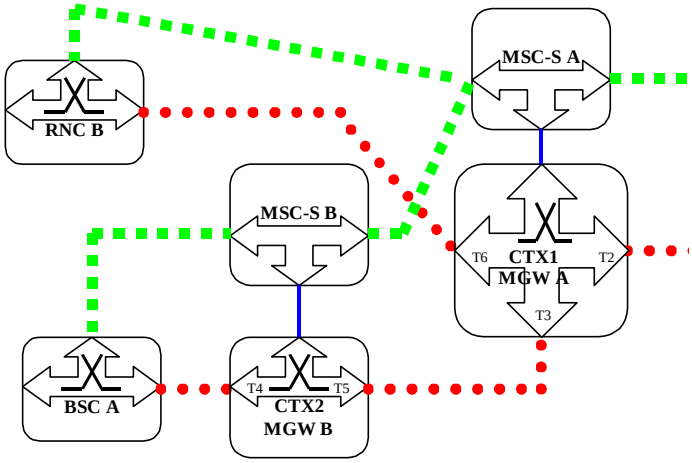
Example

Figure 8.17 shows the network model for Subsequent Inter-MSC GSM to UMTS Handover back to the Anchor MSC. The 'squared' line represents the call control signalling. The 'dotted' line represents the bearer control signalling (not applicable in case of GSM access) and the bearer. In the MGW the bearer termination T1 is used for the bearer towards RNC-B, the bearer termination T3 is used for the bearer towards MSC-A server, and the bearer termination T2 is used for the bearer towards the succeeding/preceding MGW. In MGW-B the bearer termination T4 is used for the bearer towards BSC-A, bearer termination T5 is used for the bearer towards MGW-A.

Before Handover:



During Handover:



After Handover:

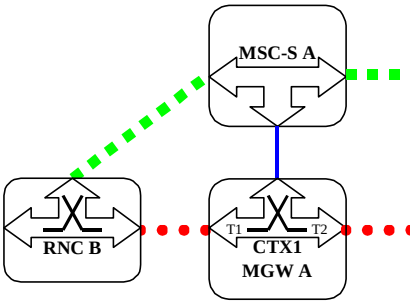


Figure 8.17 Subsequent Inter-MSC GSM to UMTS Handover back to the Anchor MSC (network model)

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Next modified section

8.4 GSM to GSM

8.4.1 Intra-MSC GSM to GSM Handover

The procedures specified in 3GPP TS 23.009 [8] for 'Intra-MSC Handover' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

Handover Required

When the MSC server receives a Handover Required message, it requests the MGW to seize a TDM circuit, using the Reserve Circuit procedure. For non-speech calls the MSC server ~~also provides~~shall provide the MGW with the GSM Channel coding properties and the same PLMN Bearer Capability~~BC~~ [4] as was provided at the last access bearer assignment. ~~The MSC server also provides the MGW with the GSM Channel coding properties.~~ The MSC server uses the Change Flow Direction procedure to request the MGW to set the Handover Device to initial state. The MSC server sends the Handover Request message to the BSC-B containing the CIC (bullet 1 in figure 8.20/1).

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Next modified section

8.4.2 Basic Inter-MSC GSM to GSM Handover

The procedures specified in 3GPP TS 23.009 [8] for 'Basic Handover Procedure Requiring a Circuit Connection between MSC-A and MSC-B' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.4.2.1 MSC-A / MGW-A

Bearer establishment between MGW-A and MGW-B

The handling of the bearer establishment between MGW-A and MGW-B is as described for a Basic Mobile Originating Call, using either forward or backward bearer establishment. ~~The differences are that f~~For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the GSM Channel coding properties and the same PLMN Bearer Capability [4] as was provided at the last access bearer assignment. The MSC-A server also uses the Change Flow Direction procedure to request MGW-A to set the Handover Device to initial state (bullet 3 in figure 8.22/2).

Handover Command/Handover Detect

When the MSC-A server sends the Handover Command message or alternatively if it receives the Handover Detect message, the MSC-A server uses the Change Flow Direction procedure to requests MGW-A to set the Handover Device to intermediate state (bullet 4 in figure 8.22/2).

Handover Complete

When the MSC-A server receives the Handover Complete message, it releases the A-interface line towards the BSC-A. The MSC-A server also requests MGW-A to set the Handover Device to its final state by removing the bearer termination towards the BSC-A, using the Release Termination procedure (bullet 5 in figure 8.22/2).

Interworking function

The interworking function used by MGW-A before handover will also be used after handover.

Voice Processing function

Voice processing function(s) provided by MGW-A before handover, may be modified or disabled by MGW-A after handover.

Failure Handling in MSC server

When a procedure between the MSC-A server and MGW-A fails the MSC-A server shall handle the failure as an internal error in accordance with 3GPP TS 23.009 [8] and 3GPP TS 29.010 [23]. If call establishment towards the MSC-B server has already started then the call towards MSC-B server shall be cleared as described in subclause 7.3. If the original call is to be cleared, then it shall be handled as described in subclause 7.3.

8.4.2.2 MSC-B / MGW-B

MGW selection

The MSC-B server selects an MGW when it receives Prepare Handover Request message (bullet 1 in figure 8.22/1~~4~~).

Bearer establishment towards BSC-B

When the MSC-B server has selected MGW-B it requests MGW-B to seize a TDM circuit, using the Reserve Circuit procedure. The MSC-B server sends the Handover Request message to the BSC-B containing the CIC (bullet 2 in figure 8.22/1).

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Next modified section

8.4.3 Subsequent Inter-MSC GSM to GSM Handover back to the Anchor MSC

The procedures specified in 3GPP TS 23.009 [8] for 'Subsequent Handover from MSC-B to MSC-A requiring a Circuit Connection between 3G_MSC-A and 3G_MSC-B' shall be followed. The following paragraphs describe the additional requirements for the bearer independent CS core network.

8.4.3.1 MSC-A / MGW-A

Handover Required

When the MSC-A server receives the Handover Required message, it requests MGW-A to seize a TDM circuit, using the Reserve Circuit procedure. For non-speech calls the MSC-A server ~~also provides~~shall provide MGW-A with the GSM Channel coding properties and the same PLMN Bearer Capability ~~BC~~ [4] as was provided at the first~~last~~ access bearer assignment. ~~The MSC-A server also provides MGW-A with the GSM Channel coding properties.~~ The MSC-A server uses the Change Flow Direction Procedure to request MGW-A to set the Handover Device to initial state. The MSC-A server sends the Handover Request message to the BSC-B containing the CIC (bullet 1 in figure 8.24/1).

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Next modified section

8.4.3.2 MSC-B / MGW-B

Handover Complete

When the MSC-B server receives the Handover Complete message, it releases the A-interface line towards the BSC-A and requests the MGW-B to remove the bearer termination towards the BSC-A using the Release ~~Bearer~~ Termination procedure (bullet 4 in figure 8.24/2).

Release of bearer towards MGW-A

When the MSC-B server receives a call clearing indication from the MSC-A server, the MSC-B server handles it as described in subclause 7.2.

End modified section

3GPP TSG-CN-WG4 Meeting #11 **N4-011427**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v5

CHANGE REQUEST

⌘ **23.205** **CR** **014** ⌘ **rev** **2** ⌘ Current version: **4.2.0** ⌘

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

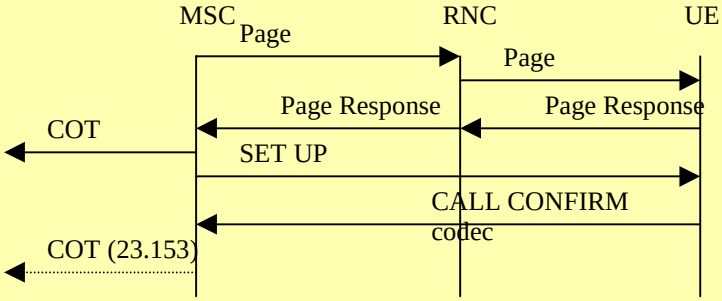
Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	New timer to support long paging in bearer independent network
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	19th November 2001
Category:	⌘	**F** (Essential)
Release:	⌘	Rel-4

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)

Reason for change: ⌘ In bearer independent network it is beneficial to **delay selection of MGWs** and bearer establishments until final destination of the call is known. For mobile terminating call this would mean until paging procedure has been completed. For out of band transcoder control (23.153) it is beneficial even to delay MGW selection until Call Confirmed message is received from the mobile.



In TS23.205 v4.2, clauses 6.2.1.2 and 6.2.2.2, it states that MGW selection can be deferred until the Called Confirmed message is received. This means that there is a relationship between call establishment in the network and paging in the terminating MSC server.

By delaying the bearer establishments (and MGW selection) the Initial Address Message shall indicate that continuity (COT) message will follow later on. Each server that receives this indication starts a COT timer to expect COT message within specified time (e.g. Timer T8 from ITU-T Q.1902.4 is 10 – 15 seconds). If the COT timer expires the call would be released.

In case the bearer establishment is delayed in terminating MSC server until paging response is received from the mobile then there is a likelihood that the call is released by an intermediate (G)MSC server. This is because the COT timer expires before the paging response is received in the case of long paging. To support the possibility of continuing call setup after successful long paging it is proposed to introduce a new guard timer in terminating MSC server. This guard

		timer would start the bearer establishment in the network before COT timers expires in the preceding servers. This gives the possibility to wait until paging response in the bearer independent network for a similar period as in a monolithic network.
Summary of change:	⌘	New timer is introduced in terminating MSC server for duration of paging. If the new timer expires the bearer establishment is started in the network even though final location of the mobile is not known yet. The new timer would have expiry time of 1 – 14 seconds.
Consequences if not approved:	⌘	The bearer independent network does not have the same support for long paging times as a monolithic network has. Calls of long paging might be released unnecessarily too early.

Clauses affected:	⌘	6.2.1.2, 6.2.2.2, 19 (new)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

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Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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

6.2 Basic Mobile Terminating Call

6.2.1 Forward bearer establishment

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6.2.1.2 MSC server

Paging

If the network side bearer establishment ~~shall~~ is ~~be~~ delayed ~~until~~whilst the paging procedure is completed, the MSC server starts the Start_Bearer_Establishment timer when the paging procedure is started. The Start_Bearer_Establishment timer is stopped when the paging procedure is completed, or optionally when the Call Confirmed message is received in accordance with 3GPP TS 23.153 [3]. If the Start_Bearer_Establishment timer expires, the MSC server starts the network side bearer establishment.

Call setup

The MSC server indicates to the UE in the SETUP message that early access bearer assignment is used in order to establish the bearer end-to-end before the UE starts alerting. The MSC server indicates to the UE in SETUP message that early access bearer assignment is used if either of the following conditions is satisfied before sending the SETUP message (bullet 2 in figure 6.6):

1. The incoming IAM indicated that the Continuity message will follow, but no Continuity message has been received;

2. A notification of successful bearer establishment in the network side has not been received from the MGW.

MGW selection

The MSC server shall select an MGW for the bearer connection before it performs the network side bearer establishment or the access bearer assignment. This happens at latest after the UE has sent the Call Confirmed message. If the MSC server received an MGW-id from the preceding node, it may use this for the MGW selection (bullet 3 in figure 6.6).

Network side bearer establishment

The MSC server requests the MGW to prepare for the network side bearer establishment using the Prepare Bearer procedure. The MSC server requests the MGW to provide a bearer address, a binding reference and to notify when the bearer is established (bullet 3 in figure 6.6). The MSC server also provides the MGW with the bearer characteristics that was received from the preceding node in the IAM. After the MGW has replied with the bearer address and the binding reference, the MSC server provides the Bearer Information message to the preceding node. The MSC server may also provide the MGW-id in the Bearer Information message.

Access bearer assignment

The access bearer assignment may be started when both of the following conditions are satisfied:

1. Either:

a. The incoming IAM indicated that the Continuity message will follow, and a Continuity message has been received from the preceding node, or

b. The incoming IAM did not indicate that the Continuity message will follow;

2. A notification of successful bearer establishment in the network side has been received from the MGW (bullet 6 in figure 6.6).

The MSC server shall select bearer characteristics for the access bearer.

For the access bearer assignment in UTRAN the MSC server requests the MGW to prepare for the access bearer establishment using the Prepare Bearer procedure. The MSC server requests the MGW to provide a bearer address and a binding reference, and provides the MGW with the bearer characteristics. For speech calls, the MSC server shall provide the MGW with the speech coding information for the bearer. For a non-speech call the MSC server also provides the MGW with a PLMN Bearer Capability [4]. After the MGW has replied with the bearer address and the binding reference the MSC server requests the access bearer assignment using the provided bearer address and the binding reference (bullet 9 in figure 6.6).

For GERAN, before the MSC server starts the access bearer assignment, the MSC server uses the Reserve Circuit procedure to seize a TDM circuit. For a non-speech call the MSC server also provides the MGW with a PLMN Bearer Capability [4] and a GSM channel coding. After the MGW has replied the TDM circuit seizure the MSC server requests access bearer assignment (bullet 10 in figure 6.6).

Framing protocol initialisation

In 3GPP CS CN speech and data shall be carried using the Iu/Nb User Plane Protocol. The specification for the Iu UP protocol is defined in [20] and the Nb UP Protocol in [7] and [21]. The Iu/Nb UP Protocol is established through the CN in a forward direction. This is established independently of the bearer establishment direction. The MGW derives the forward direction from information sent by the MSC server within the Establish Bearer and Prepare Bearer procedures [6]. The notification of bearer establishment shall not be sent until the Nb UP has been initialised.

Called party alerting

For a speech call, when the MSC server receives an Alerting message, it requests the MGW to provide a ringing tone to the calling party using the Send Tone procedure (bullet 11 in figure 6.6).

NOTE: Other kind of tones may be provided to the calling party at an earlier stage of the call establishment.

Called party answer

For a speech call, when the MSC server receives a Connect message, it requests the MGW to stop providing the ringing tone to the calling party using the Stop Tone procedure (bullet 12 in figure 6.6).

Through-Connection

During the Prepare Bearer and Reserve Circuit procedures, the MSC server will use the Change Through-Connection procedure to request the MGW to through-connect the bearer terminations so that the bearer will be not through-connected (bullet 3, and bullet 9 or 10 in figure 6.6).

When the MSC server receives the Connect message, it requests the MGW to both-way through-connect the bearer using the Change Through-Connection procedure (bullet 12 in figure 6.6).

Interworking function

The MGW may use an interworking function that is based on the PLMN Bearer Capability [4] of the bearer termination. The activation of the possible interworking function in both bearer terminations will be requested by the MSC server at reception of the Connect message using the Activate Interworking Function procedure (bullet 12 in figure 6.6).

Codec handling

The MGW may include a speech transcoder based upon the speech coding information provided to each bearer termination.

Voice Processing function

A voice processing function located on the MGW may be used to achieve desired acoustic quality on the bearer terminations. The MSC server shall request the activation of the voice processing functions in the bearer terminations. For non-speech calls, the MSC server has the ability to instruct the MGW to disable the voice processing functions (bullet 12 in figure 6.6).

Failure handling in MSC server

If any procedure between the MSC server and the MGW is not completed successfully, the call shall be cleared as described in clause 7.3, (G)MSC server initiated call clearing. Alternatively, the MSC server may only release the resources in the MGW that caused the failure, possibly select a new MGW for the bearer connection and continue the call establishment using new resources in the selected MGW.

Next modified section

6.2.2 Backward bearer establishment

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6.2.2.2 MSC server

Paging

If the network side bearer establishment ~~shall be~~ is delayed ~~until~~whilst the paging procedure is completed, the MSC server starts the Start_Bearer_Establishment timer when the paging procedure is started. The Start_Bearer_Establishment timer is stopped when the paging procedure is completed, or optionally when the Call Confirmed message is received in accordance with 3GPP TS 23.153 [3]. If ~~the Start~~the Start_Bearer_Establishment timer expires, the MSC server starts the network side bearer establishment.

Call setup

The MSC server indicates to the UE in the SETUP message that early access bearer assignment is used in order to establish the bearer end-to-end before the UE starts alerting. The MSC server indicates to the UE in the SETUP message that early access bearer assignment is used, if and only if, either of the following conditions are satisfied before sending the SETUP message (bullet 5 in figure 6.8):

1. If the IAM indicated that the Continuity message will follow, but no Continuity message has been received.
2. A notification of successful bearer establishment in the network side has not been received from the MGW.

MGW selection

The MSC server shall select an MGW for the bearer connection before it performs the network side bearer establishment or the access bearer assignment. This happens at latest after the UE has sent the Call Confirmed message. If the MSC server received an MGW-id from the preceding node, it may use this for the MGW selection (bullet 6 in figure 6.8).

Network side bearer establishment

The MSC server requests the MGW to establish a bearer to the given destination MGW and to notify when the bearer is established using the Establish Bearer procedure. The MSC server provides the MGW with the bearer address, the binding reference and the bearer characteristics that were received from the preceding node in the IAM (bullet 6 in figure 6.8).

Access bearer assignment

The access bearer assignment may be started when both of the following conditions are satisfied:

1. Either:

    a. The incoming IAM indicated that the Continuity message will follow, and a Continuity message has been received from the preceding node, or

    b. The incoming IAM did not indicate that the Continuity message will follow;

2. A notification of successful bearer establishment in the network side has been received from the MGW (bullet 7 in figure 6.8).

The MSC server shall select bearer characteristics for the access bearer.

For the access bearer assignment in UTRAN the MSC server requests the MGW to prepare for the access bearer establishment using the Prepare Bearer procedure. The MSC server requests the MGW to provide a bearer address and a binding reference and provides the MGW with the bearer characteristics. For speech calls, the MSC server shall provide the MGW with the speech coding information for the bearer. For a non-speech call the MSC server also provides the MGW with a PLMN Bearer Capability [4]. After the MGW has replied with the bearer address and the binding reference the MSC server requests the access bearer assignment using the provided bearer address and the binding reference (bullet 8 in figure 6.8).

For GERAN, before the MSC server starts the access bearer assignment, the MSC server uses the Reserve Circuit procedure to seize a TDM circuit. For a non-speech call the MSC server also provides the MGW with a PLMN Bearer Capability [4] and a GSM channel coding. After the MGW has replied the TDM circuit seizure the MSC server requests access bearer assignment (bullet 9 in figure 6.8).

Framing protocol initialisation

In 3GPP CS CN speech and data shall be carried using the Iu/Nb User Plane Protocol. The specification for the Iu UP protocol is defined in [20] and the Nb UP Protocol in [7] and [21]. The Iu/Nb UP Protocol is established through the CN in a forward direction. This is established independently of the bearer establishment direction. The MGW derives the forward direction from information sent by the MSC server within the Establish Bearer and Prepare Bearer procedures [6]. The notification of bearer establishment shall not be sent until the Nb UP has been initialised.

Called party alerting

For a speech call, when the MSC server receives an Alerting message, it requests the MGW to provide a ringing tone to the calling party using the Send Tone procedure (bullet 10 in figure 6.8).

NOTE: Other kind of tones may be provided to the calling party at an earlier stage of the call establishment.

Called party answer

For a speech call, when the MSC server receives a Connect message, it requests the MGW to stop providing the ringing tone to the calling party using the Stop Tone procedure (bullet 11 in figure 6.8).

Through-Connection

During any one of the Prepare Bearer, Reserve Circuit and Establish Bearer procedures, the MSC server will use the Change Through-Connection procedure to request the MGW to through-connect the bearer terminations so that the bearer will be not through-connected (bullet 6, and bullet 8 or 9 in figure 6.8).

When the MSC server receives the Connect message, it requests the MGW to both-way through-connect the bearer using the Change Through-Connection procedure (bullet 11 in figure 6.8).

Interworking function

The MGW may use an interworking function that is based on the PLMN Bearer Capability [4] of the bearer termination. The activation of the possible interworking function in both bearer terminations will be requested by the

MSC server at reception of the Connect message using the Activate Interworking Function procedure (bullet 11 in figure 6.8).

Codec handling

The MGW may include a speech transcoder based upon the speech coding information provided to each bearer termination.

Voice Processing function

A voice processing function located on the MGW may be used to achieve desired acoustic quality on the bearer terminations. The MSC server shall request the activation of the voice processing functions in the bearer terminations. For non-speech calls, the MSC server has the ability to instruct the MGW to disable the voice processing functions (bullet 11 in figure 6.8).

Failure handling in MSC server

If any procedure between the MSC server and the MGW is not completed successfully or the MSC server receives a Bearer Released procedure from the MGW, the call shall be cleared as described in clause 7.3, (G)MSC server initiated call clearing or in clause 7.4, MGW initiated call clearing. Alternatively, the MSC server may only release the resources in the MGW that caused the failure, possibly select a new MGW for the bearer connection and continue the call establishment using new resources in the selected MGW.

New section

19 Timers for bearer independent CS core network

Table 19.1: Timers for bearer independent CS core network

Timer identity	Timer value	Timer started	Timer stopped	Timer expiry
Start_Bearer_ Establishment	1 – 14 seconds	Paging procedure is started. Applied only if network side bearer establishment is delayed until paging procedure is completed.	Paging procedure is completed or optionally when Call Confirmed message is received.	The network side bearer establishment is started.

3GPP TSG-CN-WG4 Meeting #11 **N4-011361**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v5

CHANGE REQUEST

⌘ **23.205** **CR** **016** ⌘ **rev** **1** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction for Release of Network Bearer
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	19th November 2001
Category:	⌘	**F** (Essential)
Release:	⌘	Rel-4

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)*

Reason for change: ⌘ At the time of writing the TS 23.205 in Rel-4, ITU-T Q.1950 (see 3GPP TS 29.205) was used as a base document for writing the release clause. From this it was incorrectly concluded that the (G)MSC server would only order release of the network bearer if it had ordered bearer establishment.

However, ITU-T TRQ 2500 (12/2000) that is the actual requirement for ITU-T Q.1950 is different. In clause 8.9.1 "Release" flow 1, it states that "*Because there was a request to release the BNC, **and if the BIWF originated the bearer connection**, it initiates the release of the bearer connection with information flow (2)",* i.e. the MGW should decide whether to release the network bearer. Therefore the (G)MSC server will always indicate to the MGW that the network bearer can be released.

An amendment to the ITU-T Q.1950 (3/2001) shall be presented to the December meeting of ITU SG11 to rectify this misalignment. It is proposed to update clause 8.1.7.1 "Release" flow 1 with : "*Because there was a request to release the BNC, **and if the BIWF originated the bearer connection**, it also initiates the release of the bearer connection. The resources associated (eg. BNC-ID) with the termination are not deleted until bearer release confirmation is received.*"

Given that the radio access always initiates the release, then the current use of Release Termination procedure shall remain.

Summary of change: ⌘ For release of any network bearer the (G)MSC server will always use the Release Bearer and Change Through-Connection procedures, independently of whether the server actually established the bearer. The MGW will decide whether the network bearer should be released.

Consequences if not approved: ⌘ There could be inconsistent release handling within a multi-vendor environment.

Clauses affected: ⌘ 7.1, 7.2, 7.3

Other specs ⌘ ☐ Other core specifications ⌘

affected:	☐ Test specifications ☐ O&M Specifications	
Other comments: ⌘		

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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 Call Clearing

NOTE: All message sequence charts in this clause are examples. All valid call establishment message sequences can be derived from the example message sequences and associated message pre-conditions.

7.1 Network Initiated

The terms "incoming" and "outgoing" in the following text refers to the direction of propagation of the Release message, not to the direction of establishing the original call.

7.1.1 GMSC server

Call clearing from the incoming side

Once the Release message has been received from the preceding node, the GMSC server releases any MGW allocated resources for the incoming side. If any resources were seized in the MGW, ~~and the GMSC server had previously requested the MGW to establish a bearer,~~ the GMSC server shall use the Release Bearer, Change Through-Connection and Release Termination procedures to indicate to the MGW to remove the incoming side bearer termination and that the bearer can be released towards the preceding MGW. ~~uses the Release Bearerprocedure to request the MGW to release the bearer towards the preceding MGW. Finally, if any resources were seized in the MGW, the GMSC server uses the Release Termination procedure to request the MGW to remove the incoming side bearer termination.~~ After the resources in the MGW are released the GMSC server sends the Release Complete message to the preceding node.

Call clearing to the outgoing side

The GMSC server sends the Release message to the succeeding node. Once the succeeding node has sent the Release Complete message, the GMSC server releases any MGW allocated resources for the outgoing side. If any resources were seized in the MGW, ~~and the GMSC server had previously requested the MGW to establish a bearer,~~ the GMSC server shall use the Release Bearer, Change Through-Connection and Release Termination procedures to indicate to the MGW to remove the outgoing side bearer termination and that the bearer can be released towards the succeeding MGW.~~uses the Release Bearer procedure to request the MGW to release the bearer towards the succeeding MGW. Finally, if any resources were seized in the MGW, the GMSC server uses the Release Termination procedure to request the MGW to remove the outgoing side bearer termination.~~

7.1.2 MSC server

The network initiated call clearing shall be performed in accordance with 3GPP TS 23.108 [18]. The following paragraphs describe the additional requirements for the bearer independent CS core network.

Call clearing from the network side

Once the Release message has been received from the preceding/succeeding node, the MSC server releases any MGW allocated resources for the network side. If any resources were seized in the MGW, ~~and the MSC server had previously requested the MGW to establish a bearer,~~ the MSC server shall use the Release Bearer, Change Through-Connection and Release Termination procedures to indicate to the MGW to remove the network side bearer termination and that the bearer can be released towards the preceding/succeeding MGW. ~~uses the Release Bearer procedure to request the MGW to release the bearer towards the preceding/succeeding MGW. Finally, if any resources were seized in the MGW, the MSC server uses the Release Termination procedure to request the MGW to remove the network side bearer termination.~~ After the resources in the MGW are released the MSC server sends the Release Complete message to the preceding/succeeding node (bullet 1 in figure 7.2).

Call clearing to the UE

The MSC server initiates call clearing towards the UE and requests release of the associated radio resources as described in 3GPP TS 23.108[18]. Once the call clearing and the release of the associated radio resources have been completed, the MSC server releases any MGW allocated resources for the access side. If any resources were seized in the MGW, the MSC server uses the Release Termination procedure to requests the MGW to remove the access side bearer termination (bullet 2 or bullet 3 in figure 7.2).

Example

Figure 7.1 shows the network model for a network initiated clearing of the mobile call. The 'squared' line represents the call control signalling. The 'dotted' line represents the bearer control signalling (not applicable in A-interface) and the bearer. The MSC server seizes one context with two bearer terminations in the MGW. Bearer termination T1 is used for the bearer towards RNC/BSC and bearer termination T2 is used for the bearer towards succeeding MGW.

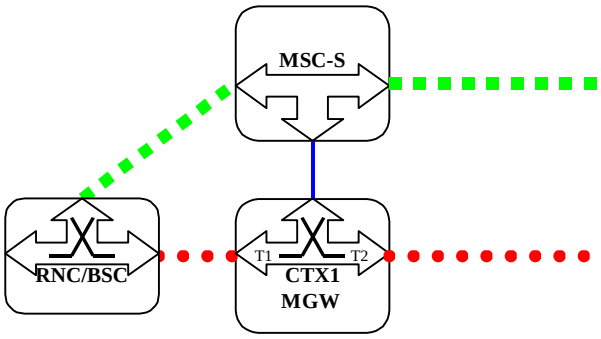
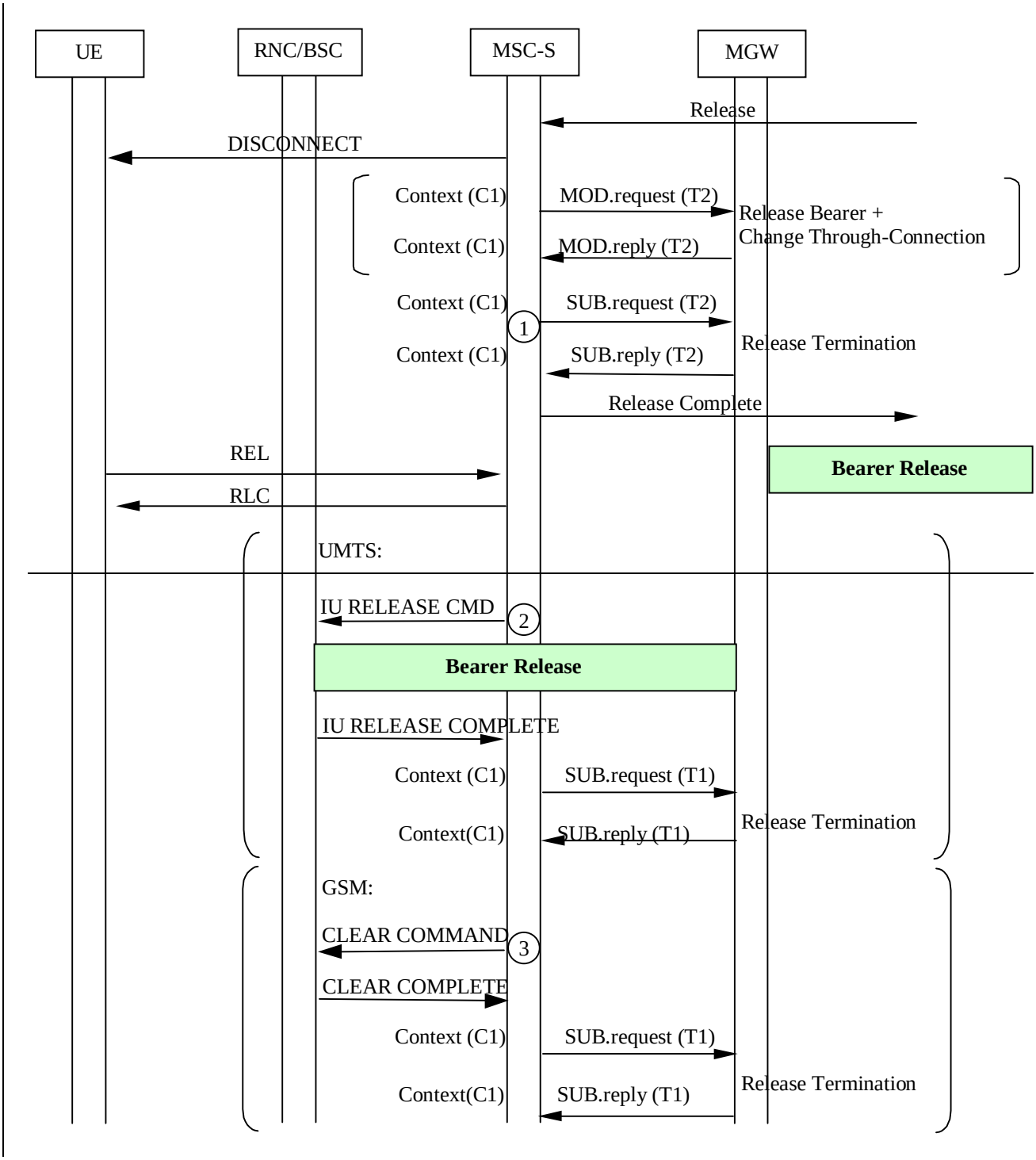


Figure 7.1 Network Initiated Call Clearing (Network model)

Figure 7.2 shows the message sequence example for the network initiated clearing of a mobile call. In the example when the call clearing indication is received from the preceding/succeeding node, the MSC server indicates that the network bearer can be released and to release the network side bearer termination~~requests release of the network side bearer, if establishment of the bearer was requested by the MSC server, and release of the bearer termination when the call clearing indication is received from the preceding/succeeding node~~. After the release of the network side bearer termination the MSC server indicates to the preceding/succeeding node that call clearing has been completed. The MSC server initiates call clearing towards the UE and requests release of the radio resource. After the response of the radio resource release is received then the MSC server requests release of the access side bearer termination.


UE
RNC/BSC
MSC-S
MGW
Release
DISCONNECT
Context (C1)
MOD.request (T2)
Release Bearer +
Change Through-Connection
Context (C1)
MOD.reply (T2)
Context (C1)
SUB.request (T2)
1
Release Termination
Context (C1)
SUB.reply (T2)
Release Complete
REL
Bearer Release
RLC
UMTS:
IU RELEASE CMD
2
Bearer Release
IU RELEASE COMPLETE
Context (C1)
SUB.request (T1)
Release Termination
Context(C1)
SUB.reply (T1)
GSM:
CLEAR COMMAND
3
CLEAR COMPLETE
Context (C1)
SUB.request (T1)
Release Termination
Context(C1)
SUB.reply (T1)

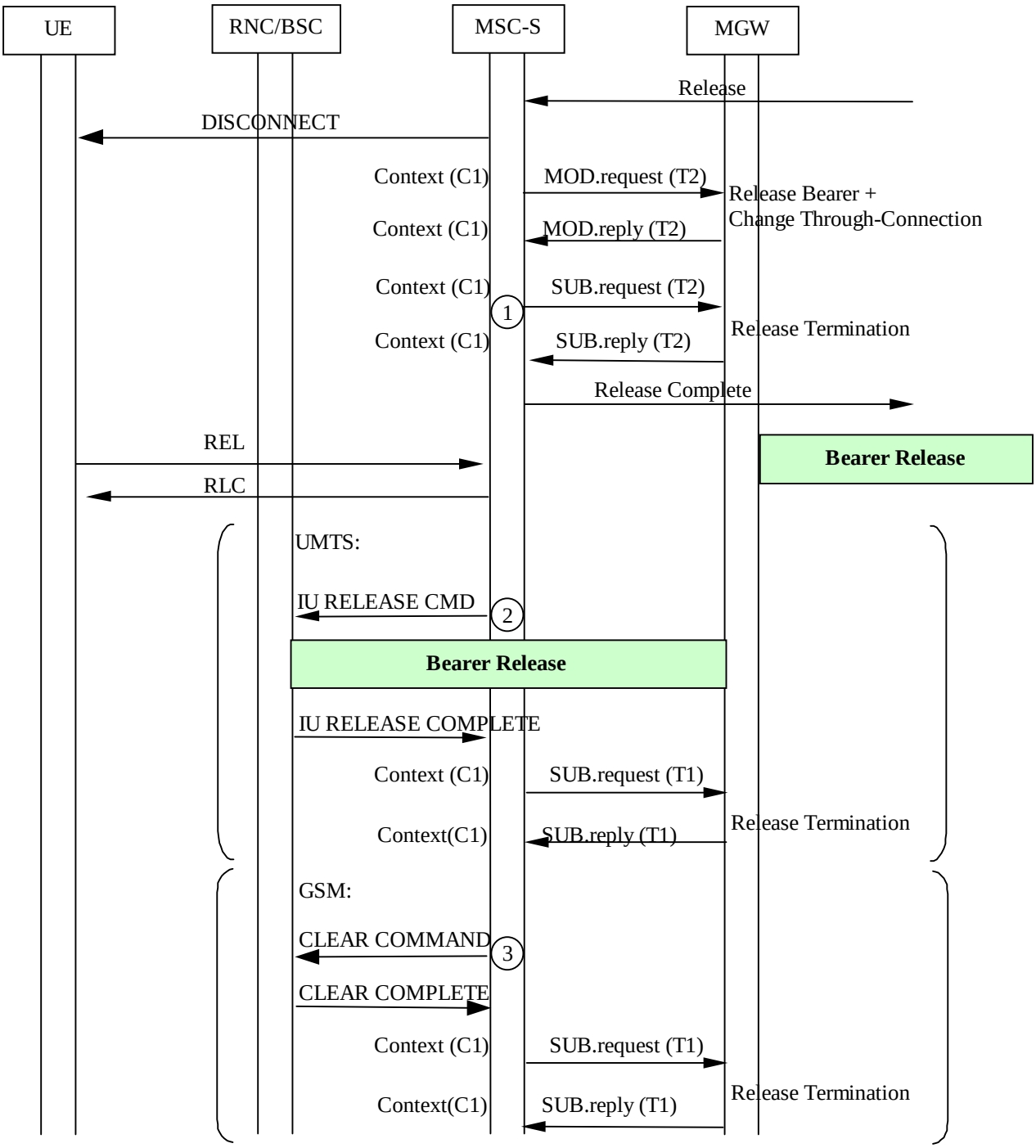


Figure 7.2 Network Initiated Call Clearing (message sequence chart)

Next modified section

7.2 User Initiated

The user initiated call clearing shall be performed in accordance with 3GPP TS 23.108 [18]. The following paragraphs describe the additional requirements for the bearer independent CS core network.

7.2.1 Void

7.2.2 MSC server

Call clearing from the UE

The UE initiated call clearing is performed and the release of the associated radio resources is performed as described in 3GPP TS 23.108 [18]. Once the call clearing and the associated radio resources release have been completed, the MSC server releases any MGW allocated resources for the access side. If any resources were seized in the MGW the MSC server uses the Release Termination procedure to requests the MGW to remove the access side bearer termination (bullet 1 or bullet 2 in figure 7.4).

Call clearing to the network side

The MSC server sends the Release message to the preceding/succeeding node. Once the preceding/succeeding node has sent the Release Complete, the MSC server releases any MGW allocated resources for the network side. If any resources were seized in the MGW server shall use the Release Bearer, Change Through-Connection and Release Termination procedures to indicate to the MGW to remove the network side bearer termination and that the bearer can be released towards the preceding/succeeding MGW ~~and the MSC server had previously requested the MGW to establish a bearer the MSC server uses the Release Bearer procedure to request the MGW to release the bearer towards the preceding/succeeding MGW. Finally, if any resources were seized in the MGW, the MSC server uses the Release Termination procedure to request the MGW to remove the network side bearer termination~~ (bullet 3 in figure 7.4).

Example

Figure 7.3 shows the network model for a user initiated clearing of a mobile call. The 'squared' line represents the call control signalling. The 'dotted' line represents the bearer control signalling (not applicable in A-interface) and the bearer. The MSC server seizes one context with two bearer terminations in the MGW. Bearer termination T1 is used for the bearer towards RNC/BSC and bearer termination T2 is used for the bearer towards succeeding MGW.

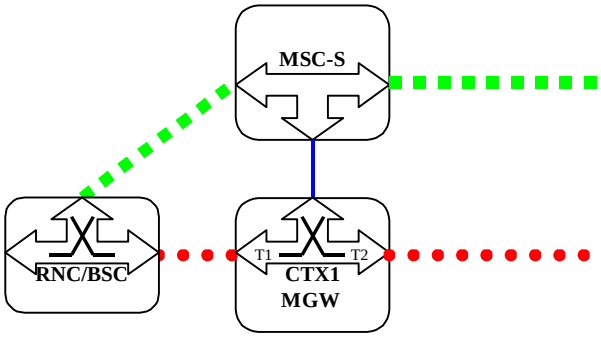
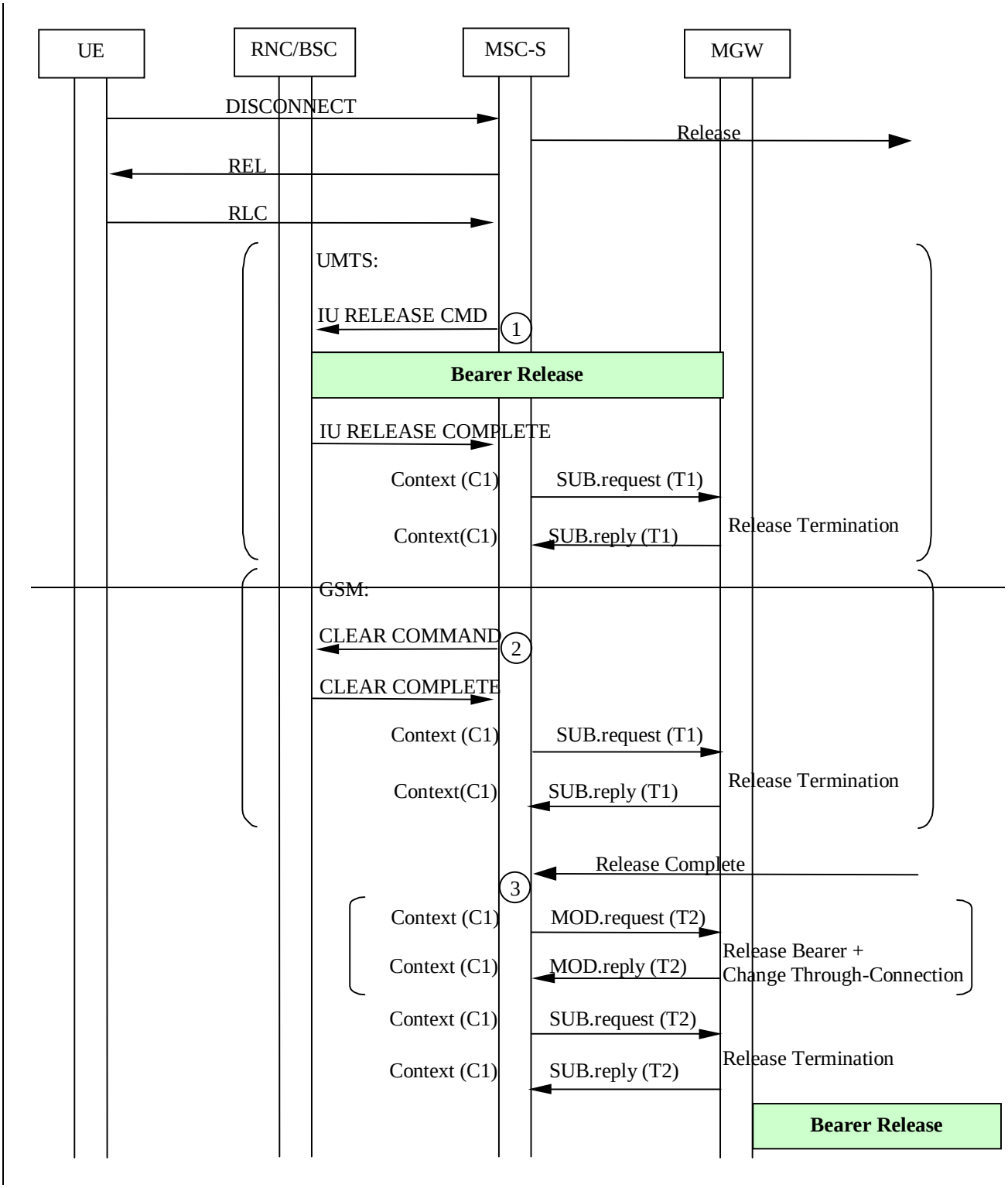


Figure 7.3 User Initiated Call Clearing (Network model)

Figure 7.4 shows the message sequence example for the user initiated clearing of a mobile call. In the example the UE initiates call clearing towards the MSC server and the MSC server requests release of the radio resource. After the response of the radio resource release is received the MSC server requests the release of the access side bearer termination. The MSC server initiates call clearing towards the preceding/succeeding node. Once the preceding/succeeding node has indicated that call clearing has been completed, the MSC server indicates that the network bearer can be released and to release the network side bearer termination.~~requests the release of the network side bearer, if establishment of the bearer was requested by the MSC server, and release of the bearer termination.~~


UE
RNC/BSC
MSC-S
MGW
DISCONNECT
Release
REL
RLC
UMTS:
IU RELEASE CMD
1
Bearer Release
IU RELEASE COMPLETE
Context (C1)
SUB.request (T1)
Context(C1)
SUB.reply (T1)
Release Termination
GSM:
CLEAR COMMAND
2
CLEAR COMPLETE
Context (C1)
SUB.request (T1)
Context(C1)
SUB.reply (T1)
Release Termination
Release Complete
3
Context (C1)
MOD.request (T2)
Context (C1)
MOD.reply (T2)
Release Bearer +
Change Through-Connection
Context (C1)
SUB.request (T2)
Context (C1)
SUB.reply (T2)
Release Termination
Bearer Release

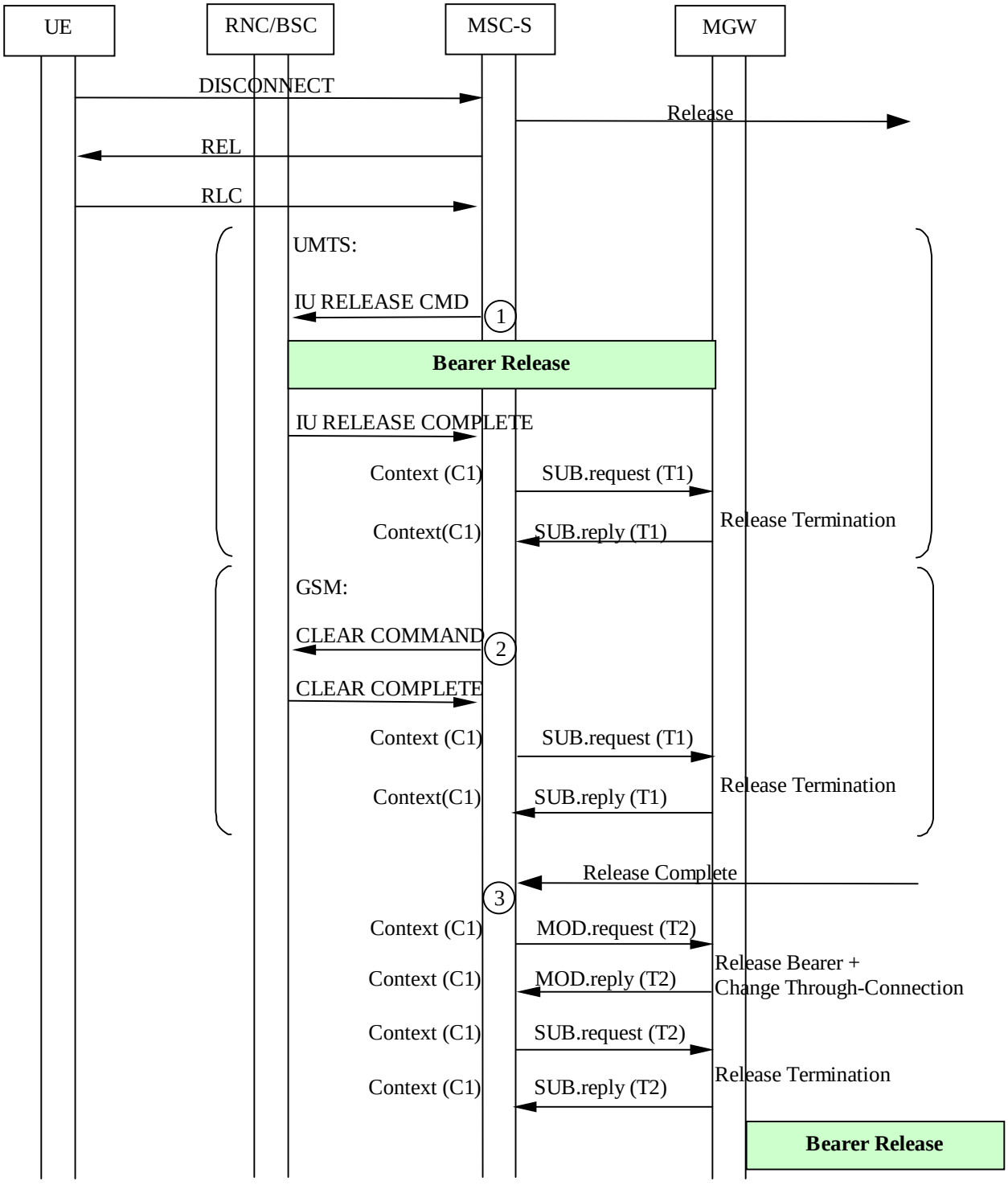


Figure 7.4 User Initiated Call Clearing (message sequence chart)

Next modified section

7.3 (G)MSC server Initiated

The following paragraphs describe the additional requirements for (G)MSC server initiated call clearing in the bearer independent CS core network.

7.3.1 GMSC server

Call clearing to the destination side

If the call is already established towards the destination, call clearing is performed as described in clause 7.1.1~~.2~~, call clearing to the outgoing side.

Call clearing to the originating side

The call clearing to the originating side is performed as described in clause 7.1.1~~.2~~, call clearing to the outgoing side.

7.3.2 MSC server

Call clearing to the UE

The call clearing to the UE is performed as described in clause 7.1.2~~.2~~, call clearing to the UE (bullet 1 and bullet 2 in figure 7.6).

Call clearing to the network side

If the call is already established towards the network side, the call clearing to the network side is performed as described in clause 7.2.2, call clearing to the network side (bullet 3 in figure 7.6).

Example

Figure 7.5 shows the network model for the MSC server initiated clearing of the mobile call. The 'squared' line represents the call control signalling. The 'dotted' line represents the bearer control signalling (not applicable in A-interface) and the bearer. The MSC server seizes one context with two bearer terminations in the MGW. Bearer termination T1 is used for the bearer towards RNC/BSC and bearer termination T2 is used for the bearer towards succeeding MGW.

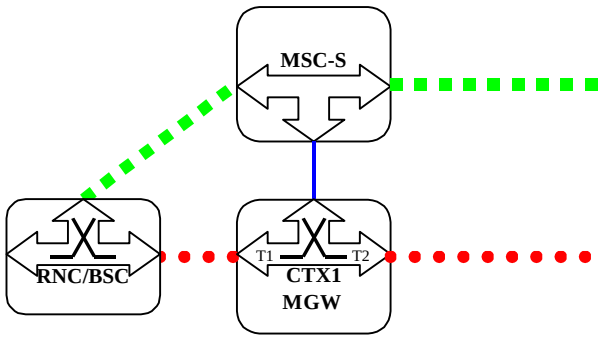
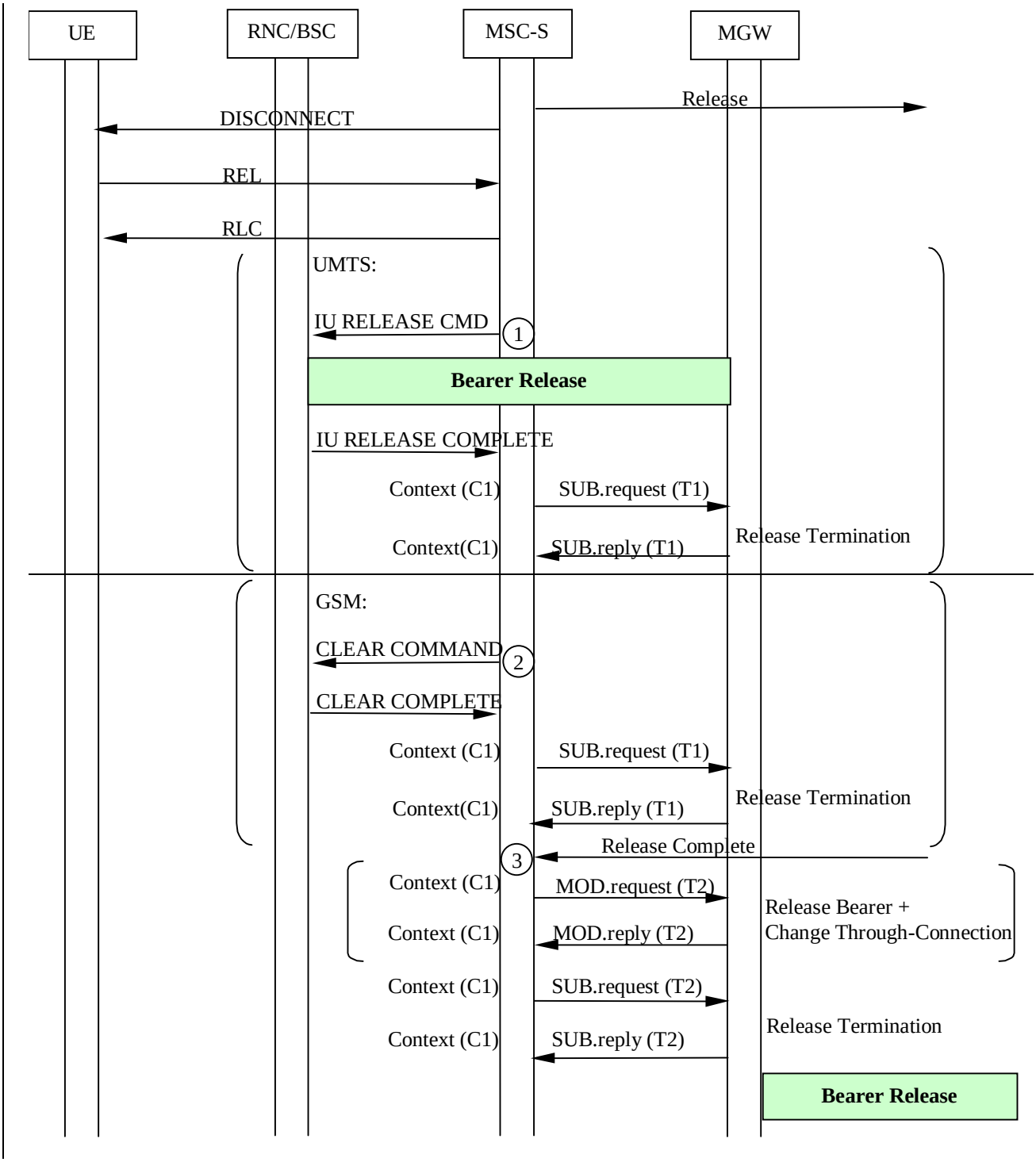


Figure 7.5 MSC Sserver Initiated Call Clearing (Network model)

Figure 7.6 shows the message sequence example for the MSC server initiated clearing of a mobile call. In the example the MSC server initiates call clearing of the network side and the access side. After the call clearing towards the UE and the release of the radio resource have been completed the MSC server requests release of the access side bearer termination. Once the preceding/succeeding node has indicated that call clearing has been completed, the MSC server indicates that the network bearer can be released and to release the network side bearer termination.~~requests the release of the network side bearer, if establishment of the bearer was requested by the MSC server, and release of the bearer termination.~~


UE
RNC/BSC
MSC-S
MGW
Release
DISCONNECT
REL
RLC
UMTS:
IU RELEASE CMD
1
Bearer Release
IU RELEASE COMPLETE
Context (C1)
SUB.request (T1)
Context(C1)
SUB.reply (T1)
Release Termination
GSM:
CLEAR COMMAND
2
CLEAR COMPLETE
Context (C1)
SUB.request (T1)
Context(C1)
SUB.reply (T1)
Release Termination
Release Complete
3
Context (C1)
MOD.request (T2)
Context (C1)
MOD.reply (T2)
Release Bearer +
Change Through-Connection
Context (C1)
SUB.request (T2)
Context (C1)
SUB.reply (T2)
Release Termination
Bearer Release

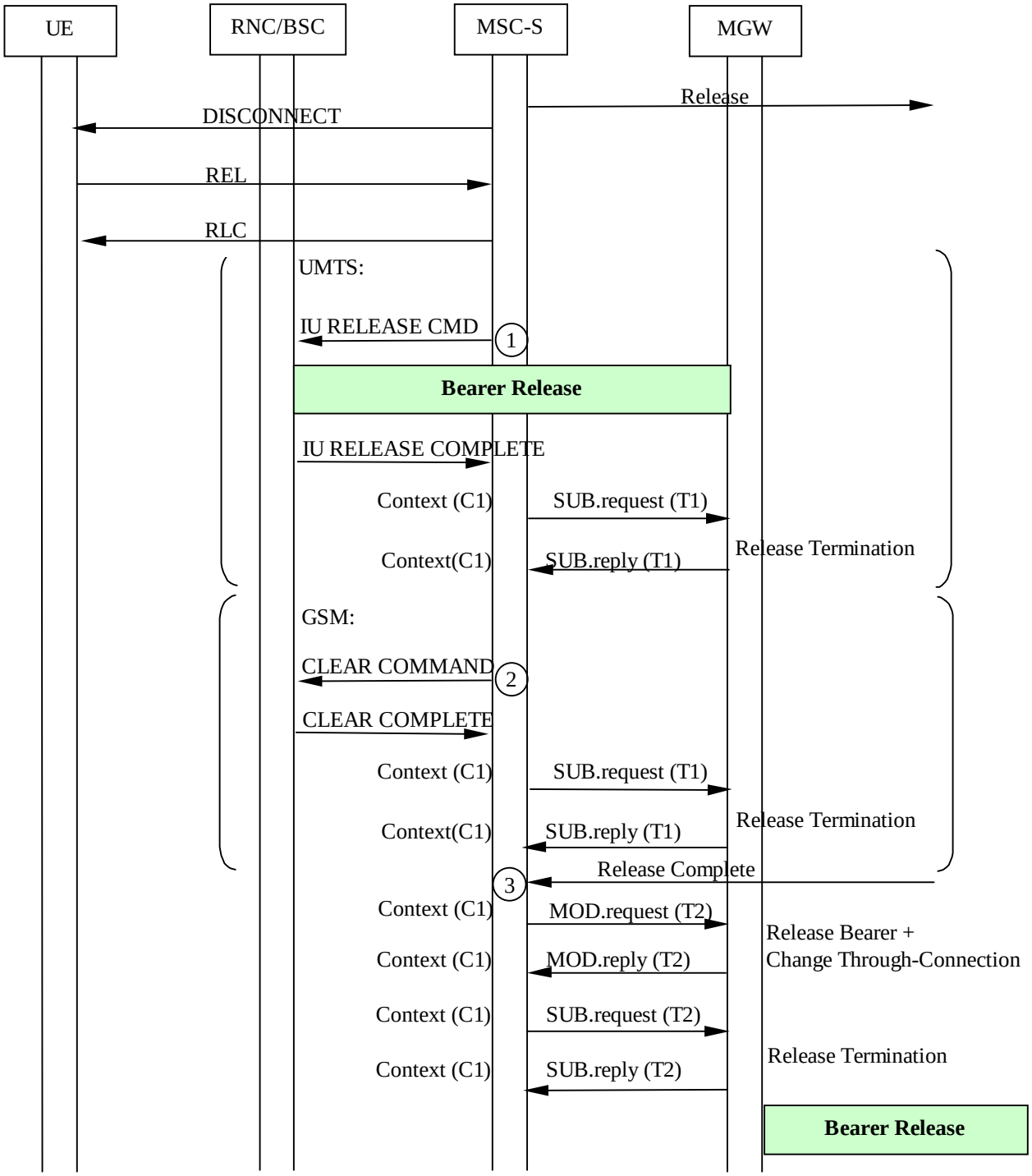


Figure 7.6 MSC Sserver Initiated Call Clearing (message sequence chart)

End modified section

3GPP TSG-CN-WG4 Meeting #10 **N4-011079**
Brighton, UK, 15th - 19th October 2001

CR-Form-v4

CHANGE REQUEST

⌘ **29.232** **CR** **012** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Removal of the Reuse Idle Package
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	5th October 2001
Category:	⌘	**F** (Essential)
Release:	⌘	REL-4

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)*

Reason for change:	⌘	Incomplete description on use of Reuse Idle Package.This could lead to incorrect handling when applied to multi-vendor environment. At the time of writing the 3GPP TSs 23.205/29.232 it was not intended that the Reuse Idle Package should be described. Therefore it should either be removed or some other contribution should be written to correct the use of this package.
Summary of change:	⌘	Delete reference to Reuse Idle Package (see ITU Q.1950 Annex A.5)
Consequences if not approved:	⌘	Incomplete description for handling of Re-use of Idle Bearer within 3GPP TS 29.232 v4.2.0 and 3GPP TS 23.205 v4.2.0 means that this cannot be fully used within a 3GPP core network.

Clauses affected:	⌘	13.2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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

13 BICC packages

13.1 Mandatory BICC packages

The following BICCpackages shall be supported:

- Bearer Characteristics Package (see ITU-T Recommendation Q.1950 Annex A.3);
- Bearer Network Connection Cut Through Package (see ITU-T Recommendation Q.1950 Annex A.4);
- Generic Bearer Connection Package (see ITU-T Recommendation Q.1950 Annex A.6).

13.2 Optional BICC packages

The following BICC packages shall be supported as required by the network services deployed in the network:

- Basic Call Progress Tones Generator with Directionality, (See ITU-T Recommendation Q.1950 Annex A.8)
- Expanded Call Progress tones Generator Package (See ITU-T Recommendation Q.1950 Annex A.9)
- Basic Services Tones Generation Package, (See ITU-T Recommendation Q.1950 Annex A.10)
- ~~Reuse Idle Package (see ITU-T Recommendation Q.1950 Annex A.5);~~
- Bearer Control Tunnelling Package (see ITU-T Recommendation Q.1950 Annex A.7);

End modified section

3GPP TSG-CN-WG4 Meeting #10 ***N4-011083***
Brighton, UK, 15th - 19th October 2001

CR-Form-v4

CHANGE REQUEST

⌘ **29.232** **CR** **014** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction of Release Procedures
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	5th October 2001
Category:	⌘	**F** (essential)
Release:	⌘	REL-4

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)*

Reason for change:	⌘	With 3GPP TS 23.205 the Release of bearer involves two procedures from (G)MSC server to MGW, i.e. Release bearer + Release termination procedures. There is no restriction on actual transaction handling for these procedures. For 3GPP TS 29.232, it is stated that Release bearer and Release termination procedures should be done in one transaction. Release is described in terms of ITU-T Q.1950 procedure Cut_BNC. From ITU-T Q.1950, Release of bearer (i.e. Cut_BNC) can be done as one transaction or several transactions. The description in the 3GPP TS 29.232 contradicts the 3GPP TS23.205 and ITU-T Q.1950.
Summary of change:	⌘	The comment stating that Release bearer and Release termination procedures in one transaction should be removed. There should be no limitation stated on whether one or several transactions are done.
Consequences if not approved:	⌘	Inconsistency of description could lead to incorrect release handling in multi-vendor environment.

Clauses affected:	⌘	14.2.8
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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

14.2.8 Release procedures

This subclause includes a number of procedures.

14.2.8.1 Release bearer

This procedure is the same as that defined in the subclause "Cut_BNC" in ITU-T Recommendation Q.1950 (see 3GPP TS 29.205 **Error! Reference source not found.**) including the Modify command in the transaction

14.2.8.2 Release termination

This procedure is the same as that defined in the subclause "Cut_BNC"in ITU-T Recommendation Q.1950 (see 3GPP TS 29.205 **Error! Reference source not found.**) including a Subtract command in the transaction.

~~NOTE: Release bearer and release termination should be sent in the same transaction.~~

End modified section

3GPP TSG-CN-WG4 Meeting #10 ***N4-011084***
Brighton, UK, 15th - 19th October 2001

CR-Form-v4

CHANGE REQUEST

⌘ **29.232** **CR** **015** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Clarification Of Use Of 3GUP package For PCM
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	25th September 2001
Category:	⌘	**F**
Release:	⌘	REL-4

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)*

Reason for change:	⌘	In TS 23.205 the IuFP is used on the Nb interface in support mode for PCM encoding. The procedures for IuFP in the MGW only describe its use in general terms, mainly relating to TrFO. When PCM is used the procedures are not clear.
Summary of change:	⌘	Additional description in 3GUP package for PCM. In addition a minor editorial is made to add “Modify Bearer Characteristics” to the procedures that can support this package.
Consequences if not approved:	⌘	Unclear procedures for MGW implementation, possible faulty operation.

Clauses affected:	⌘	15.1.1.5
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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

15.1.1 3GUP package.

PackageID: 3gup (0x002f)

Version: 1

Extends: None

This package identifies that the User Plane package is used for the termination. It also contains some parameters for the User Plane functions in the MGW.

The UP Protocol operates independently of the stream mode property, i.e. type 14 UP PDUs (which are used for inband UP signalling) can be transported between UP peers, irrespective of the stream mode direction. However, other types of UP PDUs shall be handled according to the stream mode property.

15.1.1.1 Properties

UP Mode of operation:

PropertyID: mode (0x0001)

Description: Defines the mode of operation of the User Plane functions , for further definitions see 3GPP TS 25.415 [4] and 29.415 [8].

Type: Enumeration

Possible Values:

"Trans" (0x0001) Transparent mode

"Supp" (0x0002) Support mode for predefined SDU sizes

Default: "Trans" (0x0001) Transparent mode

Defined in: Local Control descriptor

Characteristics: Read/Write

UP versions:

PropertyID: upversions (0x0002)

Description: Defines the required versions of the UP mode of operation.

Type: Sub-list

Possible Values:

{1,..., 16}

Default: {1}

Defined in: Local Control descriptor

Characteristics: Read/Write

Delivery of erroneous SDUs:

PropertyID: delerrsdu (0x0003)

Description:
Indicates how erroneous SDUs should be handled. If it is set to YES then the UP entity implements error checking and sets Frame Quality Classification (FQC) bits accordingly; bad frames are delivered to the UP layer.

If it is set to NO then the UP entity performs error checking and if a bad frame is detected then it is discarded. These settings are required only when the payload is to be examined by upper layer services; an MGW may ignore the settings of this parameter if it passes frames transparently through the UP entities. If it is set to NA then no checking is performed.

Type: Enumeration

Possible Values:

"Yes" (0x0001) Yes

"No" (0x0002) No

"NA" (0x0003) Not Applicable

Default: "NA" (0x0003) Not Applicable

Defined in: Local Control descriptor

Characteristics: Read/Write

Interface:

PropertyID: interface (0x0004)

Description: Indicates the type of interface on which the termination is used.

Type: Enumeration

Possible Values:

"RAN" (0x0001) Iu interface

"CN" (0x0002) Nb interface

Defined in: Local Control descriptor

Characteristics: Read/Write

Initialisation Direction

PropertyID: initdir (0x0005)

Description:
Indicates whether or not the termination in the MGW should expect initialisation information, or initiate UP initialisation itself.

For a termination with property "interface = CN":

- If Initialisation Direction is set to Incoming then the MGW shall expect to receive an initialisation either at this termination or from an other Nb or Iu termination in the same context.

- If Initialisation Direction is set to outgoing, then the MGW shall generate an initialisation procedure at this termination independently of the other termination in the same context.

For a termination with property "interface = Iu":

- If Initialisation Direction is set to "incoming", then the initialisation received at this termination is from the originating RAN and can be forwarded internally to other terminations for subsequent UP initialisations.

- If Initialisation Direction is set to "outgoing", then initialisations received are from the terminating RAN and cannot be forwarded internally. RFCI value correction can be performed at this termination, and initialisations can be sent out to the RAN.

Examples for the usage of this property are given in Annex B.

Type: Enumeration

Possible Values:

"In" (0x0001) Incoming

"Out" (0x0002) Outgoing

Defined in: Local Control descriptor

Characteristics: Read/Write

15.1.1.2 Events

None

15.1.1.3 Signals

None

15.1.1.4 Statistics

None

15.1.1.5 Procedures

The MGC uses this package to indicate to the MGW that the Iu (or Nb) User Plane is used between the RNC (or distant MGW) and the MGW. The package is sent in the Establish bearer, Modify Bearer Characteristics and Prepare bearer procedures. For more information on the User Plane and for a description of ' UP mode of operation', 'UP versions' and 'Delivery of erroneous SDUs' see 3GPP TS 25.415 [4].

The following procedures are valid for UP in Support Mode:

- TheMGW shall be able to initiate and respond to the UP control procedures (PDU type 14 frames) independently of the Stream Mode during the call establishment phase, i.e. when not in TrFO.
- Otherwise, during TrFO the MGW shall be able to forward UP control procedures (PDU type 14 frames) received at one termination to the other termination.
- The UP Initialisation procedure is always acknowledged between MGW peers. If an MGW receives a request for a notification for the bearer establishment then the MGW shall not send the notification until after it has sent the acknowledgement for the UP initialisation.
- The MGW shall always store RFCI parameters against the MGW termination which received the UP initialisation.
- If an MGW has the UP termination property Initialisation Direction = Incoming then it expects to receive an Initialisation (either internally or externally).
- If an MGW has UP termination property Initialisation Direction = Outgoing and interface CN, then it generates a network originated Initialisation PDU.
- If an MGW has UP termination property Initialisation Direction = Outgoing and interface RAN, then it expects to receive an Initialisation externally. It shall not pass the initialisation parameters internally. It may initiate RFCI Value Correction out from this termination.
- If an MGW has two terminations in the same context defined as supporting the UP package and with Initialisation Direction incoming, then when it receives an Initialisation procedure from one side (provided the bearer connection from the other termination to its peer MGW is established) it shall start the UP initialisation procedure towards the peer MGW. The MGW shall perform this procedure independently of the through-connection of the terminations in the context. The MGW shall relay control information from the first initialisation to the UP peer for use at the subsequent initialisation. Also, subsequent control procedures received on one UP shall be relayed to the other UP entity when the two UP entities are connected within the MGW. This behaviour is described in more detail in Annex A.

- If an MGW has one termination with properties "interface = Iu" and "initialisation direction = outgoing" and another termination with property "initialisation direction = Incoming" in the same context, then the MGW shall not forward the UP initialisation from the Incoming termination until it has received a UP initialisation at the "Iu"/"outgoing" side. If the RFCI values stored at the "incoming" termination do not match the RFCI values stored at the "outgoing" Iu side then "RFCI Value Correction" may be performed to the "outgoing" Iu side: The MGW starts UP initialisation with the RFCI values 'relayed' from the "Incoming" side. No "RFCI Value Correction" is permitted at a "incoming" Iu termination or at any Nb termination.

- As an implementation option, "RFCI Value Correction" may be delayed if terminations are not through-connected; it will be triggered by connection modification. Otherwise it shall be performed immediately

- If "RFCI Value Correction" is not performed the MGW shall map the indexes for frames from one side to the RFCI indexes for frames from the other side. This behaviour is described in more detail in Annex A.

- If an MGW has two Iu terminations connected to the same context then the "RFCI Value Correction" is performed by the Outgoing termination.

- If an MGW has two terminations which support the UP package connected to the same context and both RFCI sets match then the MGW may pass frames transparently through the UP entities; no monitoring of the frames is performed, provided that the terminations are through-connected. This behaviour is described further in Annex A.

- If the MGW is passing frames transparently, no UP monitoring is performed. When the MGW receives an H.248 procedure request which requires interpretation or interaction with the UP, then it shall resume its UP protocol responsibilities, i.e. perform monitoring or termination of the UP protocol.

- If an MGW sends an FP UP initialisation message from a termination, the MGW shall only offer versions of the FP UP, which are given in the property “UP versions” of this termination and which are supported by the MGW for this termination.

- If an MGW receives an FP UP initialisation message at a termination, the MGW shall only positively acknowledge this initialisation message, if versions of the FP UP are offered, which are given in the property “UP versions” and which are supported at the MGW for this termination. In the positive FP UP initialisation acknowledge message, the MGW shall select one of these versions. If none of these versions are offered in the FP UP initialisation message, the MGW shall send a negative FP UP acknowledge message and it shall not forward the initialisation to a possible second FP UP termination in the same context.

- If PCM is used on the Nb then FP UP initialisation shall be performed by the termination with property “Outgoing”. If the termination property is “Incoming” then it shall receive the RFCI’s from its IuFP peer (or from internal MGW termination with IuFP and same codec). If IuFP is defined on another termination in the MGW but the codec is different, i.e. not TrFO then the relaying of RFCI’s shall not be performed. These IuFP peer connection shall be seen as completely separate.

End modified section

3GPP TSG CN WG4 Meeting #11 **N4-011278**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v4

CHANGE REQUEST

⌘ **29.232** **CR** **016** ⌘ rev **-** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Corrections to ABNF coding of PackageIDs
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	16th November 2001
Category:	⌘	**F** (Essential)
Release:	⌘	REL-4

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)*

Reason for change: ⌘ Megaco spesification (RFC 3015) says about ABNF syntax:

PackageName = NAME

NAME = ALPHA *63(ALPHA/ DIGIT / "_")

ALPHA = %x41-5A / %x61-7A ; A-Z / a-z

DIGIT = %x30-39 ; 0-9

This means that the first character in the PackageID is a letter.

In the 29.232 there is defined four UMTS packages which start with number 3. Because this can be seen conflicting with the RFC 3015 it is proposed that the UMTS packageIDs will be corrected as follows:

3gup -> threegup

3gcsd -> threegcsd

3gtfoc -> threegtfoc

3gxcg -> threegxcg

Summary of change: ⌘ Package IDs are corrected according to RFC 3015.

Consequences if not approved: ⌘ Conflicting Package ID may cause coding differencies and therefore harm interworking of MSC servers and MGWs.

Clauses affected: ⌘ 15.1.1, 15.1.2, 15.1.3, 15.1.4

Other specs affected: ⌘ ☐ Other core specifications ⌘
☐ Test specifications

	☐ 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/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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

****

15.1.1 3GUP package.

PackageID: threegup~~3gup~~ (0x002f)

Version: 1

Extends: None

This package identifies that the User Plane package is used for the termination. It also contains some parameters for the User Plane functions in the MGW.

****

Second modified section

****

15.1.2 Circuit Switched Data package

PackageID: threegcsd~~3gcsd~~ (0x0030)

Version: 1

Extends: None

This package contains the information needed to be able to support GSM and UMTS Circuit Switched Data from the media gateway.

****

Third modified section

****

15.1.3 TFO package

The addition of text encoding for the TFO codec list is for further study.

PackageID: threegtfoc~~3gtfoc~~ (0x0031)

Version: 1

Extends: None

This package defines events and properties for Tandem Free Operation (TFO) control. TFO uses inband signalling and procedures for Transcoders to enable compressed speech to be maintained between a tandem pair of transcoders. This package allows an MGW which has inserted a transcoder to support TFO.

****

Fourth modified section

****

15.1.4 3G Expanded Call Progress Tones Generator Package

PackageID: threegxcg ~~3gxcg~~(0x0032)

Version: 1

Extends: xcg version1

This package extends "Expanded Call Progress Tones Generator Package", as defined in ITU-T Recommendation Q.1950 (see 3GPP TS 29.205 [7]). The package adds a new toneId for CAMEL prepaid warning tone.

****

3GPP TSG CN WG4 Meeting #11 **N4-011363**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v5

CHANGE REQUEST

⌘ **29.232** **CR** **020** ⌘ **rev** **1** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of 3GUP package sub-list type
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT ***Date:*** ⌘ 19th November 2001
Category:	⌘	**F** (Essential) ***Release:*** ⌘ REL-4

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)

Reason for change:	⌘	In a recent ITU-T SG16 meeting (Dublin, 29 Oct – 2 Nov 2001) some additions was proposed to the H.248 implementors' guide (draft version TD-28). Addition to the draft implementors' guide (ch 6.109): "The type of sub-list should also be specified in the package chosen from the types specified in this section with the exception of sub-list, e.g., Type: sub–list of enumeration. The encoding of sub-lists is specified in Annexes A and B." In 3GPP TS 29.232 v 4.2.0, 3GUP package is ambiguous on how the property 'upversions' type sub-list shall be coded in ASN.1. It is needed to specify of what type the elements in the sub-list are. The proposal is that it is "sub-list of enumeration". Then also the possible values for both text and binary coding are to be shown.
Summary of change:	⌘	Specify in the 3GUP package that the type of 'UP versions' is 'sub-list of enumeration', and show the values of the UP version property.
Consequences if not approved:	⌘	Different interpretations how to encode and decode the 'UP versions' property possible will lead to multi-vendor interoperability problems.

Clauses affected:	⌘	15.1.1.1
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
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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.

15.1.1 3GUP package.

PackageID: 3gup (0x002f)

Version: 1

Extends: None

This package identifies that the User Plane package is used for the termination. It also contains some parameters for the User Plane functions in the MGW.

The UP Protocol operates independently of the stream mode property, i.e. type 14 UP PDUs (which are used for inband UP signalling) can be transported between UP peers, irrespective of the stream mode direction. However, other types of UP PDUs shall be handled according to the stream mode property.

15.1.1.1 Properties

UP Mode of operation:

PropertyID: mode (0x0001)

Description: Defines the mode of operation of the User Plane functions , for further definitions see 3GPP TS 25.415 [4] and 29.415 [8].

Type: Enumeration

Possible Values:

"Trans" (0x0001) Transparent mode

"Supp" (0x0002) Support mode for predefined SDU sizes

Default: "Trans" (0x0001) Transparent mode

Defined in: Local Control descriptor

Characteristics: Read/Write

UP versions:

PropertyID: upversions (0x0002)

Description: Defines the required versions of the UP mode of operation.

Type: Sub-list of enumeration

Possible Values:

~~{1,.., 16}~~

"1" (0x01) Version 1

"2" (0x02) Version 2

"3" (0x03) Version 3

"4" (0x04) Version 4

"5" (0x05) Version 5

"6" (0x06) Version 6

"7" (0x07) Version 7

"8" (0x08) Version 8

"9" (0x09) Version 9

"10" (0x0A) Version 10

"11" (0x0B) Version 11

"12" (0x0C) Version 12

"13" (0x0D) Version 13

"14" (0x0E) Version 14

"15" (0x0F) Version 15

"16" (0x10) Version 16

Default: "1" (0x01) Version 1~~(1)~~

Defined in: Local Control descriptor

Characteristics: Read/Write

Delivery of erroneous SDUs:

PropertyID: delerrsdu (0x0003)

Description:
Indicates how erroneous SDUs should be handled. If it is set to YES then the UP entity implements error checking and sets Frame Quality Classification (FQC) bits accordingly; bad frames are delivered to the UP layer. If it is set to NO then the UP entity performs error checking and if a bad frame is detected then it is discarded. These settings are required only when the payload is to be examined by upper layer services; an MGW may ignore the settings of this parameter if it passes frames transparently through the UP entities. If it is set to NA then no checking is performed.

Type: Enumeration

Possible Values:

"Yes" (0x0001) Yes

"No" (0x0002) No

"NA" (0x0003) Not Applicable

Default: "NA" (0x0003) Not Applicable

Defined in: Local Control descriptor

Characteristics: Read/Write

Interface:

PropertyID: interface (0x0004)

Description: Indicates the type of interface on which the termination is used.

Type: Enumeration

Possible Values:

"RAN" (0x0001) Iu interface

"CN" (0x0002) Nb interface

Defined in: Local Control descriptor

Characteristics: Read/Write

Initialisation Direction

PropertyID: initdir (0x0005)

Description:
Indicates whether or not the termination in the MGW should expect initialisation information, or initiate UP initialisation itself.

For a termination with property "interface = CN":

- If Initialisation Direction is set to Incoming then the MGW shall expect to receive an initialisation either at this termination or from an other Nb or Iu termination in the same context.

- If Initialisation Direction is set to outgoing, then the MGW shall generate an initialisation procedure at this termination independently of the other termination in the same context.

For a termination with property "interface = Iu":

- If Initialisation Direction is set to "incoming", then the initialisation received at this termination is from the originating RAN and can be forwarded internally to other terminations for subsequent UP initialisations.

- If Initialisation Direction is set to "outgoing", then initialisations received are from the terminating RAN and cannot be forwarded internally. RFCI value correction can be performed at this termination, and initialisations can be sent out to the RAN.

Examples for the usage of this property are given in Annex B.

Type: Enumeration

Possible Values:

"In" (0x0001) Incoming

"Out" (0x0002) Outgoing

Defined in: Local Control descriptor

Characteristics: Read/Write

15.1.1.2 Events

None

15.1.1.3 Signals

None

15.1.1.4 Statistics

None

15.1.1.5 Procedures

The MGC uses this package to indicate to the MGW that the Iu (or Nb) User Plane is used between the RNC (or distant MGW) and the MGW. The package is sent in the Establish bearer and Prepare bearer procedures. For more information on the User Plane and for a description of ' UP mode of operation', 'UP versions' and 'Delivery of erroneous SDUs' see 3GPP TS 25.415 [4].

The following procedures are valid for UP in Support Mode:

- TheMGW shall be able to initiate and respond to the UP control procedures (PDU type 14 frames) independently of the Stream Mode during the call establishment phase, i.e. when not in TrFO.

- Otherwise, during TrFO the MGW shall be able to forward UP control procedures (PDU type 14 frames) received at one termination to the other termination.

- The UP Initialisation procedure is always acknowledged between MGW peers. If an MGW receives a request for a notification for the bearer establishment then the MGW shall not send the notification until after it has sent the acknowledgement for the UP initialisation.

- The MGW shall always store RFCI parameters against the MGW termination which received the UP initialisation.

- If an MGW has the UP termination property Initialisation Direction = Incoming then it expects to receive an Initialisation (either internally or externally).

- If an MGW has UP termination property Initialisation Direction = Outgoing and interface CN, then it generates a network originated Initialisation PDU.

- If an MGW has UP termination property Initialisation Direction = Outgoing and interface RAN, then it expects to receive an Initialisation externally. It shall not pass the initialisation parameters internally. It may initiate RFCI Value Correction out from this termination.

- If an MGW has two terminations in the same context defined as supporting the UP package and with Initialisation Direction incoming, then when it receives an Initialisation procedure from one side (provided the bearer connection from the other termination to its peer MGW is established) it shall start the UP initialisation procedure towards the peer MGW. The MGW shall perform this procedure independently of the through-connection of the terminations in the context. The MGW shall relay control information from the first initialisation to the UP peer for use at the subsequent initialisation. Also, subsequent control procedures received on one UP shall be relayed to the other UP entity when the two UP entities are connected within the MGW. This behaviour is described in more detail in Annex A.

- If an MGW has one termination with properties "interface = Iu" and "initialisation direction = outgoing" and another termination with property "initialisation direction = Incoming" in the same context, then the MGW shall not forward the UP initialisation from the Incoming termination until it has received a UP initialisation at the "Iu"/"outgoing" side. If the RFCI values stored at the "incoming" termination do not match the RFCI values stored at the "outgoing" Iu side then "RFCI Value Correction" may be performed to the "outgoing" Iu side: The MGW starts UP initialisation with the RFCI values 'relayed' from the "Incoming" side. No "RFCI Value Correction" is permitted at a "incoming" Iu termination or at any Nb termination.

- As an implementation option, "RFCI Value Correction" may be delayed if terminations are not through-connected; it will be triggered by connection modification. Otherwise it shall be performed immediately

- If "RFCI Value Correction" is not performed the MGW shall map the indexes for frames from one side to the RFCI indexes for frames from the other side. This behaviour is described in more detail in Annex A.

- If an MGW has two Iu terminations connected to the same context then the "RFCI Value Correction" is performed by the Outgoing termination.

- If an MGW has two terminations which support the UP package connected to the same context and both RFCI sets match then the MGW may pass frames transparently through the UP entities; no monitoring of the frames is performed, provided that the terminations are through-connected. This behaviour is described further in Annex A.

- If the MGW is passing frames transparently, no UP monitoring is performed. When the MGW receives an H.248 procedure request which requires interpretation or interaction with the UP, then it shall resume its UP protocol responsibilities, i.e. perform monitoring or termination of the UP protocol.

- If an MGW sends an FP UP initialisation message from a termination, the MGW shall only offer versions of the FP UP, which are given in the property “UP versions” of this termination and which are supported by the MGW for this termination.

- If an MGW receives an FP UP initialisation message at a termination, the MGW shall only positively acknowledge this initialisation message, if versions of the FP UP are offered, which are given in the property “UP versions” and which are supported at the MGW for this termination. In the positive FP UP initialisation acknowledge message, the MGW shall select one of these versions. If none of these versions are offered in the FP UP initialisation message, the MGW shall send a negative FP UP acknowledge message and it shall not forward the initialisation to a possible second FP UP termination in the same context.

3GPP TSG-CN-WG4 Meeting #10 ***N4-011184***
Brighton, UK, 15th - 19th October 2001

CR-Form-v4

CHANGE REQUEST

⌘ **29.232** **CR** **011** ⌘ rev **1** ⌘ Current version: **4.2.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Inclusion of H.248 Annex L, "Error Codes and Service Change Reason Description"
Source:	⌘	CN4
Work item code:	⌘	CSSPLIT
Date:	⌘	5th October 2001
Category:	⌘	**F** (by concensus)
Release:	⌘	REL-4

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)*

Reason for change:	⌘	To include the description and handling as defined by ITU-T SG-16 for error codes and service change reasons to be used between (G)MSC server and MGW belonging to 3GPP core network. This would utilise the ITU-T SG-16 approved H.248 Annex L, "Error Codes and Service Change Reason Description".
Summary of change:	⌘	Introduce reference to H.248 Annex L, so that additional handling and description can be used. These values will give further benefit and usability for failed transactions/commands and service change reason.
Consequences if not approved:	⌘	Lead to interoperability problem due to existing scope of H.248 descriptions for error codes and service change reasons.

Clauses affected:	⌘	2
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ 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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

:

:

[~~*~~14] ITU-U Recommendation H.248 Annex L, "Error Codes and Service Change Reason Description"

Next modified section

14 H.248 standard packages

The following H.248 packages are used by this UMTS Capability Set:

- Generic v1 (see **Error! Reference source not found.** Annex E.1);
- Base Root Package v1 (see **Error! Reference source not found.** Annex E.2);
- Tone Generator Package v1 (see **Error! Reference source not found.** Annex E.3);
- Tone Detection Package v1 (see **Error! Reference source not found.** Annex E.4);
- Basic DTMF Generator Package v1 (see **Error! Reference source not found.** Annex E.5);
- DTMF Detection Package v1 (see **Error! Reference source not found.** Annex E.6);
- Call Progress Tones Generator Package v1 (see **Error! Reference source not found.** Annex E.7);
- Generic Announcement Package v1 (see **Error! Reference source not found.** Annex K);
- TDM Circuit Package v1 (see **Error! Reference source not found.** Annex E.13).

14.1 Call independent H.248 transactions

Table 2 shows the relationship between each non call-related procedure in ITU-T Recommendation Q.1950 (see 3GPP TS 29.205 **Error! Reference source not found.**) and the corresponding stage 2 procedure defined in 3GPP TS 23.205 **Error! Reference source not found.**.

For further description of error codes and service change reasons, refer to [~~*~~14].

Table 2: Correspondence between Q.1950 non call-related transactions and TS 23.205 procedures

Transaction used in Q.1950	Procedure defined in 3GPP **TS 23.205** Error! Reference source not found.	Comments
BIWF_Service_Cancellation_Indication	MGW Out-of-Service	
BIWF_Lost_Communication	MGW Communication Up	
BIWF_Service_Restoration_Indication	MGW Restoration	
BIWF_Registration	MGW register	
BIWF_Re-Registration	MGW re-register	
CCU Ordered BIWF Re-Registration	(G)MSC ordered re-register	
CCU Initiated Service Restoration	(G)MSC restoration	
CCU Initiated Service Cancellation	(G)MSC out of service	
BIWF_Service_Cancellation_Indication	Termination Out-of-Service	Is a part of BIWF Service cancellation in Q.1950
BIWF_Service_Restoration_Indication	Termination Restoration	Is a part of BIWF Service cancellation in Q.1950
Audit_Values	Audit Value	
Audit_Capabilities	Audit Capability	
BIWF_Capability_Change	Capability Update	

:

:

Next modified section

14.2 Call related H.248 transactions

Table 3 shows the relationship between each call-related procedure in ITU-T Recommendation Q.1950 (see 3GPP TS 29.205 **Error! Reference source not found.**) and the corresponding stage 2 procedure defined in 3GPP TS 23.205 **Error! Reference source not found.**.

For further description of error codes and service change reasons, refer to [~~*~~14].

Table 3: Correspondence between Q.1950 call-related transactions and 3GPP TS 23.205 and 23.153 procedures

Transaction used in Q.1950	Procedure defined in 3GPP TS **23.205** Error! Reference source not found. **and 23.153** Error! Reference source not found.	Comments
Change_Topology	Change Flow Direction	
Join	Join Bearer Terminations	
Isolate	Isolate Bearer Terminations	
Establish_BNC_notify+(tunnel)	Establish Bearer	
Prepare_BNC_notify+(tunnel)	Prepare Bearer	
Cut_Through	Change Through-Connection	
Not defined in Q.1950	Activate Interworking Function	
Cut_BNC (include several procedures).	Release Bearer (Release Bearer and Release termination)	
BNC Established	Bearer Established	
BNC Release	Bearer Released	
Insert_Tone	Send Tone	
Insert_Annoucement	Play Announcement	
Signal Completion	Announcement Completed	
Detected_Digit	Detect DTMF	
Insert_Digit	Send DTMF	
Detect digit(BIWF)	Report DTMF	
Confirm_char	Confirm char	
Modify_ Char	Modify char	
Reserve_Char	Reserve char	
BNC Modified	Bearer modified	
Echo canceller	Activate Voice Processing Function	
BNC connected	**[Editors note: No definition yet]**	
BNC modification failed	Bearer modified failed	
Tunnel (MGC-MGW)	Tunnel information down	
Tunnel (MGW-MGC)	Tunnel information up	
Insert tone	Stop tone	
Insert announcement	Stop announcement	
Detect digits	Stop DTMF detection	
Insert digit	Stop DTMF	
Insert tone	Tone completed	
Not defined	Reserve circuit	
Not defined	Command rejected	
Not defined	TFO activation	
Not defined	Codec_modify	
Not defined	Optimal codec and distant list_notify	
Not defined	Distant codec list	
Modify char	Modify bearer characteristics	
Not defined	IWF Protocol Indication	

NOTE: A procedure defined in table 3 can be combined with another procedure in the same action. This means that they can share the same contextID and termination ID(s).

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End modified section