

**3GPP TSG CN Plenary Meeting #21**  
**17<sup>th</sup> – 19<sup>th</sup> September 2003 Frankfurt, GERMANY.**

**NP-030380**

**Source:** TSG CN WG4  
**Title:** Corrections on mobile OoBTC  
**Agenda item:** 7.7  
**Document for:** APPROVAL

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<b>Spec</b>	<b>CR</b>	<b>Rev</b>	<b>Doc-2nd-Level</b>	<b>Phase</b>	<b>Subject</b>	<b>Cat</b>	<b>Ver_C</b>
23.153	062	1	N4-031032	Rel-4	Clarification on codec modification	F	4.8.0
23.153	063	1	N4-031033	Rel-5	Clarification on codec modification	A	5.5.0
23.153	066	1	N4-031034	Rel-4	Clarification of luUP Initialisation during codec modification	F	4.8.0
23.153	067	1	N4-031035	Rel-5	Clarification of luUP Initialisation during codec modification	A	5.5.0

## CHANGE REQUEST

⌘ **23.153 CR 062** ⌘ rev **1** ⌘ Current version: **4.8.0** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification on codec modification		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ OoBTC	<b>Date:</b>	⌘ 11/08/2003
<b>Category:</b>	⌘ <b>F</b> Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	<b>Release:</b>	⌘ Rel-4 Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

**Reason for change:** ⌘ 1. Errors in Figures 5.8.4/1, which contradict Figures 5.8.4/2, 5.8.5/1 and 5.8.5/2 and the text in this specification with respect to:  
  
BNC Modified message is required to be sent  
  
UP Initialisation arriving before Confirm Bearer Characteristics should be passed immediately to avoid interruption in speech.  
  
2. Errors in Figures 5.8.4/2:  
  
Optional Bearer Modification to reduce bandwidth omitted (allowed according to BICC and Figure 5.8.1/2)  
  
Rab Assign Modify Response in wrong direction  
  
3. Figure 5.8.5/2 does not fit on one page and will not be printed completely

**Summary of change:** ⌘ 1. Corrections in Figure 5.8.4/1  
  
BNC Modified message is not optional  
  
Confirm Bearer Characteristics does not trigger UP Initialisation  
  
2. Corrections in Figure 5.8.4/2  
  
Direction of Rab Assign Modify Response turned around  
  
Optional Bearer Modification to reduce bandwidth added

Figure Split in two for better readability

3. Figure 5.8.5/2 is split in two

**Consequences if not approved:** ⌘ Specification is self-contradicting, which may lead to different non-interworking implementations.

**Clauses affected:** ⌘ 5.8.4, 5.8.5

**Other specs affected:**

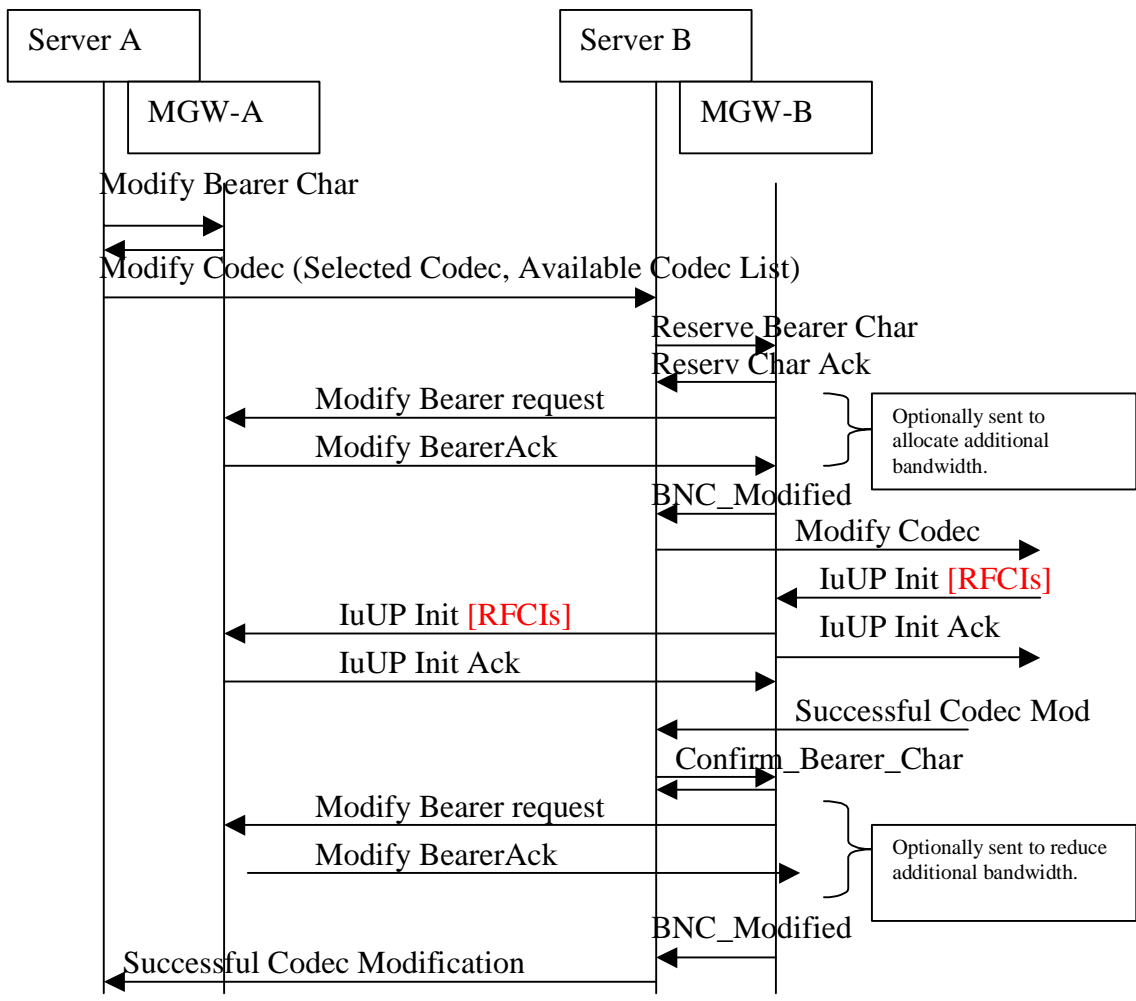
Y	N
	X
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	X

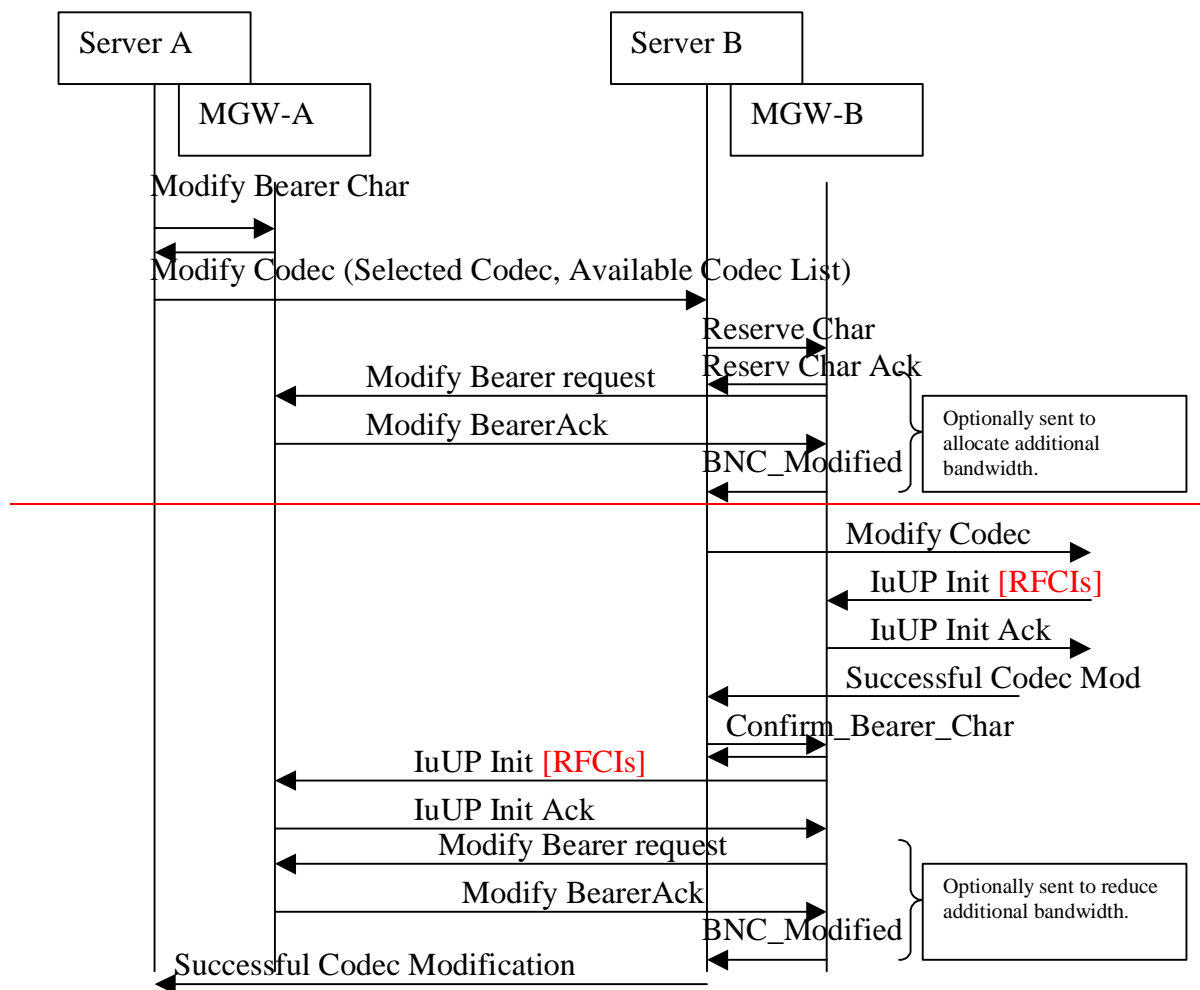
Other core specifications ⌘  
Test specifications  
O&M Specifications

**Other comments:** ⌘

## 5.8.4 Detailed Procedures For Iu Framing Protocol & Codec Modification

The IuFP must be initialised sequentially from one end to the other in order to store new RFCIs in each node to allow TrFO to resume. The IuFP shall be initialised in the backward direction with respect to the Codec Modification/Modify To Selected Codec message as shown in Figure 5.8.4/1.



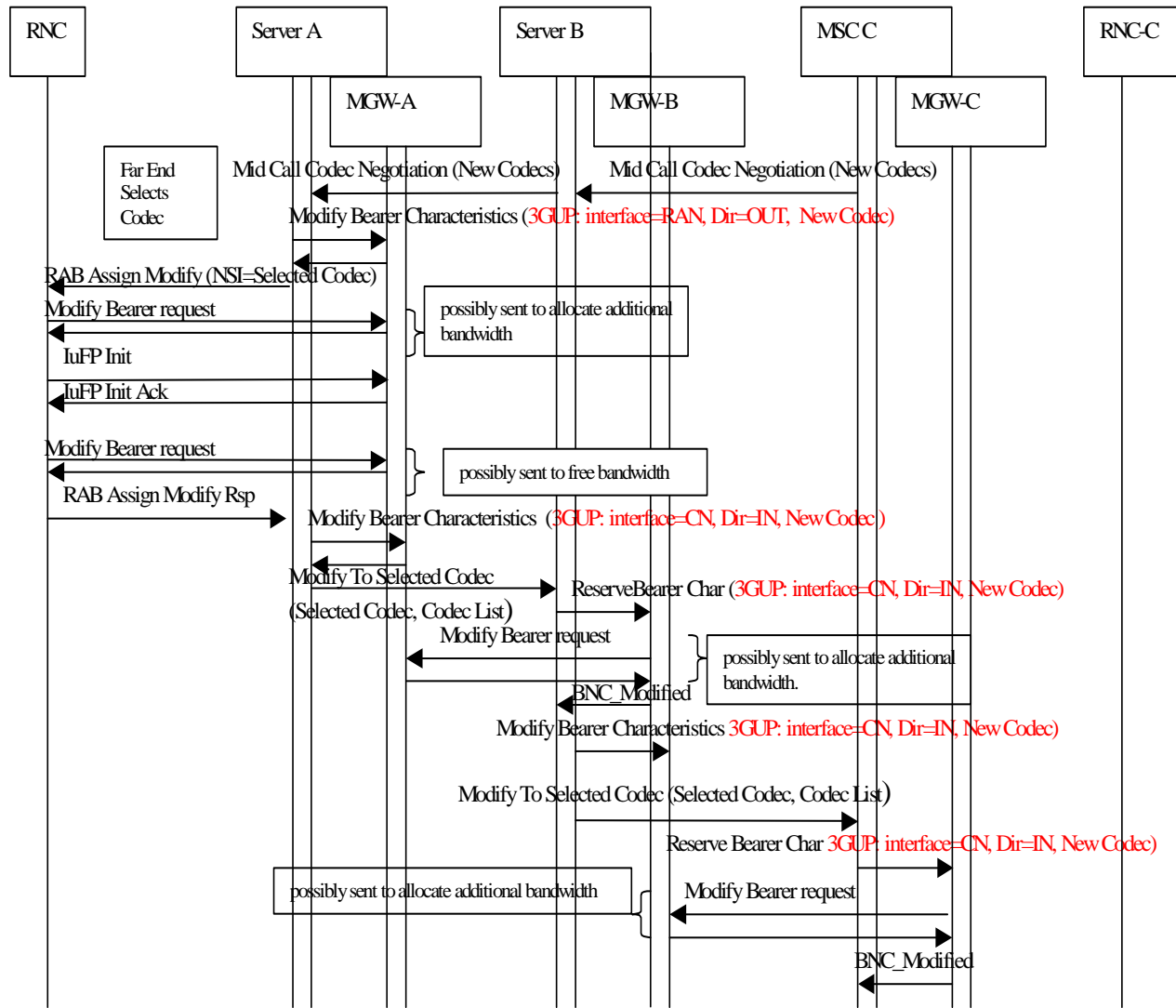


**Figure 5.8.3-4/1: Successful Codec Modification including IuFP**

A MGW receiving a Modify Bearer Characteristics procedure shall be prepared to receive an incoming modify bearer procedure, this may be to increase the bandwidth prior to IuUP Initialisation or to reduce the bandwidth after the IuUP Initialisation. As the new codec indicated in the Modify Bearer Characteristics procedure differs from the codec that is currently used the MGW shall be prepared to receive an IuUP Initialisation for the new codec.

Each termination receiving a Reserve\_Char will initiate bearer level modification to the preceding node if needed - i.e. if the bandwidth needs to be increased to support the new IuUP. No IuUP initialisation occurs at this point in time. If the Codec Modification Request is terminated by a MGW the IuUP init through the core-network is triggered by the setting of the 3GUP package property “initialisation direction” to “OUT” in either the Reserve\_Char or the Confirm\_Char procedure; the MGW shall then start the IuUP Initialisation out from that Termination. If the node terminating the modification is an RNC then it will generate a new IuUP Initialisation toward its access MGW, each Termination shall have the initialisation direction set to “IN”. Each MGW shall in turn acknowledge the IuUP Init to the succeeding node (with respect to the modification request) and forward the RFCIs in an IuUP Initialisation to the preceding MGW (as for call set-up). After completing the Iu UP initialisation and receiving the “Confirm Characteristics” procedure, the MGW may decrease the bandwidth of the corresponding bearer performing the “Modify Bearer” procedure (if needed) - no bearer bandwidth reduction shall be initiated while the UP is still initialised for the old codec.

An example call sequence is shown in Figures 5.8.4/2 and 5.8.4/3.



**Figure 5.8.4/2: Mid Call Codec Negotiation Call Sequence. Call Flow Part 1**

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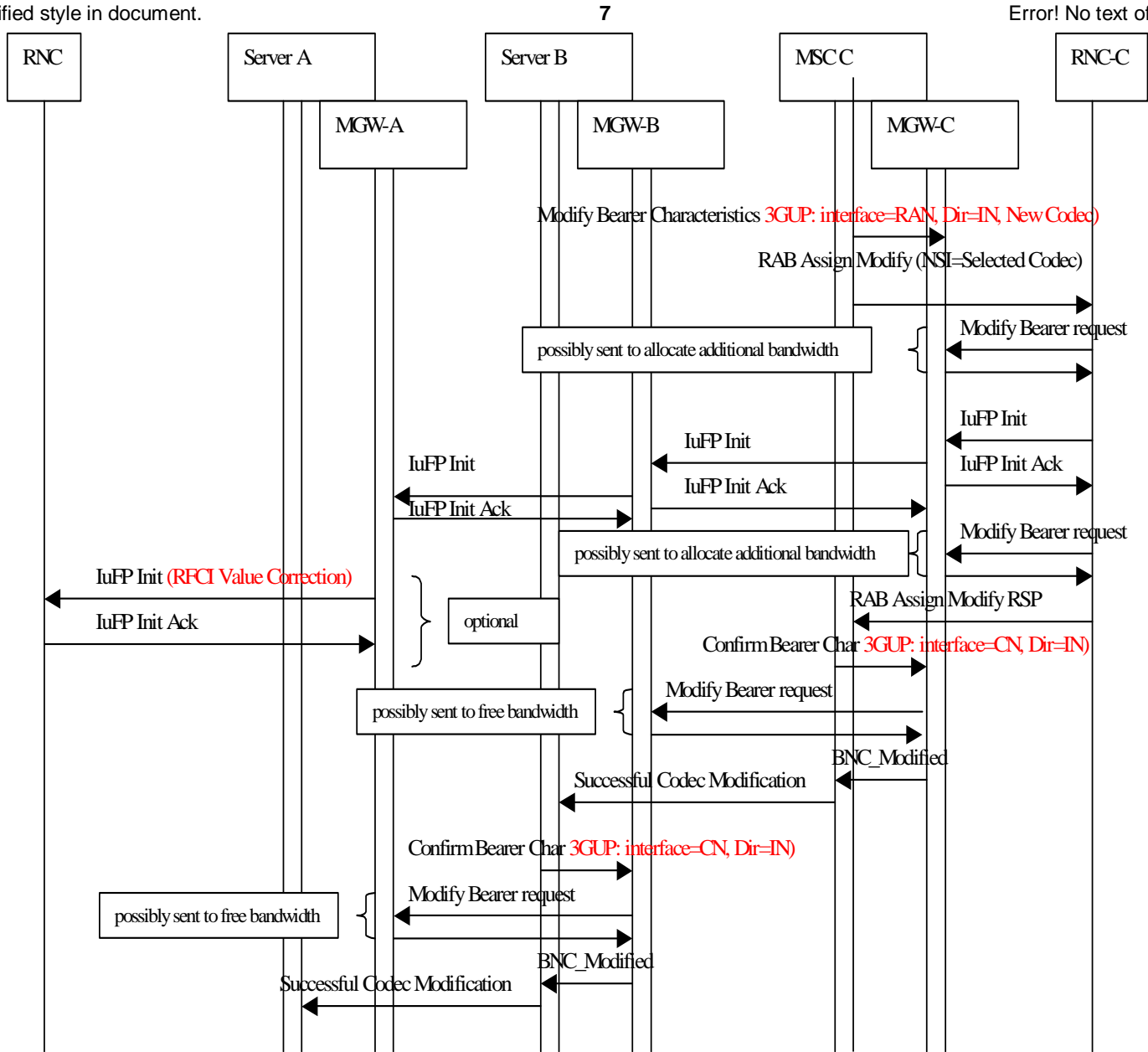
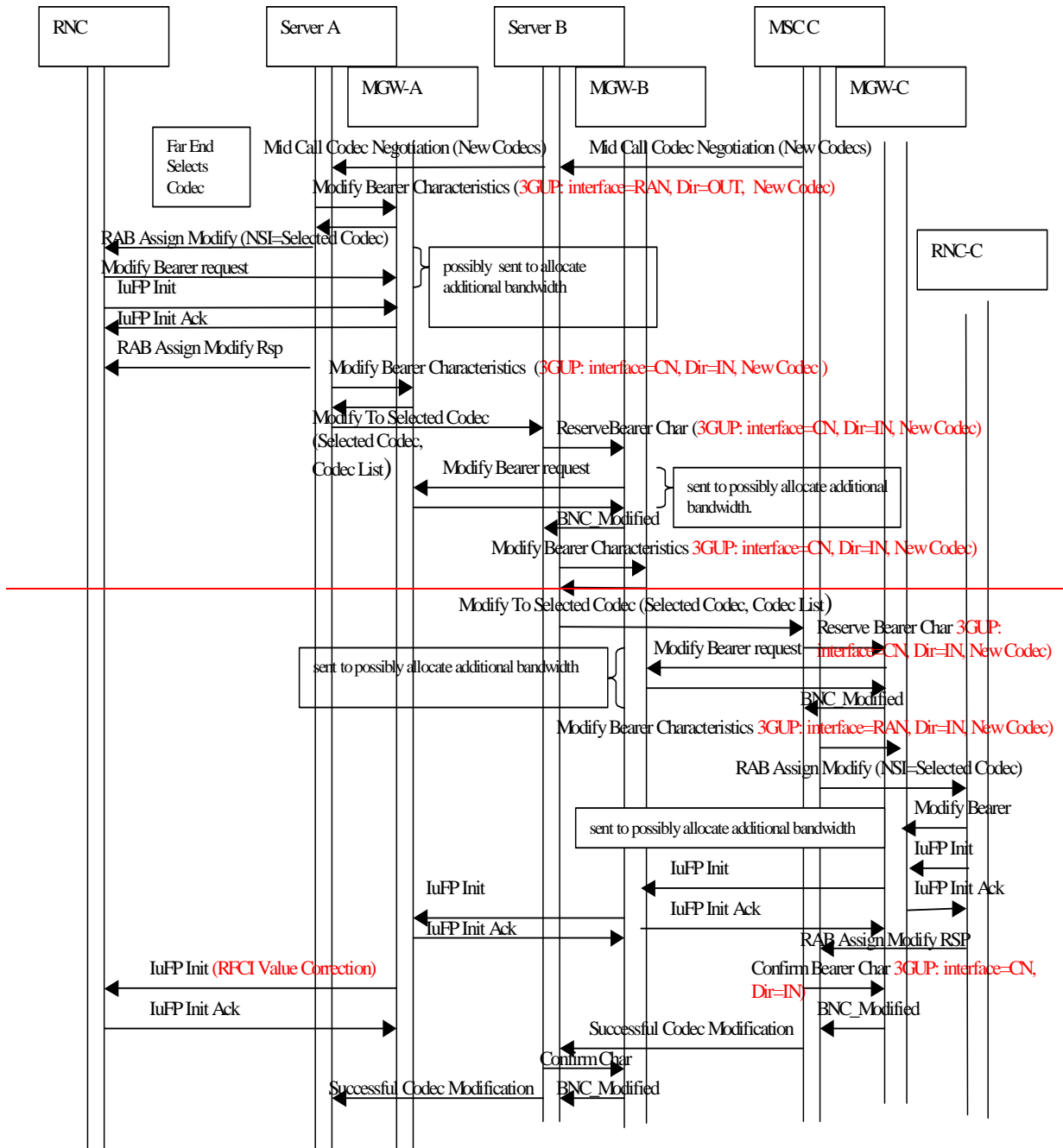


Figure 5.8.4/3: Mid Call Codec Negotiation Call Sequence. Call Flow Part 2





**Figure 5.8.4/2: Mid Call Codec Negotiation Call Sequence**

### 5.8.5 Unsuccessful Codec Modification

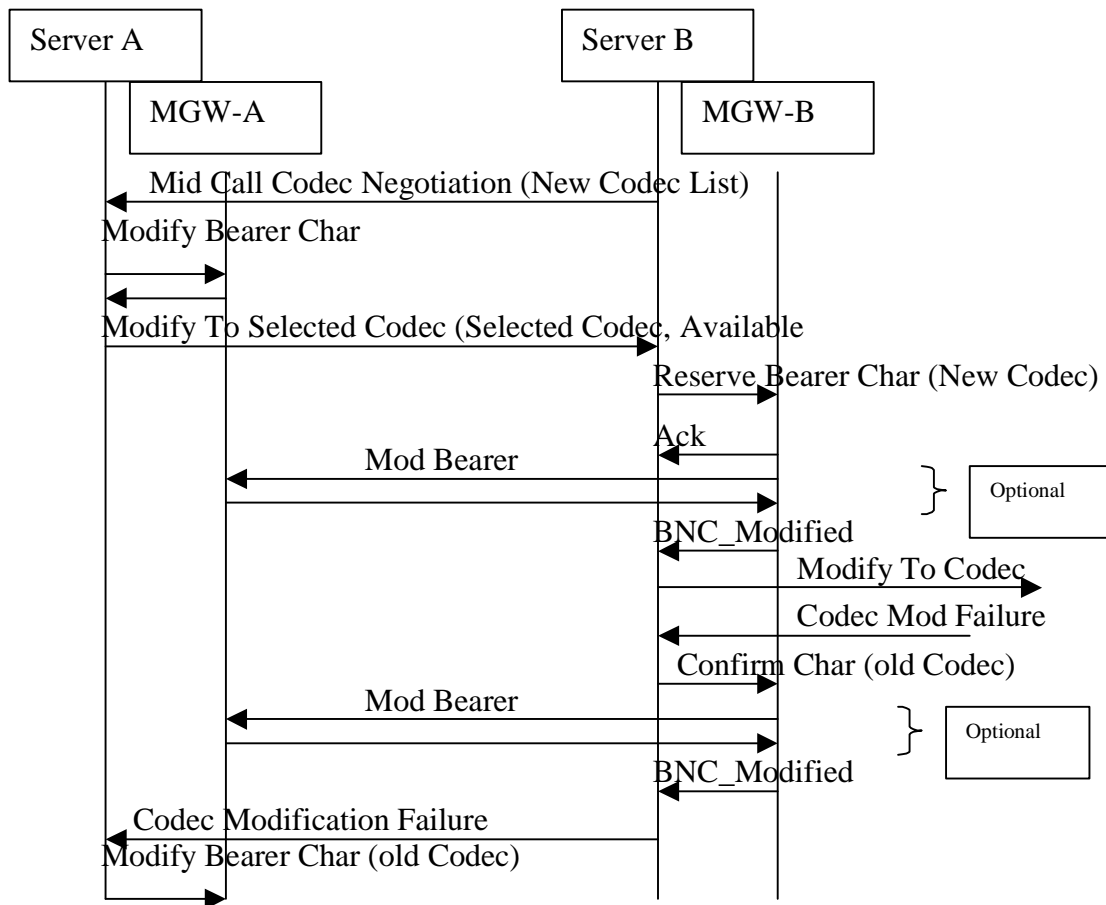
If the Codec Modification is unsuccessful at a certain node in the connection (due to the MGW rejecting a request to reserve the resources or a server rejecting the request to modify the codec) the Confirm\_Char message shall be sent to a termination that previously performed a successful Reserve\_Char Procedure to change the bearer back to its original bandwidth (if needed) and free up any reserved resources. However as the IuUP has not been modified, the Confirm\_Char shall not trigger an IuFP re-initialisation. The basic sequence is shown in Figure 5.8.5/1 and a detailed call flow is described in Figure 5.8.5/2. A server that performed a Modify Bearer Characteristics procedure to a

termination with the new codec shall perform a subsequent Modify Bearer Characteristics procedure to that termination with the old codec in the failure case. As no IuFP initialisation occurs in the unsuccessful case the IuFP currently initialised will then match the old codec restored by the subsequent Modify Bearer Char; the MGW then knows that it can return to TrFO.

The Codec Modification Failure message shall not be returned to a preceding node until notification of the bearer level modification (BNC\_Modified).

**RAB Assignment Modification Failure**

If the reason for failed codec modification is due to an unsuccessful RAB Modification Request then the MSC shall assume that the old RAB is resumed and thus shall restore the old codec.



**Figure 5.8.5/1: Unsuccessful Codec Modification**

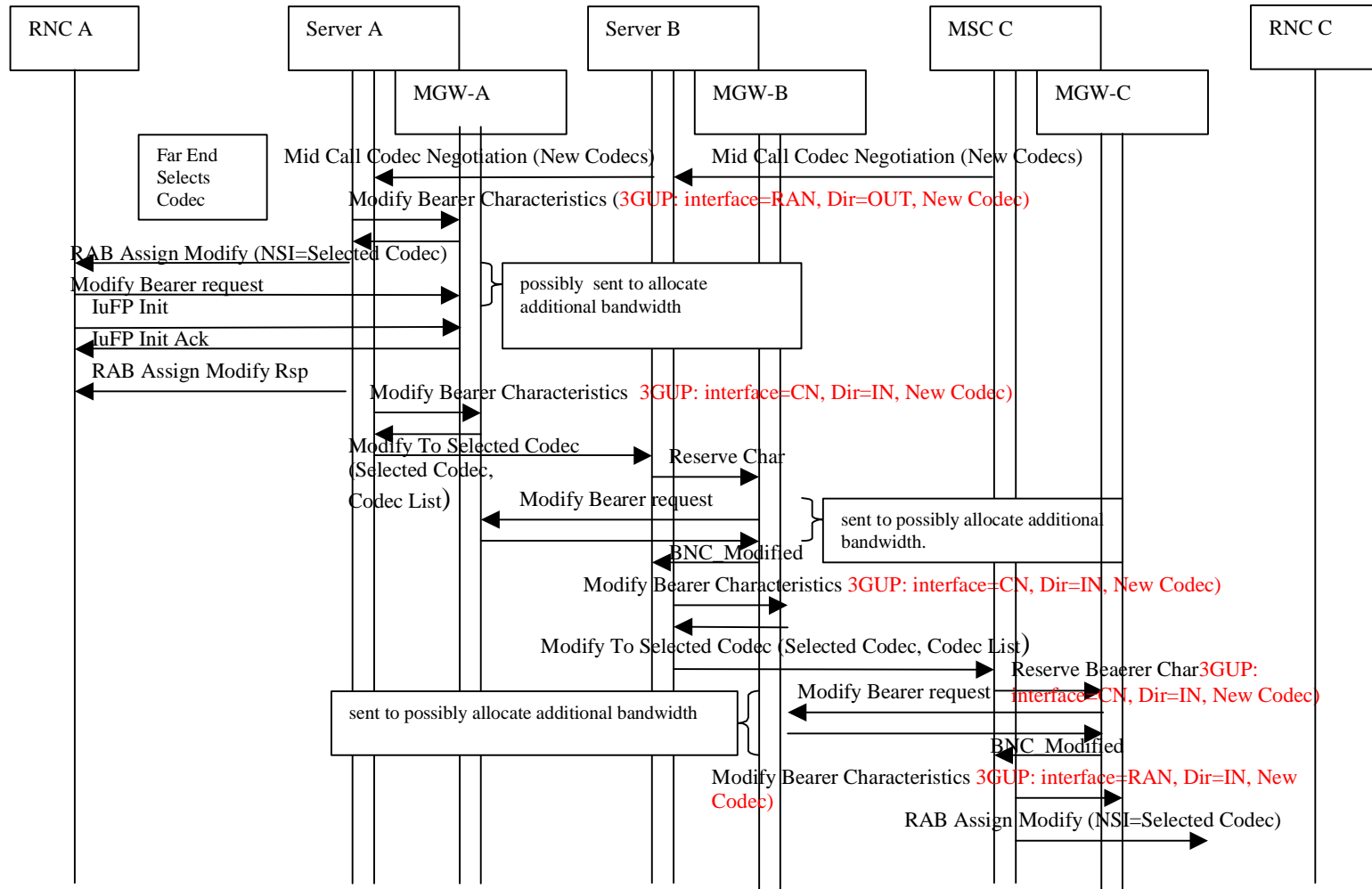
**IuUP Initialisation Unsuccessful**

If the IuUP initialisation fails (this must be due to some protocol error or transmission error because the resources have already been successfully reserved) then the UP protocol is cleared by the peers (see TS 25.415) and therefore the MGW shall notify the Server with a Bearer\_Released notification, the call shall be cleared (normal MGW initiated call clearing applies – see TS 23.205 clause 7.4 [8]).

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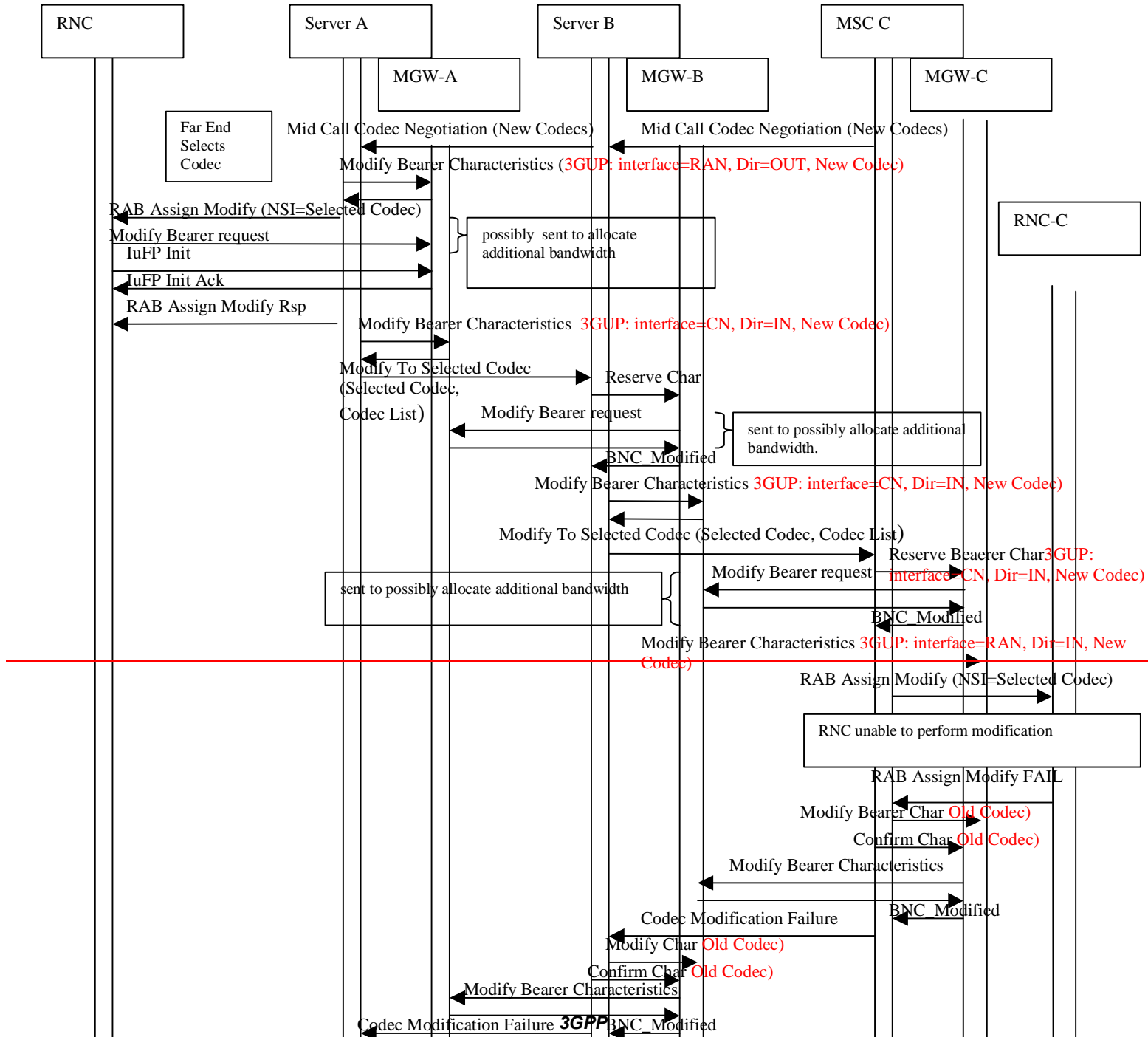
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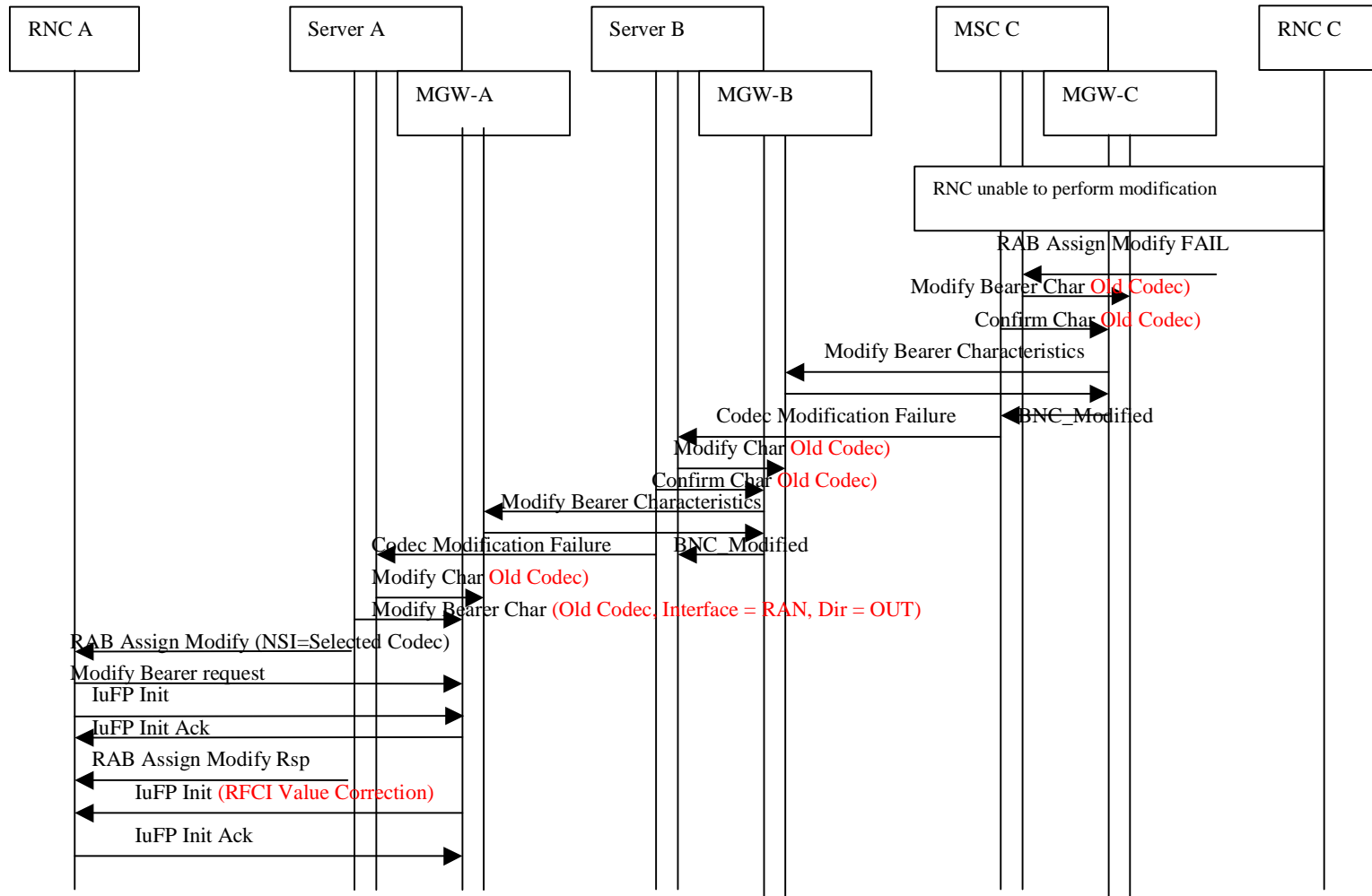
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**Figure5.8.5/2: Call Sequence for Unsuccessful Modification. [Call Flow Part 1](#)**



[Figure 5.8.5/2: Call Sequence for Unsuccessful Modification. Call Flow Part 2](#)

## CHANGE REQUEST

⌘ **23.153 CR 063** ⌘ rev **1** ⌘ Current version: **5.5.0** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification on codec modification		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ OuBTC	<b>Date:</b>	⌘ 11/08/2003
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ 1. Errors in Figures 5.8.4/1, which contradict Figures 5.8.4/2, 5.8.5/1 and 5.8.5/2 and the text in this specification with respect to:  BNC Modified message is required to be sent  UP Initialisation arriving before Confirm Bearer Characteristics should be passed immediately to avoid interruption in speech.  2. Errors in Figures 5.8.4/2:  Optional Bearer Modification to reduce bandwidth omitted (allowed according to BICC and Figure 5.8.1/2)  Rab Assign Modify Response in wrong direction  3. Figure 5.8.5/2 does not fit on one page and will not be printed completely
<b>Summary of change:</b>	⌘ 1. Corrections in Figure 5.8.4/1  BNC Modified message is not optional  Confirm Bearer Characteristics does not trigger UP Initialisation  2. Corrections in Figure 5.8.4/2  Direction of Rab Assign Modify Response turned around  Optional Bearer Modification to reduce bandwidth added

Figure Split in two for better readability

3. Figure 5.8.5/2 is split in two

**Consequences if not approved:** ⌘ Specification is self-contradicting, which may lead to different non-interworking implementations.

**Clauses affected:** ⌘ 5.8.4, 5.8.5

**Other specs affected:**

Y	N
	X
	X
	X

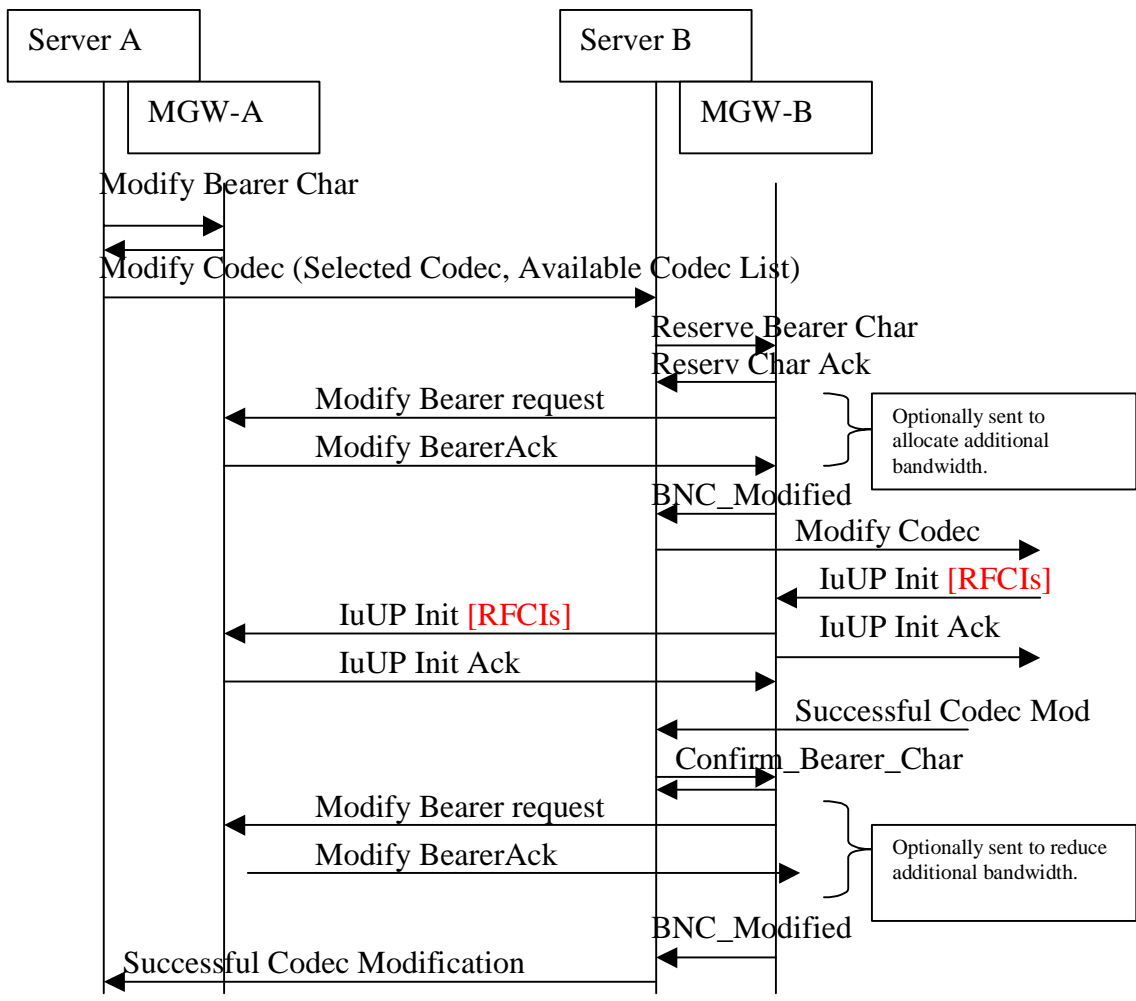
Other core specifications ⌘  
Test specifications  
O&M Specifications

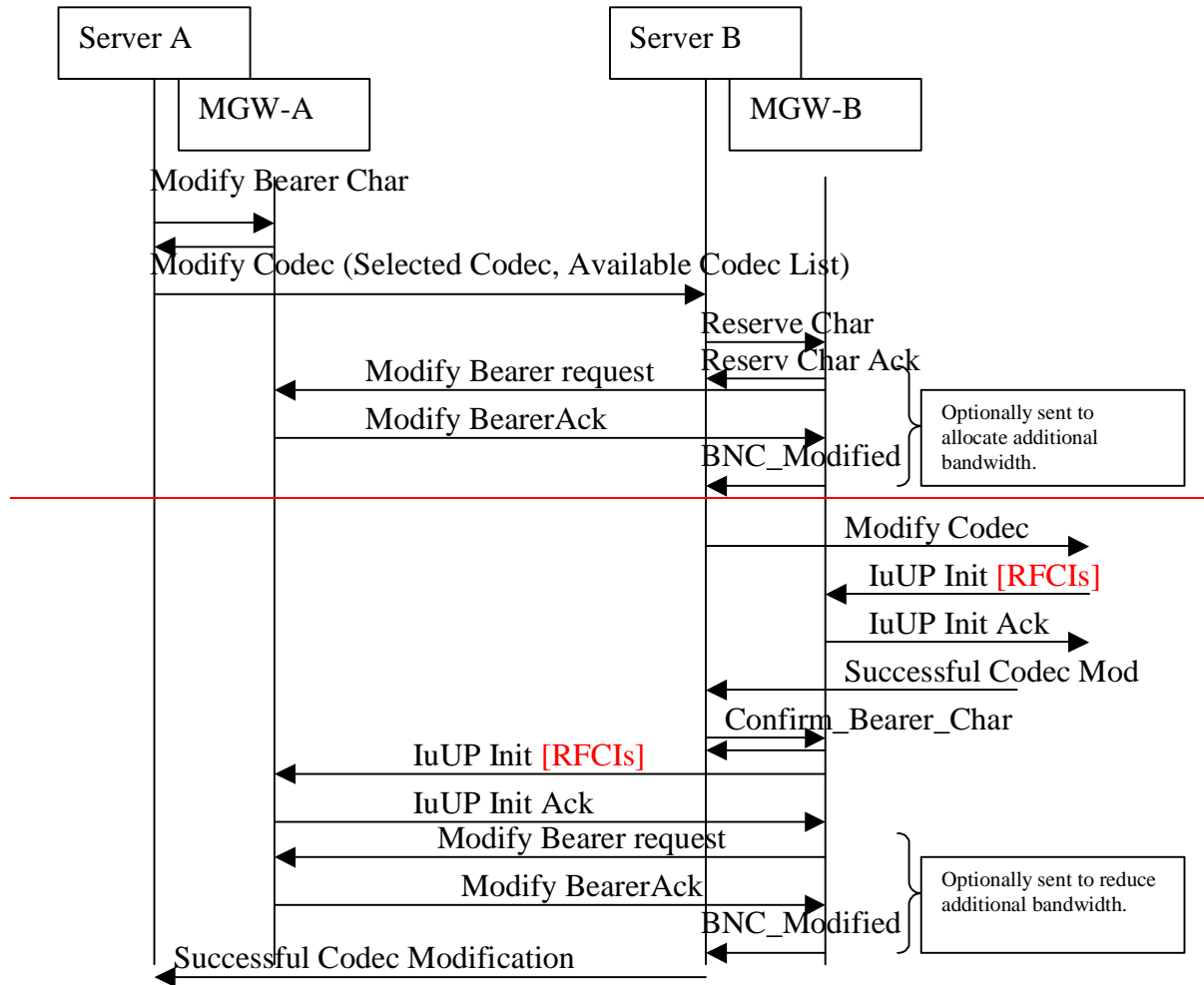
**Other comments:** ⌘



## 5.8.4 Detailed Procedures For Iu Framing Protocol & Codec Modification

The IuFP must be initialised sequentially from one end to the other in order to store new RFCIs in each node to allow TrFO to resume. The IuFP shall be initialised in the backward direction with respect to the Codec Modification/Modify To Selected Codec message as shown in Figure 5.8.4/1.



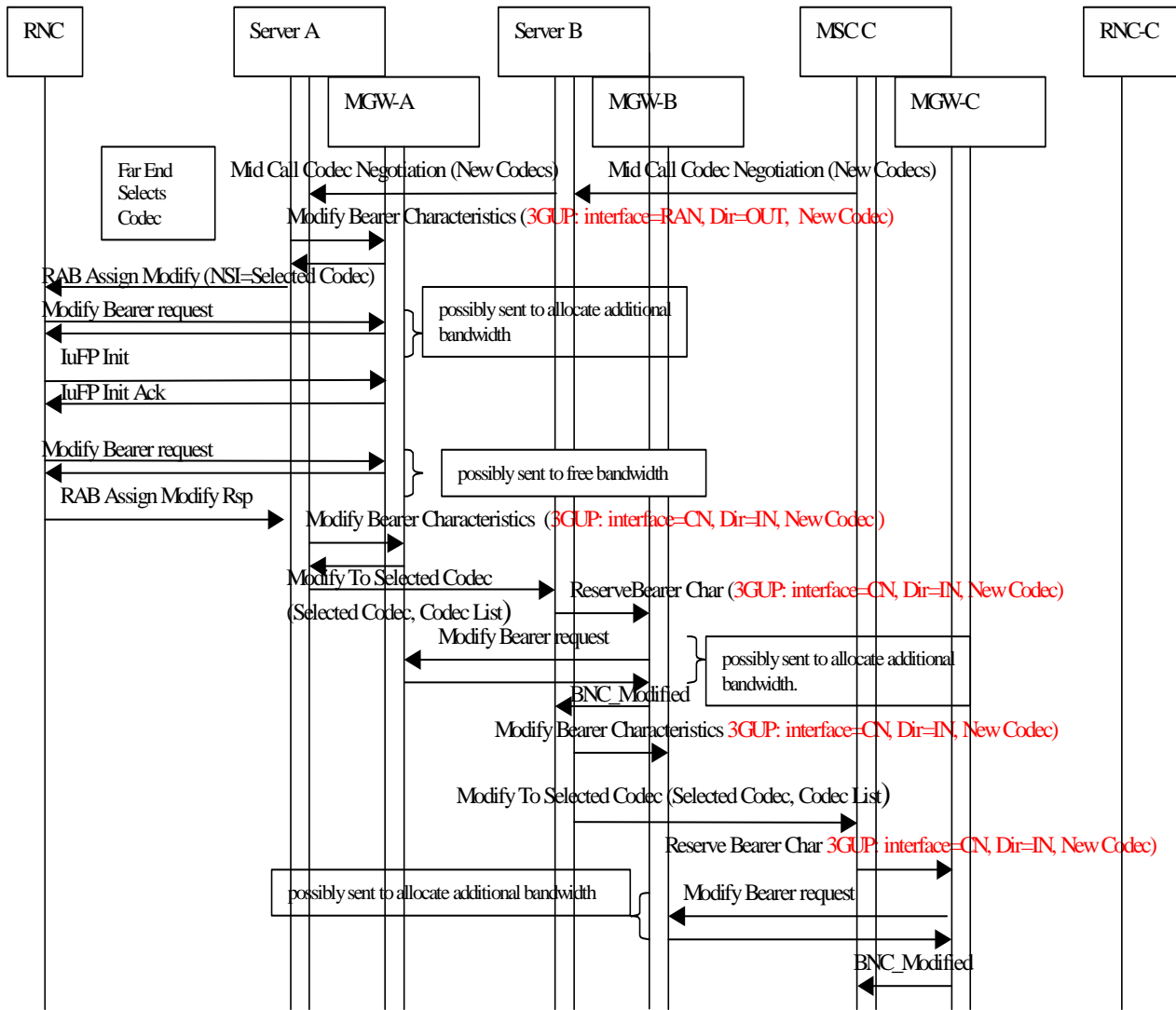


**Figure 5.8.3-4/1: Successful Codec Modification including IuFP**

A MGW receiving a Modify Bearer Characteristics procedure shall be prepared to receive an incoming modify bearer procedure, this may be to increase the bandwidth prior to IuUP Initialisation or to reduce the bandwidth after the IuUP Initialisation. As the new codec indicated in the Modify Bearer Characteristics procedure differs from the codec that is currently used the MGW shall be prepared to receive an IuUP Initialisation for the new codec.

Each termination receiving a Reserve\_Char will initiate bearer level modification to the preceding node if needed - i.e. if the bandwidth needs to be increased to support the new IuUP. No IuUP initialisation occurs at this point in time. If the Codec Modification Request is terminated by a MGW the IuUP init through the core-network is triggered by the setting of the 3GUP package property “initialisation direction” to “OUT” in either the Reserve\_Char or the Confirm\_Char procedure; the MGW shall then start the IuUP Initialisation out from that Termination. If the node terminating the modification is an RNC then it will generate a new IuUP Initialisation toward its access MGW, each Termination shall have the initialisation direction set to “IN”. Each MGW shall in turn acknowledge the IuUP Init to the succeeding node (with respect to the modification request) and forward the RFCIs in an IuUP Initialisation to the preceding MGW (as for call set-up). After completing the Iu UP initialisation and receiving the “Confirm Characteristics” procedure, the MGW may decrease the bandwidth of the corresponding bearer performing the “Modify Bearer” procedure (if needed) - no bearer bandwidth reduction shall be initiated while the UP is still initialised for the old codec.

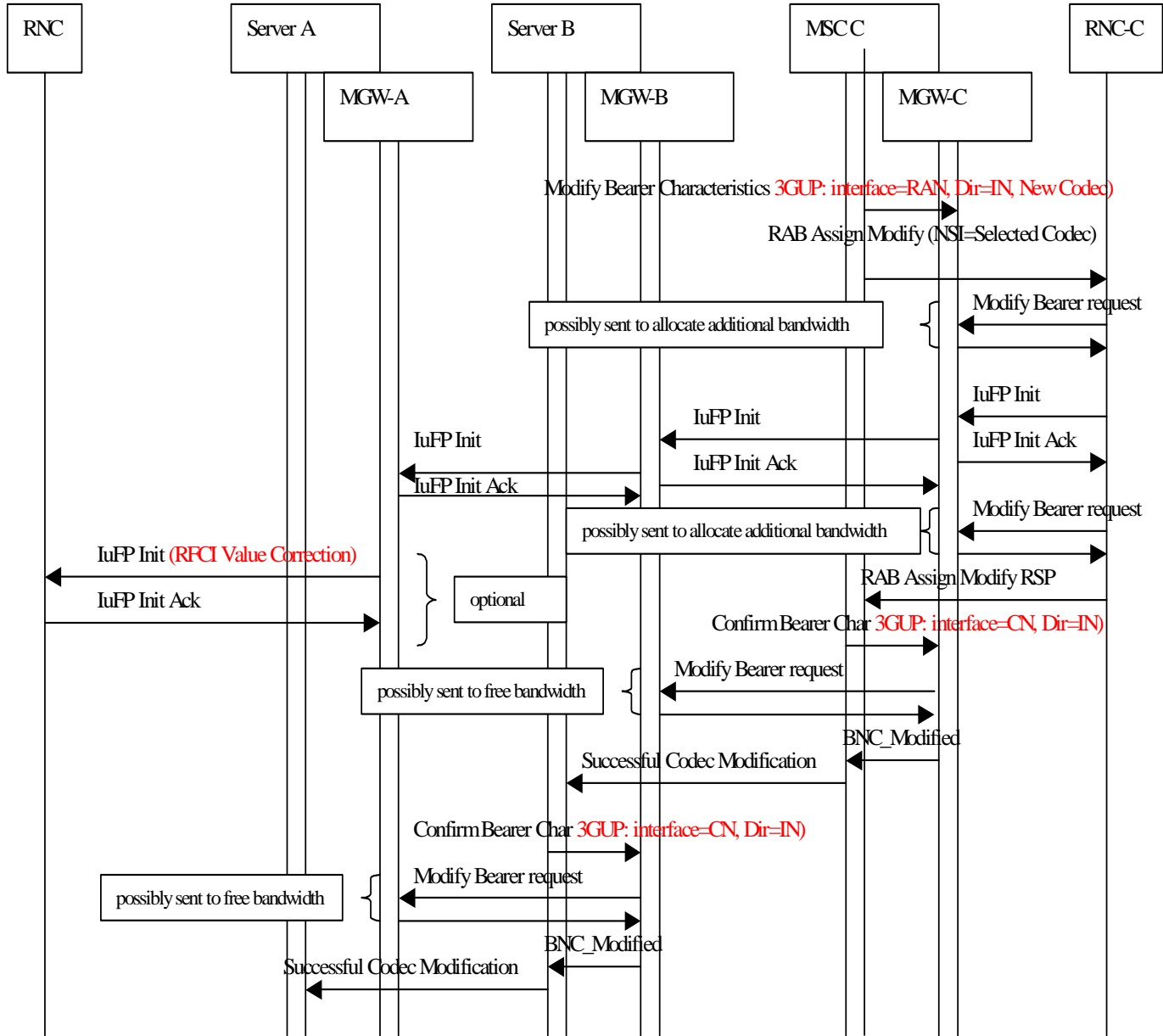
An example call sequence is shown in Figures 5.8.4/2 and 5.8.4/3.



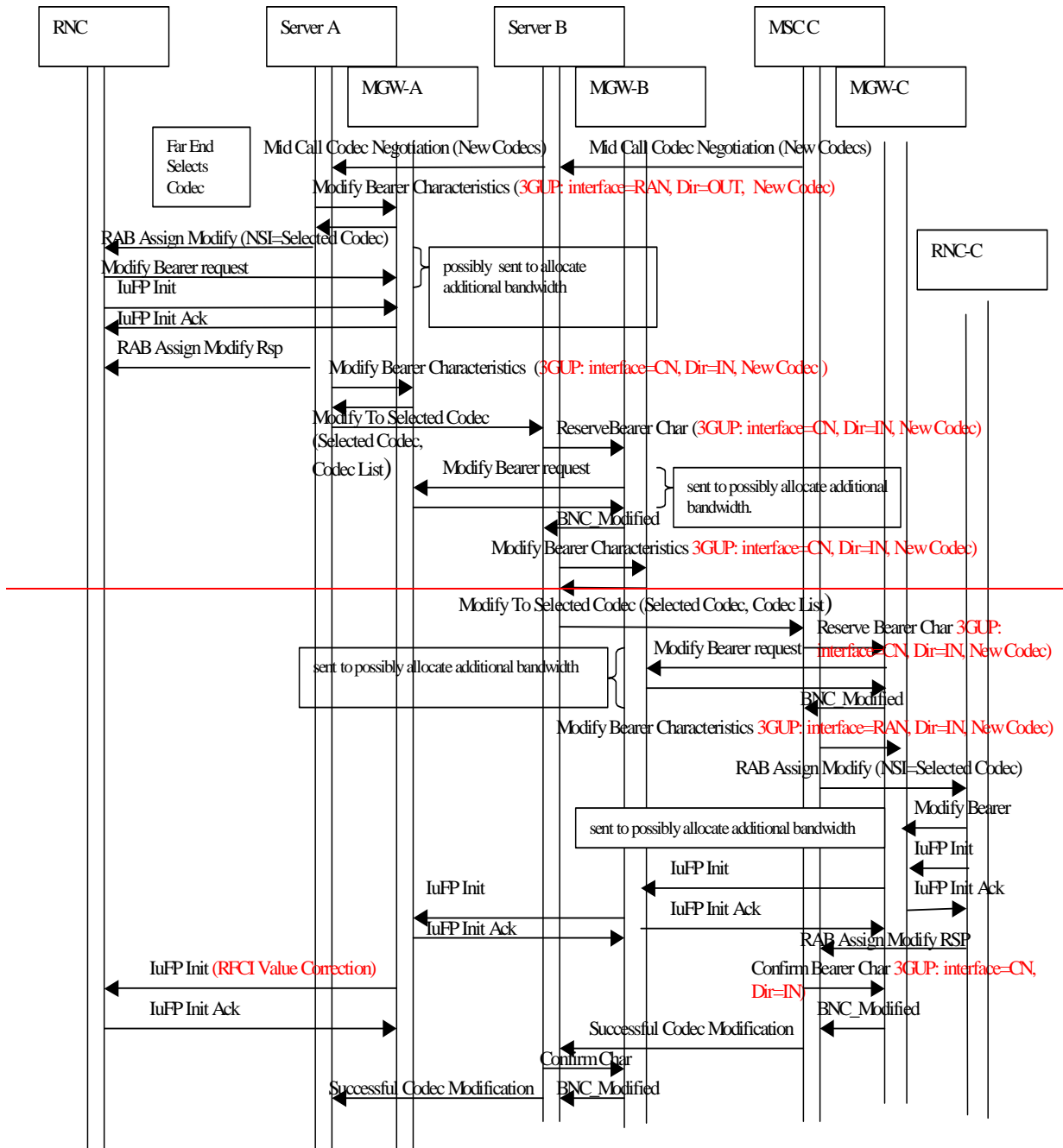
**Figure 5.8.4/2: Mid Call Codec Negotiation Call Sequence. Call Flow Part 1**

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**Figure 5.8.4/3: Mid Call Codec Negotiation Call Sequence. Call Flow Part 2**



**Figure 5.8.4/2: Mid Call Codec Negotiation Call Sequence**

### 5.8.5 Unsuccessful Codec Modification

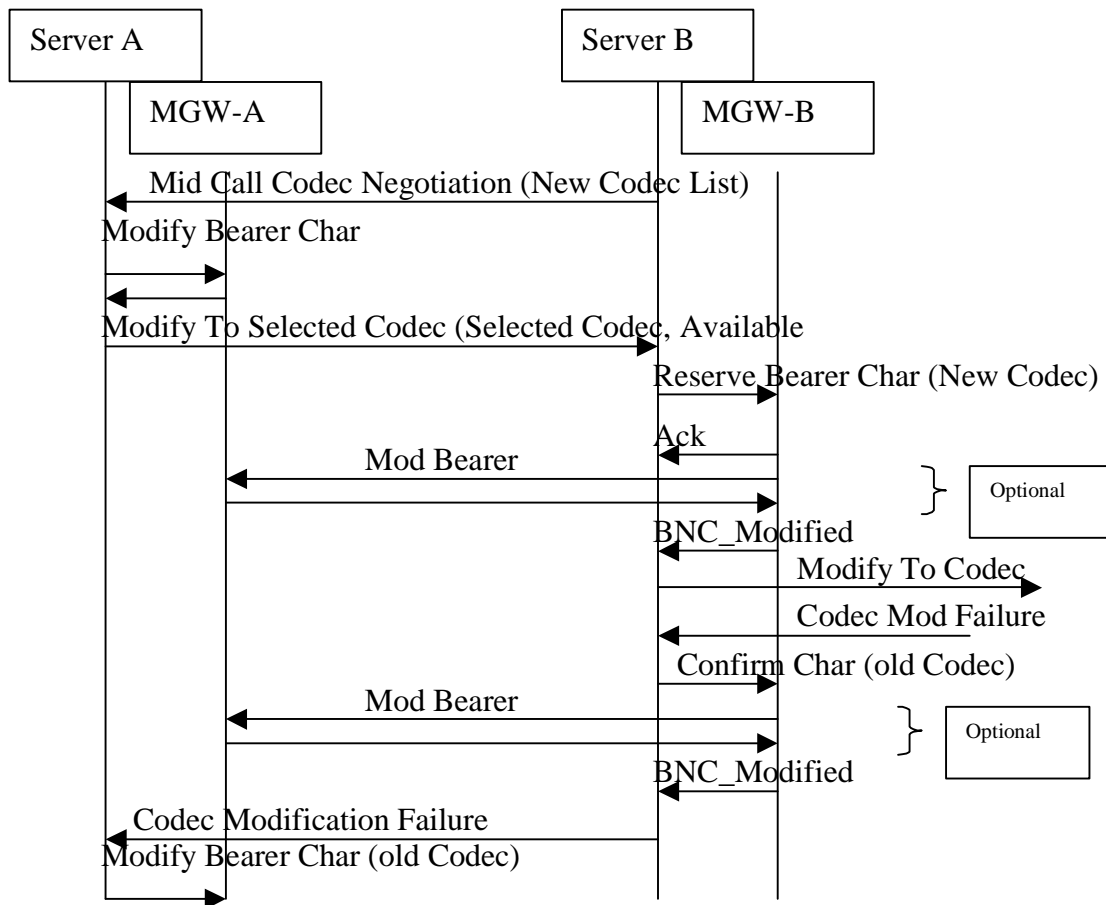
If the Codec Modification is unsuccessful at a certain node in the connection (due to the MGW rejecting a request to reserve the resources or a server rejecting the request to modify the codec) the Confirm\_Char message shall be sent to a termination that previously performed a successful Reserve\_Char Procedure to change the bearer back to its original bandwidth (if needed) and free up any reserved resources. However as the IuUP has not been modified, the Confirm\_Char shall not trigger an IuFP re-initialisation. The basic sequence is shown in Figure 5.8.5/1 and a detailed call flow is described in Figure 5.8.5/2. A server that performed a Modify Bearer Characteristics procedure to a

termination with the new codec shall perform a subsequent Modify Bearer Characteristics procedure to that termination with the old codec in the failure case. As no IuFP initialisation occurs in the unsuccessful case the IuFP currently initialised will then match the old codec restored by the subsequent Modify Bearer Char; the MGW then knows that it can return to TrFO.

The Codec Modification Failure message shall not be returned to a preceding node until notification of the bearer level modification (BNC\_Modified).

**RAB Assignment Modification Failure**

If the reason for failed codec modification is due to an unsuccessful RAB Modification Request then the MSC shall assume that the old RAB is resumed and thus shall restore the old codec.



**Figure 5.8.5/1: Unsuccessful Codec Modification**

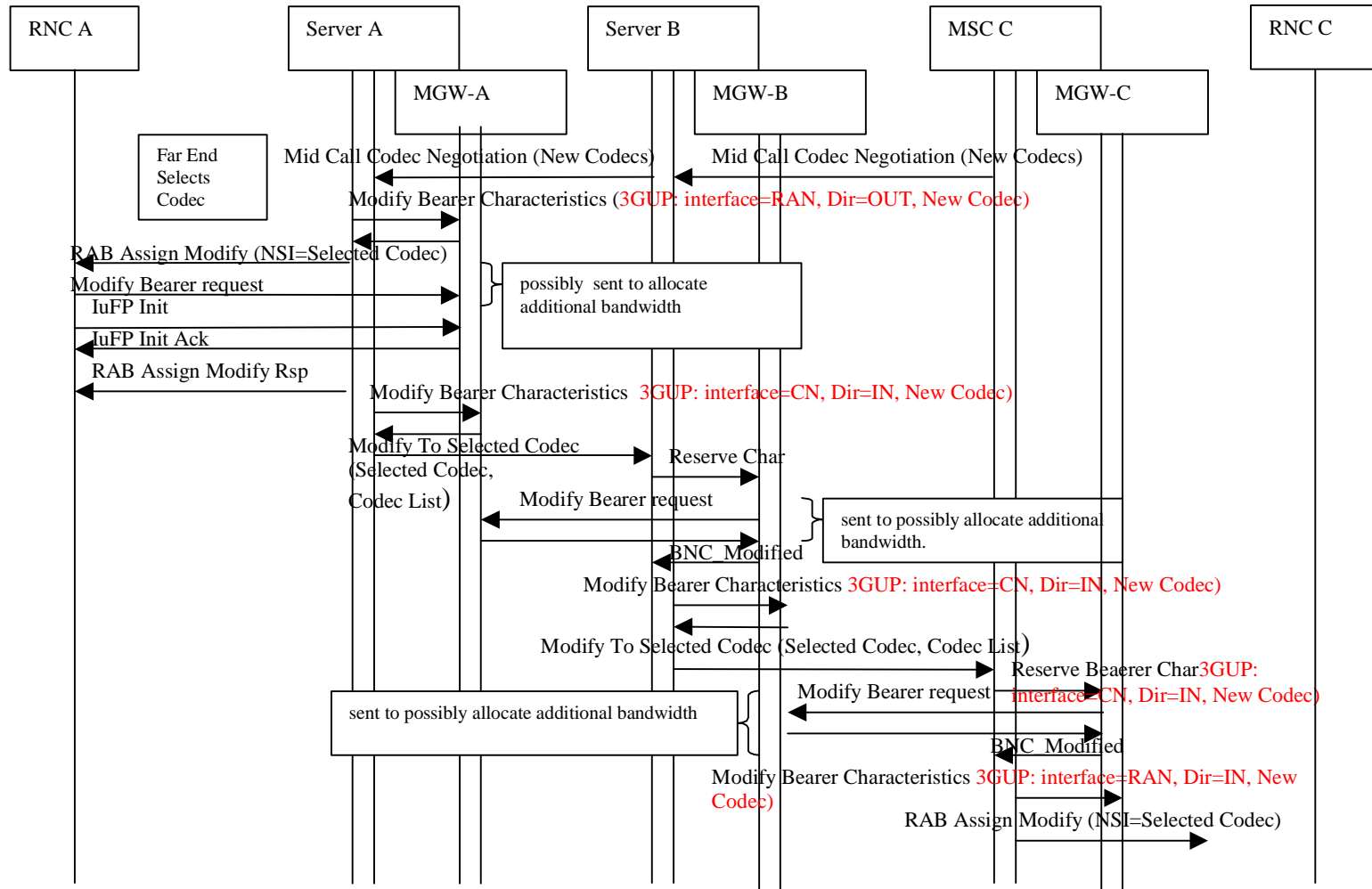
**IuUP Initialisation Unsuccessful**

If the IuUP initialisation fails (this must be due to some protocol error or transmission error because the resources have already been successfully reserved) then the UP protocol is cleared by the peers (see TS 25.415) and therefore the MGW shall notify the Server with a Bearer\_Released notification, the call shall be cleared (normal MGW initiated call clearing applies – see TS 23.205 clause 7.4 [8]).

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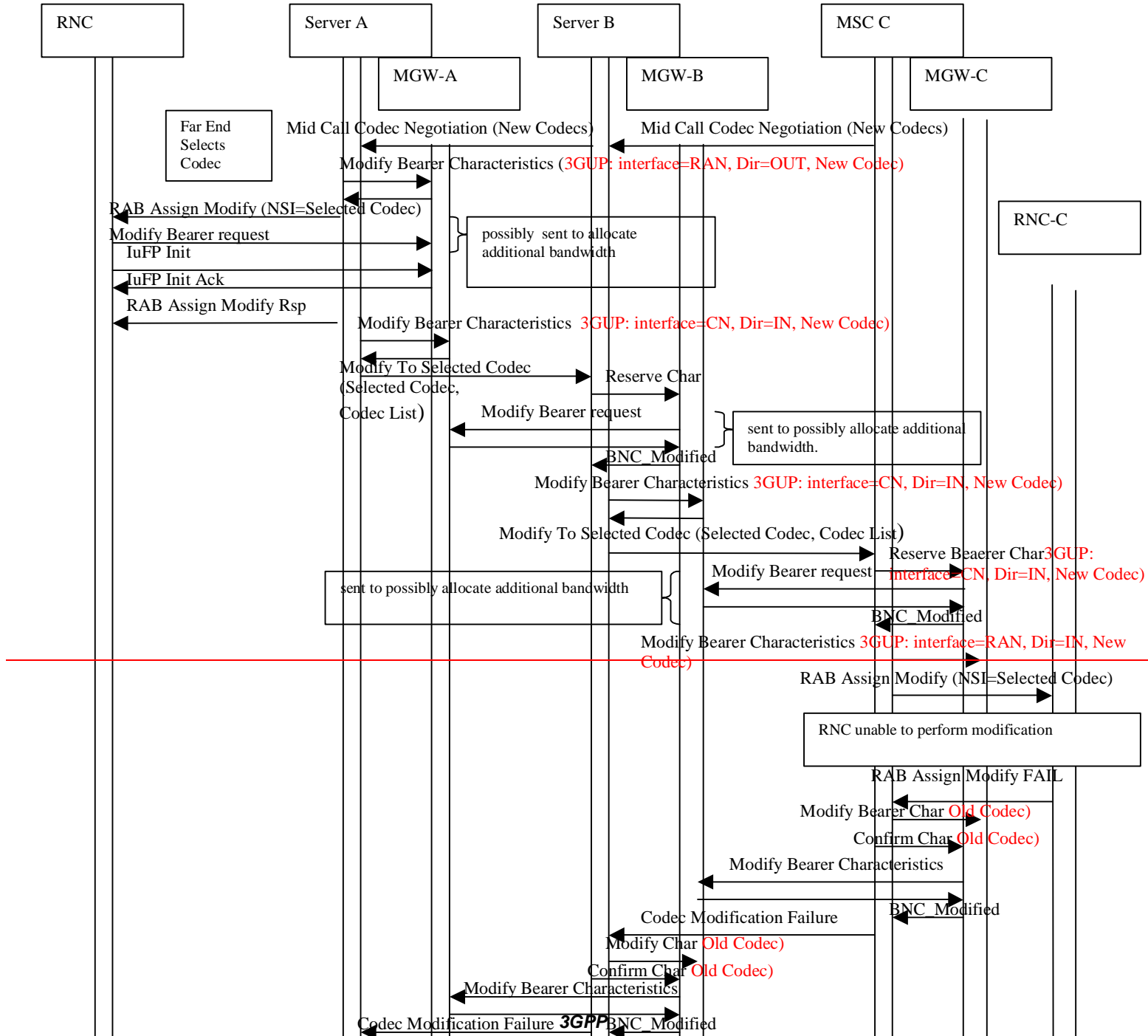




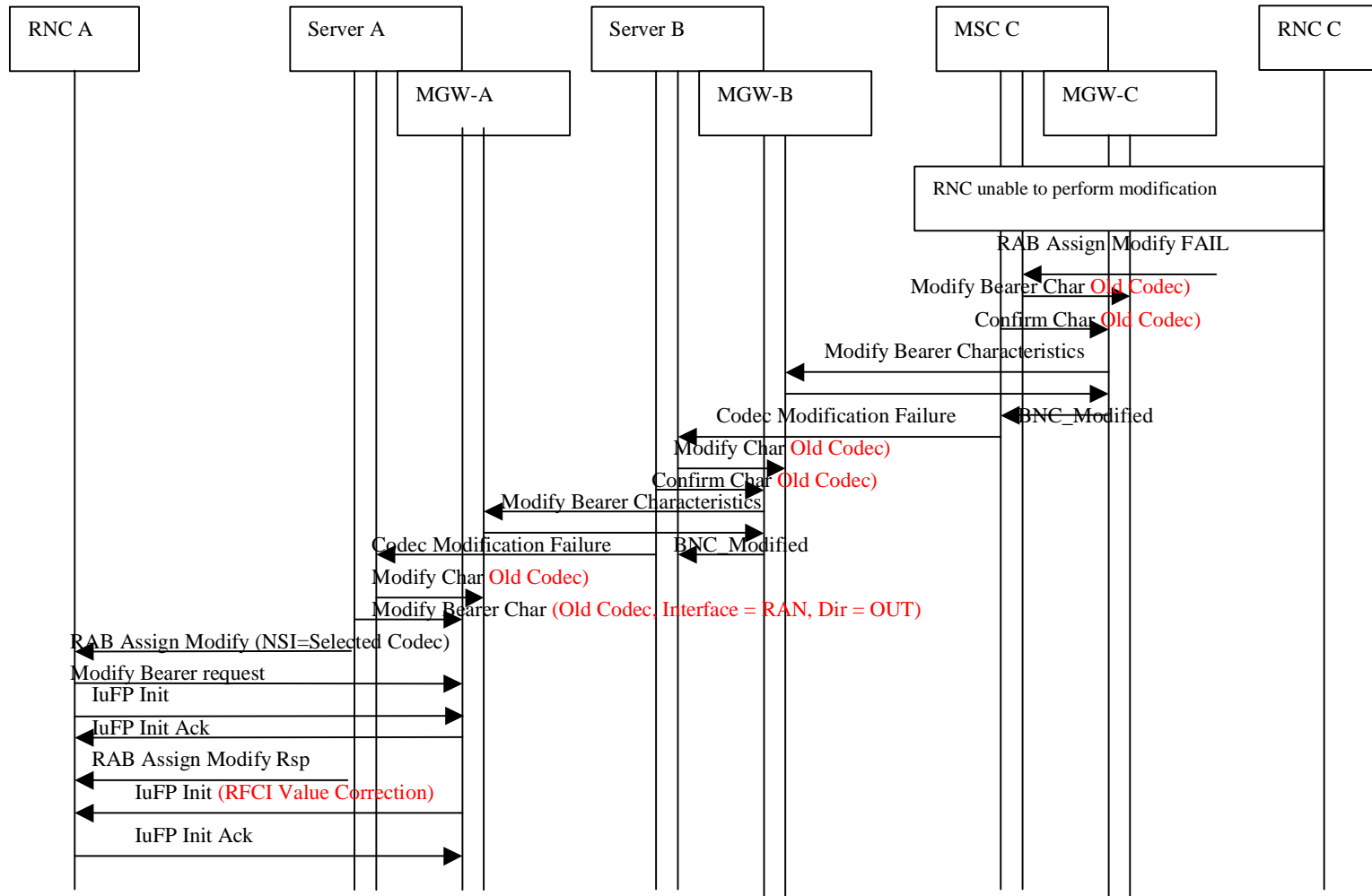
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**Figure5.8.5/2: Call Sequence for Unsuccessful Modification. [Call Flow Part 1](#)**



[Figure 5.8.5/2: Call Sequence for Unsuccessful Modification. Call Flow Part 2](#)

## CHANGE REQUEST

⌘ **23.153 CR 066** ⌘ rev **1** ⌘ Current version: **4.8.0** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification of luUP Initialisation during codec modification		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ OoBTC	<b>Date:</b>	⌘ 28/8/2003
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ If the SDU requirements for a new codec are identical to the SDU requirements for the existing codec then at codec modification the MGW shall re-initialise the User Plane through the core-network or expect to receive an luUP Init. Currently the specification is unclear in this respect.  This is an essential correction.
<b>Summary of change:</b>	⌘ Clarification that the MGW re-initialises the User Plane if the codec changes. Also the MSC behaviour is clarified according to RAN3 decision.
<b>Consequences if not approved:</b>	⌘ Interworking problems – one MGW may not expect an luUP init when its peer does send one.

<b>Clauses affected:</b>	⌘ 5.8.4										
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N		X		X		X	Other core specifications	⌘
Y	N										
	X										
	X										
	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘ This CR is in line with CN plenary and RAN3 decisions.										

**How to create CRs using this form:**

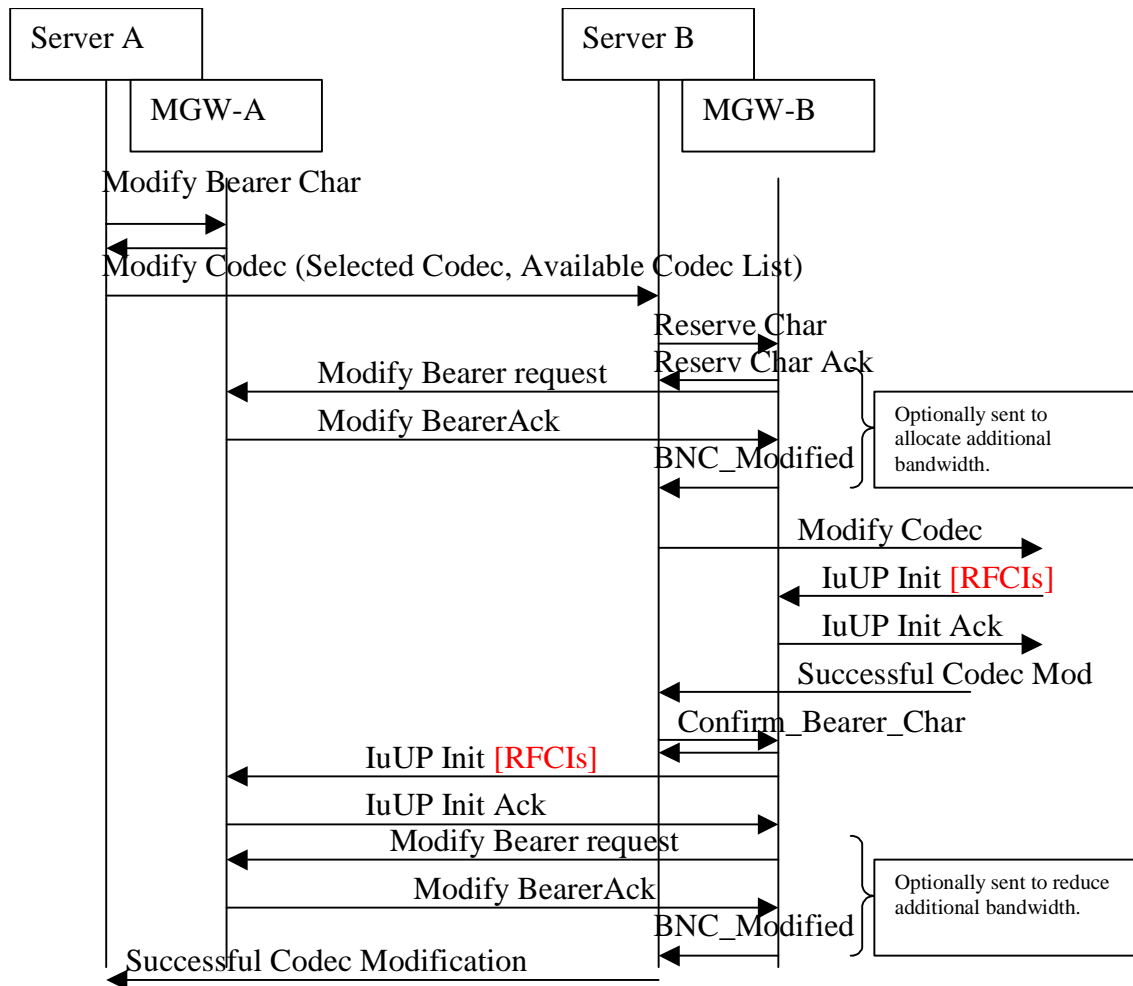
Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 5.8.4 Detailed Procedures For Iu Framing Protocol & Codec Modification

The IuFP must be initialised sequentially from one end to the other in order to store new RFCIs in each node to allow TrFO to resume. The IuFP shall be initialised in the backward direction with respect to the Codec Modification/Modify To Selected Codec message as shown in Figure 5.8.4/1.



**Figure 5.8.3.4/1: Successful Codec Modification including IuFP**

A MGW receiving a Modify Bearer Characteristics procedure shall be prepared to receive an incoming modify bearer procedure, this may be to increase the bandwidth prior to IuUP Initialisation or to reduce the bandwidth after the IuUP Initialisation. ~~As the new codec indicated in the Modify Bearer Characteristics procedure differs from the codec that is currently used the MGW shall be prepared to receive an IuUP Initialisation for the new codec.~~ The new codec indicated in the Modify Bearer Characteristics procedure shall always result in the MGW being prepared to receive an Iu UP initialisation for the new codec, even if the SDU format is unchanged. If the node terminating the modification is an RNC, the MSC shall send the RAB Parameters IE and NAS Synchronisation Indicator IE to the RNC to indicate that the codec has changed and IuUP Initialisation shall be generated.

Each termination receiving a Reserve\_Char will initiate bearer level modification to the preceding node if needed - i.e. if the bandwidth needs to be increased to support the new IuUP. No IuUP initialisation occurs at this point in time. If the Codec Modification Request is terminated by a MGW the IuUP init through the core-network is triggered by the setting of the 3GUP package property “initialisation direction” to “OUT” in either the Reserve\_Char or the Confirm\_Char procedure; the MGW shall then start the IuUP Initialisation out from that Termination. If the node terminating the modification is an RNC then it will generate a new IuUP Initialisation toward its access MGW, each Termination shall have the initialisation direction set to “IN”. Each MGW shall in turn acknowledge the IuUP Init to the succeeding node (with respect to the modification request) and forward the RFCIs in an IuUP Initialisation to the preceding MGW (as for call set-up). After completing the Iu UP initialisation and receiving the “Confirm

Characteristics” procedure, the MGW may decrease the bandwidth of the corresponding bearer performing the “Modify Bearer” procedure (if needed) - no bearer bandwidth reduction shall be initiated while the UP is still initialised for the old codec.

An example call sequence is shown in Figure 5.8.4/2.

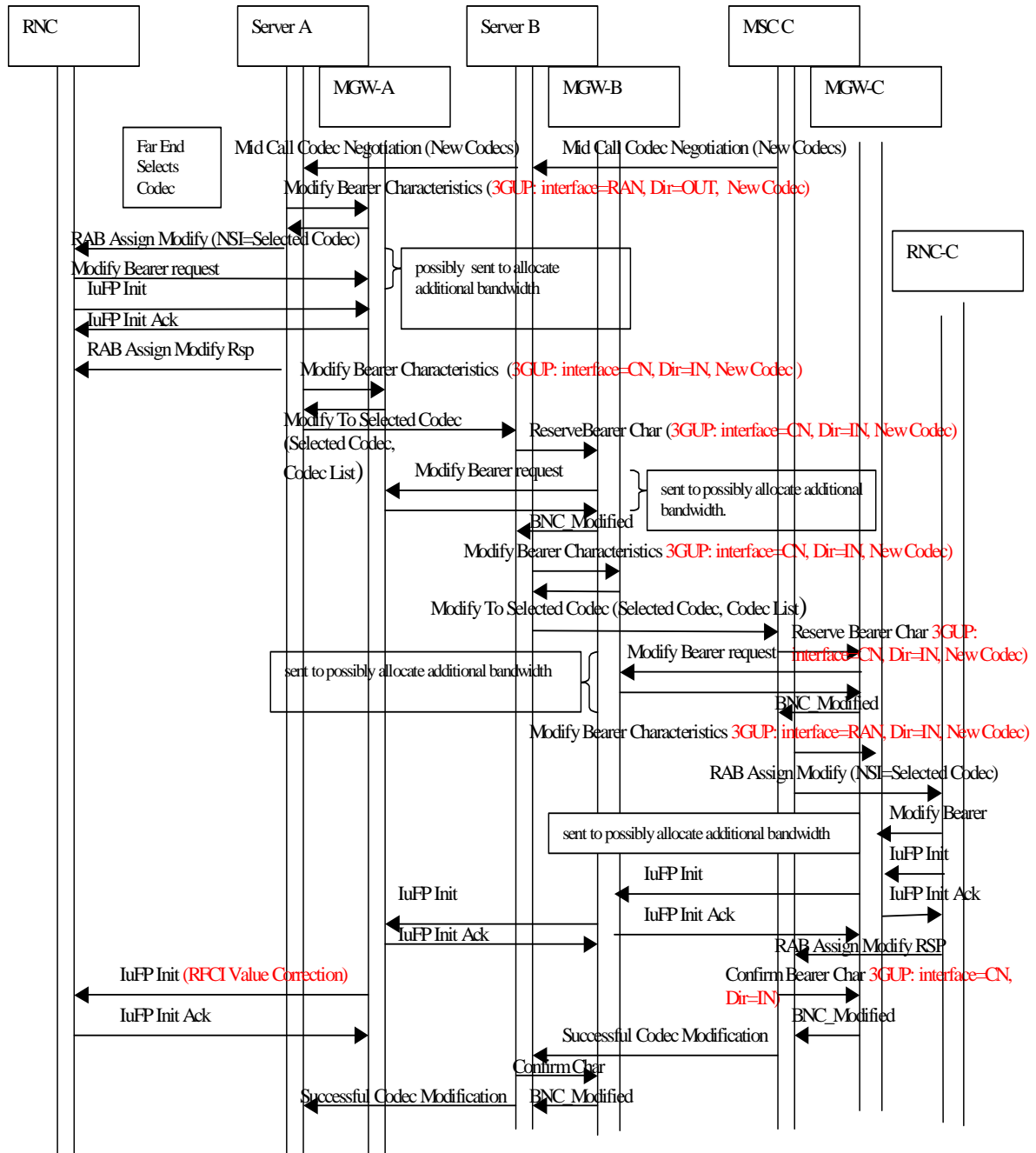


Figure 5.8.4/2: Mid Call Codec Negotiation Call Sequence

### 5.8.5 Unsuccessful Codec Modification

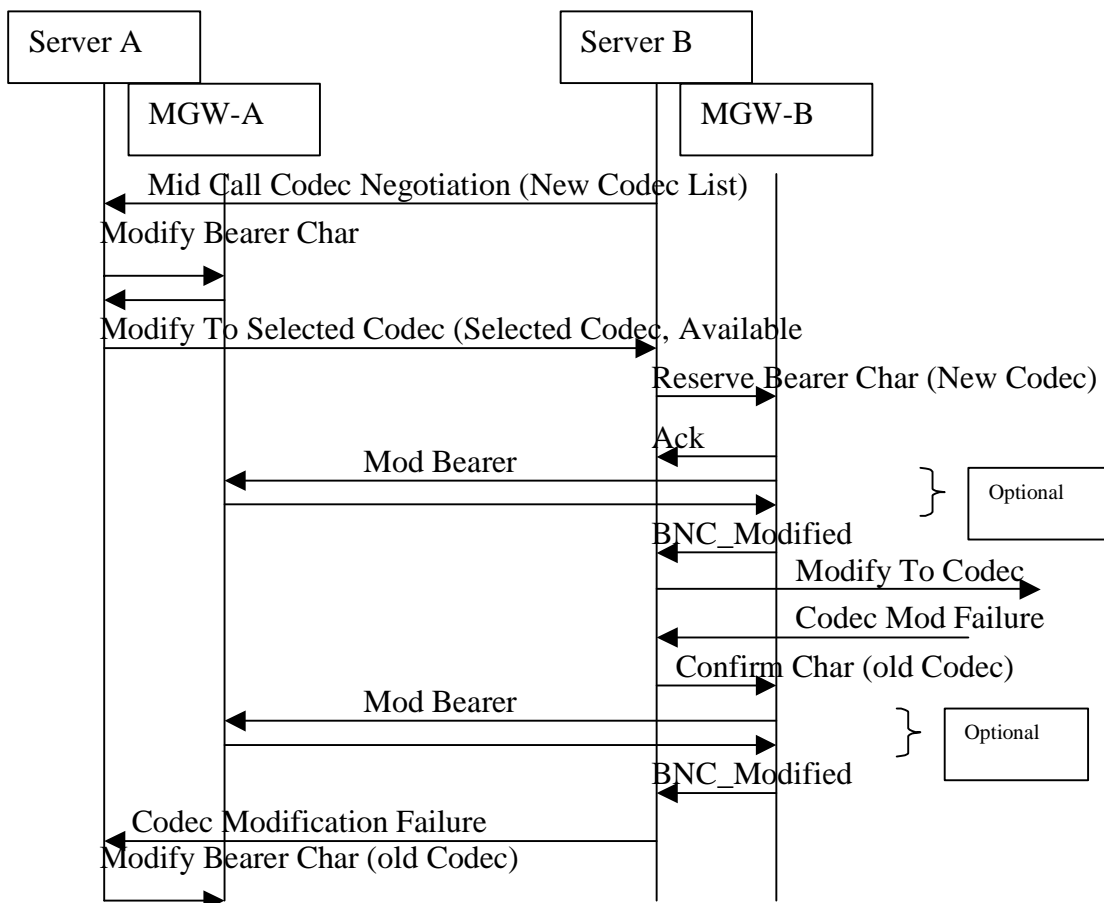
If the Codec Modification is unsuccessful at a certain node in the connection (due to the MGW rejecting a request to reserve the resources or a server rejecting the request to modify the codec) the Confirm\_Char message shall be sent to a termination that previously performed a successful Reserve\_Char Procedure to change the bearer back to its original bandwidth (if needed) and free up any reserved resources. However as the IuUP has not been modified, the Confirm\_Char shall not trigger an IuFP re-initialisation. The basic sequence is shown in Figure 5.8.5/1 and a detailed

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The Codec Modification Failure message shall not be returned to a preceding node until notification of the bearer level modification (BNC\_Modified).

**RAB Assignment Modification Failure**

If the reason for failed codec modification is due to an unsuccessful RAB Modification Request then the MSC shall assume that the old RAB is resumed and thus shall restore the old codec.



**Figure 5.8.5/1: Unsuccessful Codec Modification**

**IuUP Initialisation Unsuccessful**

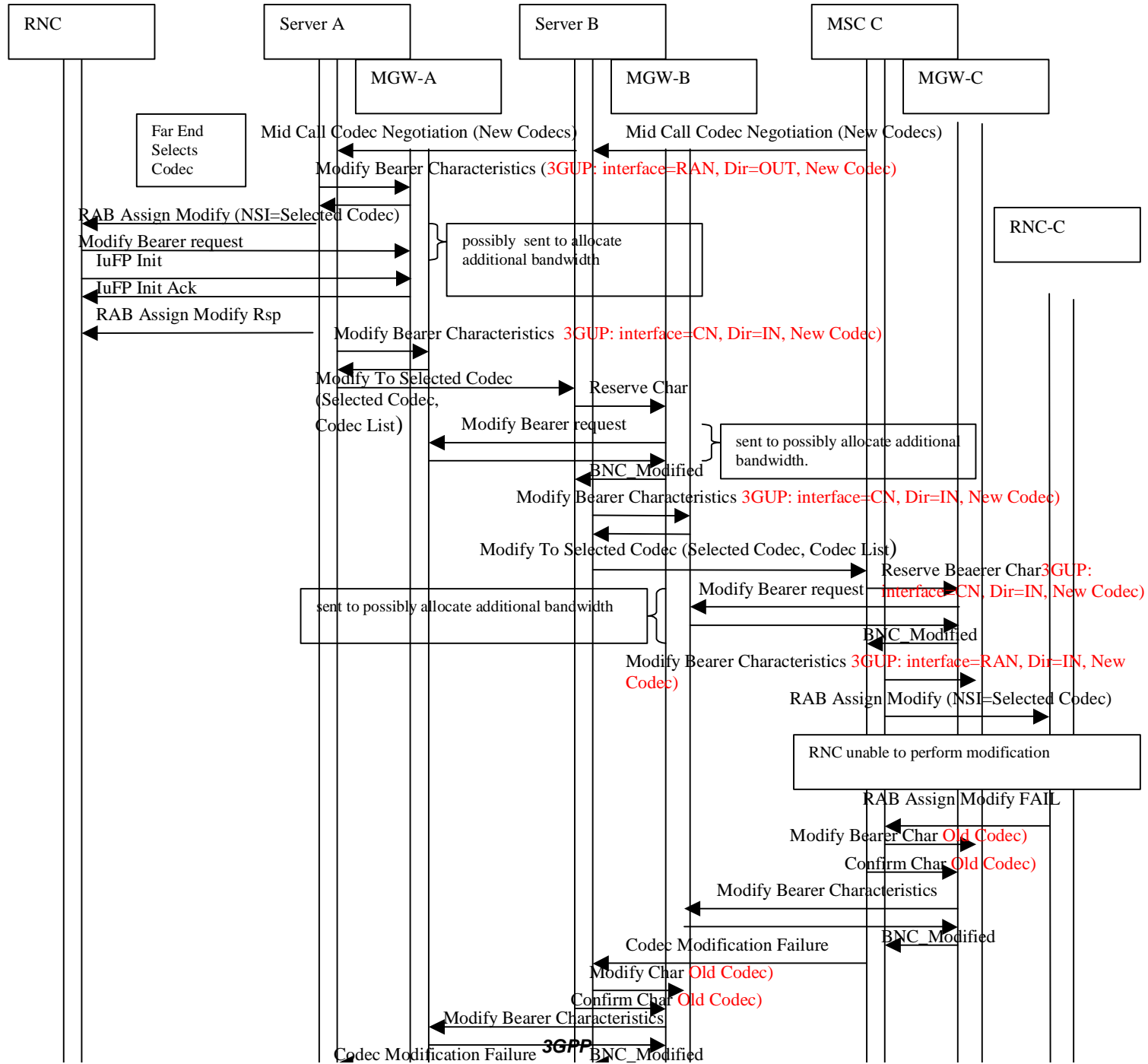
If the IuUP initialisation fails (this must be due to some protocol error or transmission error because the resources have already been successfully reserved) then the UP protocol is cleared by the peers (see TS 25.415) and therefore the MGW shall notify the Server with a Bearer\_Released notification, the call shall be cleared (normal MGW initiated call clearing applies – see TS 23.205 clause 7.4 [8]).



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**Figure 5.8.5/2: Call Sequence for Unsuccessful Modification**

## CHANGE REQUEST

⌘ **23.153 CR 067** ⌘ rev **1** ⌘ Current version: **5.5.0** ⌘

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

**Proposed change affects:** UICC apps  ME  Radio Access Network  Core Network

<b>Title:</b>	⌘ Clarification of luUP Initialisation during codec modification		
<b>Source:</b>	⌘ CN4		
<b>Work item code:</b>	⌘ OoBTC	<b>Date:</b>	⌘ 28/8/2003
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ If the SDU requirements for a new codec are identical to the SDU requirements for the existing codec then at codec modification the MGW shall re-initialise the User Plane through the core-network or expect to receive an luUP Init. Currently the specification is unclear in this respect.  This is an essential correction.
<b>Summary of change:</b>	⌘ Clarification that the MGW re-initialises the User Plane if the codec changes. Also the MSC behaviour is clarified according to RAN3 decision.
<b>Consequences if not approved:</b>	⌘ Interworking problems – one MGW may not expect an luUP init when its peer does send one.

<b>Clauses affected:</b>	⌘ 5.8.4						
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	Other core specifications	⌘
Y	N						
⌘	X						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	⌘	X	Test specifications			
⌘	X						
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	⌘	X	O&M Specifications			
⌘	X						
<b>Other comments:</b>	⌘ This CR is in line with CN plenary and RAN3 decisions.						

**How to create CRs using this form:**

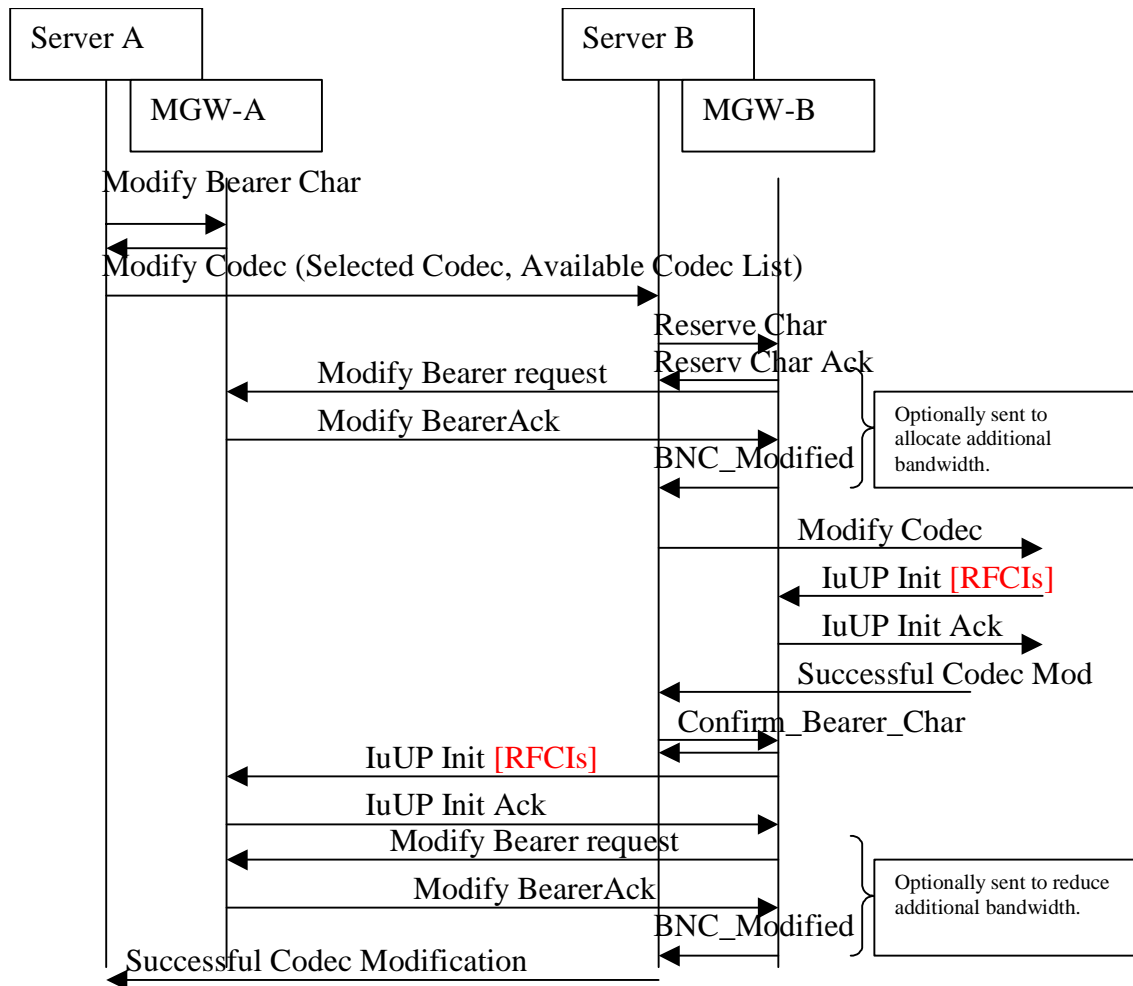
Comprehensive information and tips about how to create CRs can be found at <http://www.3gpp.org/specs/CR.htm>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

### 5.8.4 Detailed Procedures For Iu Framing Protocol & Codec Modification

The IuFP must be initialised sequentially from one end to the other in order to store new RFCIs in each node to allow TrFO to resume. The IuFP shall be initialised in the backward direction with respect to the Codec Modification/Modify To Selected Codec message as shown in Figure 5.8.4/1.



**Figure 5.8.3.4/1: Successful Codec Modification including IuFP**

A MGW receiving a Modify Bearer Characteristics procedure shall be prepared to receive an incoming modify bearer procedure, this may be to increase the bandwidth prior to IuUP Initialisation or to reduce the bandwidth after the IuUP Initialisation. The new codec indicated in the Modify Bearer Characteristics procedure shall always result in the MGW being prepared to receive an Iu UP initialisation for the new codec, even if the SDU format is unchanged. The MSC shall send the RAB Parameters IE and NAS Synchronisation Indicator IE to the RNC to indicate that the codec has changed and IuUP Initialisation shall be generated. ~~As the new codec indicated in the Modify Bearer Characteristics procedure differs from the codec that is currently used the MGW shall be prepared to receive an IuUP Initialisation for the new codec.~~

Each termination receiving a Reserve\_Char will initiate bearer level modification to the preceding node if needed - i.e. if the bandwidth needs to be increased to support the new IuUP. No IuUP initialisation occurs at this point in time. If the Codec Modification Request is terminated by a MGW the IuUP init through the core-network is triggered by the setting of the 3GUP package property “initialisation direction” to “OUT” in either the Reserve\_Char or the Confirm\_Char procedure; the MGW shall then start the IuUP Initialisation out from that Termination. If the node terminating the modification is an RNC then it will generate a new IuUP Initialisation toward its access MGW, each Termination shall have the initialisation direction set to “IN”. Each MGW shall in turn acknowledge the IuUP Init to the succeeding node (with respect to the modification request) and forward the RFCIs in an IuUP Initialisation to the preceding MGW (as for call set-up). After completing the Iu UP initialisation and receiving the “Confirm

Characteristics” procedure, the MGW may decrease the bandwidth of the corresponding bearer performing the “Modify Bearer” procedure (if needed) - no bearer bandwidth reduction shall be initiated while the UP is still initialised for the old codec.

An example call sequence is shown in Figure 5.8.4/2.

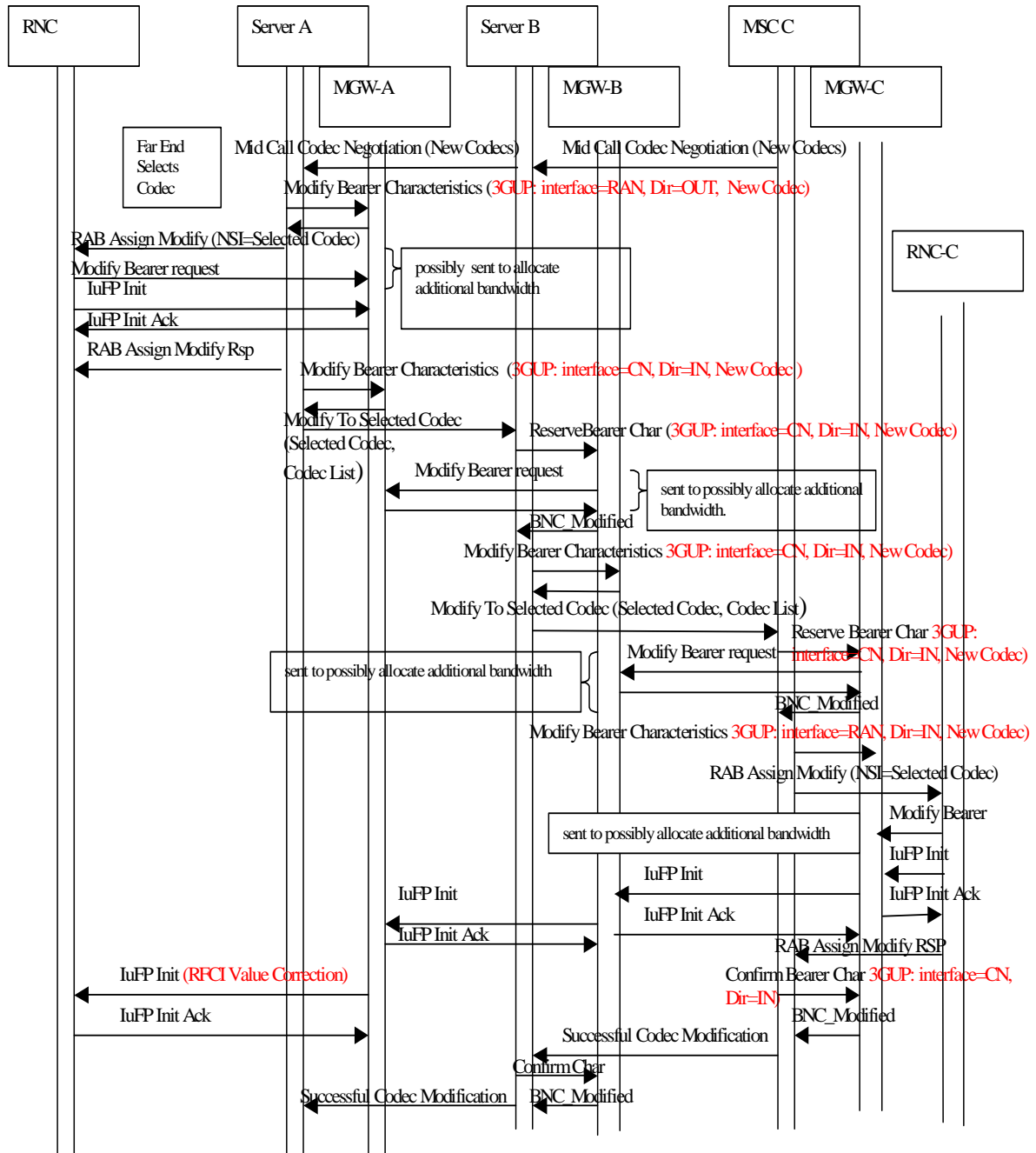


Figure 5.8.4/2: Mid Call Codec Negotiation Call Sequence

### 5.8.5 Unsuccessful Codec Modification

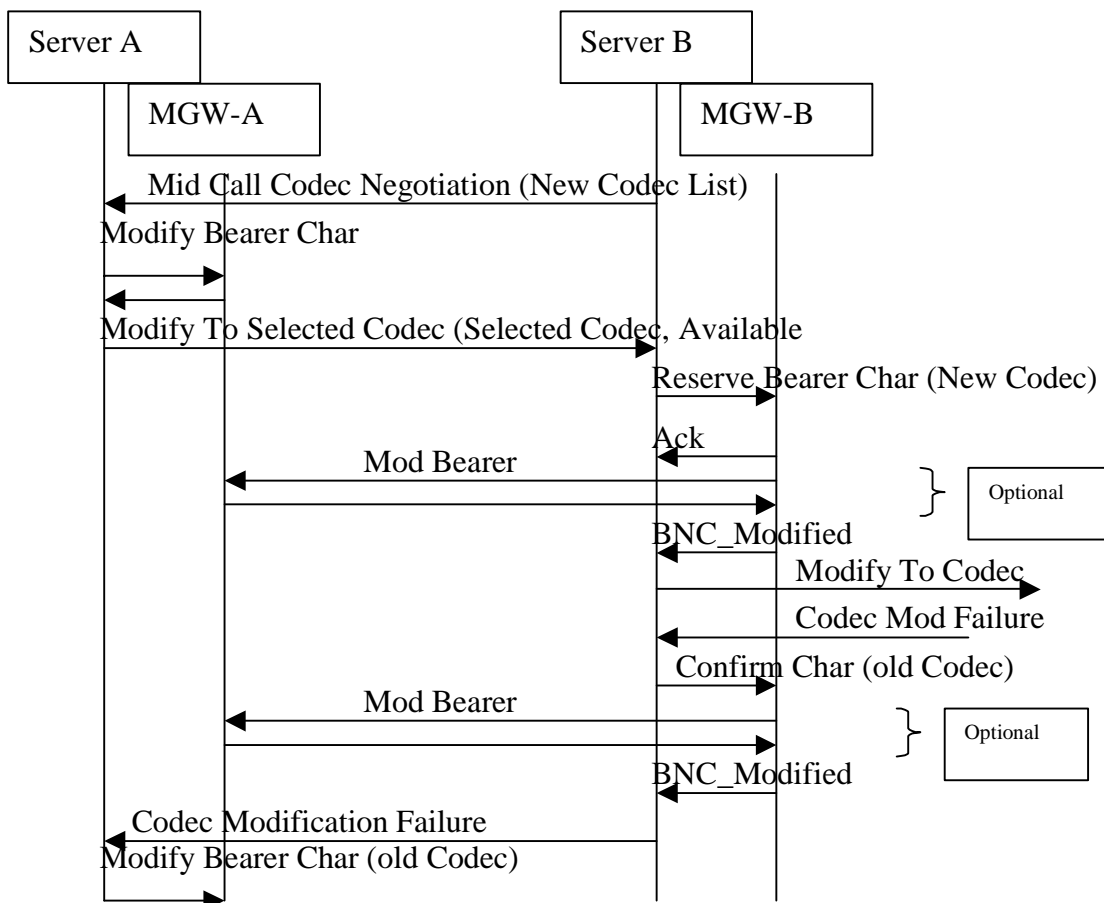
If the Codec Modification is unsuccessful at a certain node in the connection (due to the MGW rejecting a request to reserve the resources or a server rejecting the request to modify the codec) the Confirm\_Char message shall be sent to a termination that previously performed a successful Reserve\_Char Procedure to change the bearer back to its original bandwidth (if needed) and free up any reserved resources. However as the IuUP has not been modified, the Confirm\_Char shall not trigger an IuFP re-initialisation. The basic sequence is shown in Figure 5.8.5/1 and a detailed

call flow is described in Figure 5.8.5/2. A server that performed a Modify Bearer Characteristics procedure to a termination with the new codec shall perform a subsequent Modify Bearer Characteristics procedure to that termination with the old codec in the failure case. As no IuFP initialisation occurs in the unsuccessful case the IuFP currently initialised will then match the old codec restored by the subsequent Modify Bearer Char; the MGW then knows that it can return to TrFO.

The Codec Modification Failure message shall not be returned to a preceding node until notification of the bearer level modification (BNC\_Modified).

**RAB Assignment Modification Failure**

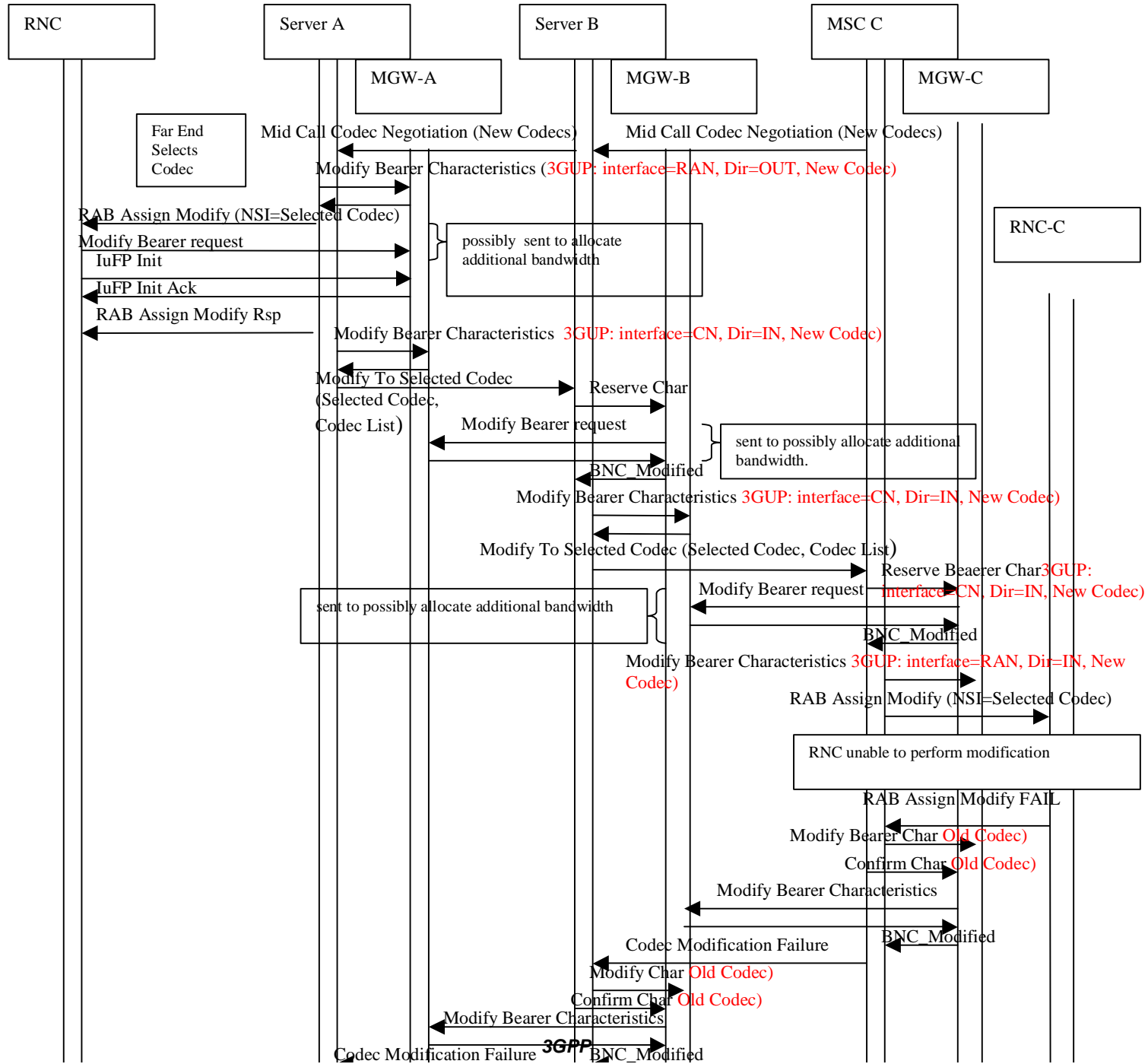
If the reason for failed codec modification is due to an unsuccessful RAB Modification Request then the MSC shall assume that the old RAB is resumed and thus shall restore the old codec.



**Figure 5.8.5/1: Unsuccessful Codec Modification**

**IuUP Initialisation Unsuccessful**

If the IuUP initialisation fails (this must be due to some protocol error or transmission error because the resources have already been successfully reserved) then the UP protocol is cleared by the peers (see TS 25.415) and therefore the MGW shall notify the Server with a Bearer\_Released notification, the call shall be cleared (normal MGW initiated call clearing applies – see TS 23.205 clause 7.4 [8]).





**Figure 5.8.5/2: Call Sequence for Unsuccessful Modification**