# 3GPP TSG CN Plenary Meeting #12 Stockholm, Sweden, 13<sup>th</sup> - 15<sup>th</sup> June 2001

Source:TSG CN WG4Title:CRs on R99 Work Item HandoverAgenda item:7.14Document for:APPROVAL

### Introduction:

This document contains 4 CRs on R99 Work Item "Handover", that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #12 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.010	019	1	N4-010592	R99	Addition of selected UMTS algorithm indication to the handover procedures	F	3.5.0
29.010	020	1	N4-010593	Rel-4	Addition of selected UMTS algorithm indication to the handover procedures	A	4.0.0
29.010	021	1	N4-010594	R99	Addition of selected GSM algorithm indication to the handover procedures	F	3.5.0
29.010	022	1	N4-010595	Rel-4	Addition of selected GSM algorithm indication to the handover procedures	A	4.0.0

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CHANGE REQUEST								
æ	<b>29.010</b> CR 019 <sup># rev</sup> 1 <sup>#</sup> Current version: <b>3.5.0</b> <sup>#</sup>							
For <u>HELP</u> on u	ising this form, see bottom of this page or look at the pop-up text over the $st$ symbols.							
Proposed change a	affects: # (U)SIM ME/UE Radio Access Network Core Network X							
Title: ೫	Addition of selected UMTS algorithm indication to the handover procedures							
Source: %	CN4							
Work item code: #	Handover         Date: %         2.5.2001							
Category: Ж	F(Agreed by consensus) <b>Release: %</b> R99							
Reason for change	Use one of the following categories:       Use one of the following releases:         F (correction)       2       (GSM Phase 2)         A (corresponds to a correction in an earlier release)       896       (Release 1996)         B (Addition of feature),       R97       (Release 1997)         C (Functional modification of feature)       R98       (Release 1998)         D (Editorial modification)       R99       (Release 1999)         Detailed explanations of the above categories can       REL-4       (Release 4)         be found in 3GPP TR 21.900.       REL-5       (Release 5)         E: #       The principle of the inter-MSC handover is that MSC-A is aware what security algorithm are used in MSC-B.         Currently the MSC-B indicates the selected UMTS algorithm to MSC-A in case of UMTS-UMTS inter MSC SRNC relocation. However, the selected algorithm shall be indicated also in case of GSM-UMTS inter MSC handover, BSSMAP Ciphering Mode Setting procedure and always whenever intersystem handover to UMTS is performed and also in the case of intra MSC-B intra UMTS relocation.							
Summary of chang	ye: ೫							
Consequences if not approved:	Solution algorithms MSC-B MSC-A does not know what UMTS integrity and encryption algorithms MSC-B has chosen.							
Clauses affected:	¥ 4.5.5, 4.6, 4.7.5							
Other specs affected:	%       X       Other core specifications       %       23.009 CR 034, 29.002 CR 225         Test specifications       0&M Specifications       %							
Other comments:	X							

# 4.5.5 Processing in MSC-B, and information transfer on E-interface

The following parameters require processing (e.g. to store the parameter, to internally generate the parameter) in MSC-B. The relevant BSSMAP procedures are mentioned to ease the comprehension, their detailed description is the scope of GSM 08.08. Each BSSMAP message listed in GSM 09.08 being transferred on E-interface shall use the mechanisms given in subclause 4.5.4 and is described in GSM 08.08.

In case of intra-MSC-B handover/relocation and security interworking, after inter-MSC handover from GSM to GSM, the 3G\_MSC-B needs additional information to be able to perform security mode and integrity protection procedures. These RANAP informations are transferred between MSC-A and 3G-MSC-B in MAP messages, defined in 3GPP TS 29.002.

### \*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

### 4.5.5.8 Selected UMTS Algorithm

After inter-MSC handover, the 3G\_MSC-B can perform intra-MSC GSM to UMTS handover. A sequence of possible encryption and integrity protection algorithms, received from the 3G\_MSC-A, can be sent to an RNS in Relocation Request or in Security Mode Command in case of cipher mode setting after intra.MSC-B handover from GSM to UMTS. The RNS chooses one of the listed algorithms and reports this back to the 3G\_MSC in Relocation Request Acknowledge or Security Mode Complete respectively. The MSC-B provides the Selected UMTS algorithm information to the MSC-A. The Selected UMTS algorithms IE in the MAP Process Access Signalling Request message refers to the Chosen Integrity Protection Algorithm and Chosen Encryption Algorithm, defined in RANAP specification 3GPP TS 25.413

The selected algorithm shall be stored by 3G\_MSC-B, and sent to 3G\_MSC-A.

Transfer of Information:

- If ciphering has not been performed before Inter-MSC Handover, this will be controlled by 3G\_MSC-A after the completion of Inter-MSC Handover and possibly after intra-MSC-B handover from GSM to UMTS. In both cases Selected UMTS algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:
- <u>The Process Access Signalling Request MAP message.</u>

### \*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

# 4.6.5 Processing in MSC-B, and information transfer on E-interface

The handling is described in chapter 4.5.5.

4.6.<u>6</u>5 Cause Code Mapping

### \*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

### 4.7.5.6 Selected UMTS Algorithm

A sequence of possible encryption and integrity protection algorithms, received from the 3G\_MSC-A, can be sent to an RNS in Relocation Request or in Security Mode Command in case of cipher mode setting after inter-MSC handover from GSM to UMTS. The RNS chooses one of the listed algorithms and reports this back to the 3G\_MSC in Relocation Request Acknowledge or Security Mode Complete respectively. The MSC-B provides the Selected UMTS algorithm information to the MSC-A. The Selected UMTS algorithms IE in the MAP Process Access Signalling Request and MAP Prepare Handover Response messages refers to the Chosen Integrity Protection Algorithm and Chosen Encryption Algorithm, defined in RANAP specification 3GPP TS 25.413

The selected algorithm shall be stored by 3G\_MSC-B, and sent to 3G\_MSC-A.

Transfer of Information:

If ciphering has not been performed before Inter-MSC Handover, this will be controlled by 3G\_MSC-A after the completion of Inter-MSC Handover.

If Ciphering has been performed before Inter-MSC Handover, Selected UMTS algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:

- <u>The Prepare Handover Response MAP message.</u>

If Ciphering has NOT been performed before Inter-MSC Handover, Selected UMTS algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:

	CR-Form-v3							
CHANGE REQUEST								
ж	<b>29.010</b> CR 020 <sup># rev</sup> 1 <sup>#</sup> Current version: <b>4.0.0</b> <sup>#</sup>							
For <u>HELP</u> on u	sing this form, see bottom of this page or look at the pop-up text over the $st$ symbols.							
Proposed change a	affects: ¥ (U)SIM ME/UE Radio Access Network Core Network X							
Title: ¥	Addition of selected UMTS algorithm indication to the handover procedures							
Source: ¥	CN4							
Work item code: ೫	Handover <b>Date: #</b> 2.5.2001							
Category: ж	A Release: # REL-4							
Reason for change	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (Addition of feature), C (Functional modification of feature) B (Addition of feature), C (Functional modification of feature) B (Addition of feature), C (Functional modification) D (Editorial modification) R 59 (Release 1999) R EL-4 (Release 4) R EL-5 (Release 5) EXT EXT The principle of the inter-MSC handover is that MSC-A is aware what security algorithm are used in MSC-B. Currently the MSC-B indicates the selected UMTS algorithm to MSC-A in case of UMTS-UMTS inter MSC SRNC relocation. However, the selected algorithm shall be indicated also in case of GSM-UMTS inter MSC handover, BSSMAP Ciphering Mode Setting procedure and always whenever intersystem handover to UMTS is performed and also in the case of intra MSC-B intra UMTS relocation.							
Summary of chang	е: Ж							
Consequences if not approved:	# MSC-A does not know what UMTS integrity and encryption algorithms MSC-B has chosen.							
Clauses affected:	<b>%</b> 4.5.5, 4.6, 4.7.5							
Other specs affected:	<b>X</b> Other core specifications <b>X</b> 23.009 CR 035, 29.002 CR 239         Test specifications       0&M Specifications							
Other comments:	x							

# 4.5.5 Processing in MSC-B, and information transfer on E-interface

The following parameters require processing (e.g. to store the parameter, to internally generate the parameter) in MSC-B. The relevant BSSMAP procedures are mentioned to ease the comprehension, their detailed description is the scope of GSM 08.08. Each BSSMAP message listed in GSM 09.08 being transferred on E-interface shall use the mechanisms given in subclause 4.5.4 and is described in GSM 08.08.

In case of intra-MSC-B handover/relocation and security interworking, after inter-MSC handover from GSM to GSM, the 3G\_MSC-B needs additional information to be able to perform security mode and integrity protection procedures. These RANAP informations are transferred between MSC-A and 3G-MSC-B in MAP messages, defined in 3GPP TS 29.002.

### \*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

### 4.5.5.8 Selected UMTS Algorithm

After inter-MSC handover, the 3G\_MSC-B can perform intra-MSC GSM to UMTS handover. A sequence of possible encryption and integrity protection algorithms, received from the 3G\_MSC-A, can be sent to an RNS in Relocation Request or in Security Mode Command in case of cipher mode setting after intra.MSC-B handover from GSM to UMTS. The RNS chooses one of the listed algorithms and reports this back to the 3G\_MSC in Relocation Request Acknowledge or Security Mode Complete respectively. The MSC-B provides the Selected UMTS algorithm information to the MSC-A. The Selected UMTS algorithms IE in the MAP Process Access Signalling Request message refers to the Chosen Integrity Protection Algorithm and Chosen Encryption Algorithm, defined in RANAP specification 3GPP TS 25.413

The selected algorithm shall be stored by 3G\_MSC-B, and sent to 3G\_MSC-A.

Transfer of Information:

- If ciphering has not been performed before Inter-MSC Handover, this will be controlled by 3G\_MSC-A after the completion of Inter-MSC Handover and possibly after intra-MSC-B handover from GSM to UMTS. In both cases Selected UMTS algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:
- <u>The Process Access Signalling Request MAP message.</u>

### \*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

# 4.6.5 Processing in MSC-B, and information transfer on E-interface

The handling is described in chapter 4.5.5.

4.6.<u>6</u>5 Cause Code Mapping

### \*\*\*\* NEXT MODIFIED SECTION \*\*\*\*

### 4.7.5.6 Selected UMTS Algorithm

A sequence of possible encryption and integrity protection algorithms, received from the 3G\_MSC-A, can be sent to an RNS in Relocation Request or in Security Mode Command in case of cipher mode setting after inter-MSC handover from GSM to UMTS. The RNS chooses one of the listed algorithms and reports this back to the 3G\_MSC in Relocation Request Acknowledge or Security Mode Complete respectively. The MSC-B provides the Selected UMTS algorithm information to the MSC-A. The Selected UMTS algorithms IE in the MAP Process Access Signalling Request and MAP Prepare Handover Response messages refers to the Chosen Integrity Protection Algorithm and Chosen Encryption Algorithm, defined in RANAP specification 3GPP TS 25.413

The selected algorithm shall be stored by 3G\_MSC-B, and sent to 3G\_MSC-A.

Transfer of Information:

If ciphering has not been performed before Inter-MSC Handover, this will be controlled by 3G\_MSC-A after the completion of Inter-MSC Handover.

If Ciphering has been performed before Inter-MSC Handover, Selected UMTS algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:

- <u>The Prepare Handover Response MAP message.</u>

If Ciphering has NOT been performed before Inter-MSC Handover, Selected UMTS algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:

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¥	29.0	010	CR		<mark>021</mark>	₩ re	/	1	Ħ	Curren	t vers	ion:	3.5	5.0	ж
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Proposed change	Proposed change affects: # (U)SIM ME/UE Radio Access Network Core Network X							etwork X							
Title: ೫	Addi	tion c	f selec	cted GSN	A algor	<mark>thm ir</mark>	dica	ation	to th	<mark>he hanc</mark>	dover	proce	edure	S	
Source: ೫	CN4														
Work item code: ೫	Han	dover								Da	<i>te:</i> Ж	2.5	<mark>.2001</mark>	l	
Category: ж	F	(Agre	ed by	consens	us)					Relea	se: Ж	R9	9		
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Reason for change	e: ೫ 1	The p Ilgorit	rinciple hm is	e of the in used in I	nter-MS MSC-B	SC hai	ndov	ver is	tha	t MSC-	A is a	ware	what	Secu	urity
Summary of chang	<b>уе:</b> Ж														
Consequences if not approved:	ж	MSC whet	-A doe her the	es not kn e connec	ow what tion is a	at algo cipher	rithr ed a	n MS it all.	SC-E	3 has cl	hoser	or in	the v	worst	case
Clauses affected:	Ħ	4.8.5													
Other specs affected:	ж 2	K 01 Te	her co est spe &M Sp	re speci cification ecificatio	fication ns ons	S	ж	23.0	09 (	CR 034	, 29.0	02 C	R 243	3	

Other comments: #

## 4.8.5.5 Selected GSM Algorithm

After inter-MSC relocation, the 3G\_MSC-B can perform intra-MSC UMTS to GSM handover. A sequence of possible encryption algorithms, received from the 3G\_MSC-A, can be sent to an BSS in Handover Request or in Cipher Mode Command in case of cipher mode setting after intra.MSC-B handover from UMTS to GSM. The BSS chooses one of the listed algorithms and reports this back to the 3G\_MSC in Handover Request Acknowledge or Cipher Mode Complete respectively. The MSC-B provides the Selected GSM algorithm information to the MSC-A. The Selected GSM algorithms IE in the MAP Process Access Signalling Request message refers to the Algorithm identifier octet in the Chosen Encryption Algorithm GSM information.

The chosen algorithm shall be stored by 3G\_MSC-B, and sent to 3G\_MSC-A.

Transfer of Information:

- If ciphering has not been performed before Inter-MSC Relocation, this will be controlled by 3G\_MSC-A after the completion of Inter-MSC Relocation.
  - If Ciphering has been performed before Inter-MSC Relocation, Selected GSM algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:
- <u>The Handover Performed BSSMAP message.</u>

If Ciphering has NOT been performed before Intra-MSC-B handover from UMTS to GSM after Inter-MSC Relocation, Selected GSM algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:

	CR-Form-v3							
CHANGE REQUEST								
æ	<b>29.010</b> CR 022 <sup># rev</sup> 1 <sup>#</sup> Current version: <b>4.0.0</b> <sup>#</sup>							
For <b>HELP</b> on using this form, see bottom of this page or look at the pop-up text over the <b>#</b> symbols.								
Proposed change	affects: ೫ (U)SIM ME/UE Radio Access Network Core Network 🗙							
Title: ೫	Addition of selected GSM algorithm indication to the handover procedures							
Source: ೫	CN4							
Work item code: ೫	Handover         Date: # 2.5.2001							
Category: ж	A Release: # REL-4							
Reason for change	Use one of the following categories:       Use one of the following releases:         F (correction)       2       (GSM Phase 2)         A (corresponds to a correction in an earlier release)       R96       (Release 1996)         B (Addition of feature),       R97       (Release 1997)         C (Functional modification of feature)       R98       (Release 1998)         D (Editorial modification)       R99       (Release 1999)         Detailed explanations of the above categories can be found in 3GPP TR 21.900.       REL-4       (Release 4)         e: <b>%</b> The principle of the inter-MSC handover is that MSC-A is aware what security algorithm is used in MSC-B.       Security       Security							
Summary of change: #								
Consequences if not approved:	<ul> <li>MSC-A does not know what algorithm MSC-B has chosen or in the worst case whether the connection is ciphered at all.</li> </ul>							
Clauses affected:	<b>₩</b> 4.8.5							
Other specs affected:	XOther core specificationsX23.009 CR 035, 29.002 CR 245Test specifications0&M Specifications							
Other comments:	¥							

## 4.8.5.5 Selected GSM Algorithm

After inter-MSC relocation, the 3G\_MSC-B can perform intra-MSC UMTS to GSM handover. A sequence of possible encryption algorithms, received from the 3G\_MSC-A, can be sent to an BSS in Handover Request or in Cipher Mode Command in case of cipher mode setting after intra.MSC-B handover from UMTS to GSM. The BSS chooses one of the listed algorithms and reports this back to the 3G\_MSC in Handover Request Acknowledge or Cipher Mode Complete respectively. The MSC-B provides the Selected GSM algorithm information to the MSC-A. The Selected GSM algorithms IE in the MAP Process Access Signalling Request message refers to the Algorithm identifier octet in the Chosen Encryption Algorithm GSM information.

The chosen algorithm shall be stored by 3G\_MSC-B, and sent to 3G\_MSC-A.

Transfer of Information:

- If ciphering has not been performed before Inter-MSC Relocation, this will be controlled by 3G\_MSC-A after the completion of Inter-MSC Relocation.
  - If Ciphering has been performed before Inter-MSC Relocation, Selected GSM algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in:
- <u>The Handover Performed BSSMAP message.</u>

If Ciphering has NOT been performed before Intra-MSC-B handover from UMTS to GSM after Inter-MSC Relocation, Selected GSM algorithm information is received by 3G\_MSC-A from 3G\_MSC-B in: