3GPP TSG CN Plenary Meeting #13   **NP-010476**
Beijing, China, 19th–21st September 2001

Source:	TSG CN WG4
Title:	CRs on R99 Handover
Agenda item:	7.14
Document for:	APPROVAL

<u>**Introduction:**</u>

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 #13 for approval.

Spec	CR	Re	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	303	3	N4-011016	R99	Minimum MAP application context for intersystem MSC handover from GSM to UMTS	F	3.9.0
29.002	307	2	N4-011017	Rel-4	Minimum MAP application context for intersystem MSC handover from GSM to UMTS	A	4.4.1
29.002	308	2	N4-011018	R99	Minimum MAP application context for intersystem MSC handover from UMTS to GSM	F	3.9.0
29.002	309	2	N4-011019	Rel-4	Minimum MAP application context for intersystem MSC handover from UMTS to GSM	A	4.4.1

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27 - 31 August 2001

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CHANGE REQUEST

| ⌘ | **29.002** CR | **303** ⌘ | rev | **3** | ⌘ | Current version: | **3.9.0** | ⌘ |

for

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

Title:	⌘	Minimum MAP application context for intersystem MSC handover from GSM to UMTS

Source:	⌘	CN4

Work item code:	⌘	Handover		**Date:** ⌘	2001-08-29

Category:	⌘	**F**	(Agreed by consensus)		**Release:** ⌘	R99

Use <u>one</u> of the following categories:
F (essential 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 <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)

Reason for change:	⌘	To ensure multi-vendor inter-working for intersystem GSM to UMTS handover, a minimum MAP Application Context for the relevant handover operations needs to be defined.

Summary of change:	⌘	Minimum applicable MAP AC for intersystem MSC GSM BSS to UTRAN handover shall be MAP AC version 3.

Consequences if not approved:	⌘	The minimum MAP Application Context required to establish Inter MSC handover is not clearly specified which could lead to multi-vendor interworking problems.

Clauses affected:	⌘	19.2.1

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

Other comments:	⌘	

19.2.1   General

The handover or relocation between different MSCs is called Inter-MSC handover. The interfaces involved for Inter-MSC handover are shown in figure 19.2/1. Following two Inter-MSC handover procedures apply:

1) Basic Inter-MSC handover:

   The call is handed over from the controlling MSC, called MSC-A to another MSC, called MSC-B (figure 19.2/1a).

   Figure 19.2/2 shows a successful handover between MSC-A and MSC-B including a request for handover number allocation by MSC-B to VLR-B.
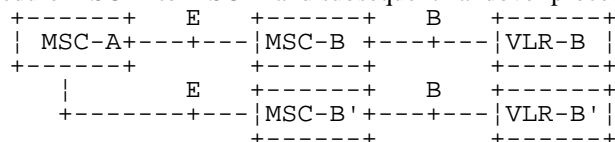
2) Subsequent Inter-MSC handover:

   After the call has been handed over from MSC-A to MSC-B, a handover to either MSC-A (figure 19.2/1a) or to a third MSC (MSC-B') (figure 19.2/1b) is necessary in order to continue the connection.

   Figure 19.2/3 shows a successful subsequent handover.

```
         +------+   E   +------+   B   +------+
         ¦MSC-A +---+---¦MSC-B +---+---¦VLR-B ¦
         +------+       +------+       +------+
```

a) Basic handover procedure MSC-A to MSC-B and subsequent handover procedure MSC-B to MSC-A.

```
         +------+   E   +------+   B   +------+
         ¦ MSC-A+---+---¦MSC-B +---+---¦VLR-B ¦
         +------+       +------+       +------+
            ¦       E   +------+   B   +------+
            +-------+---¦MSC-B'+---+---¦VLR-B'¦
                        +------+       +------+
```

b) Subsequent handover procedure MSC-B to MSC-B'.

Figure 19.2/1: Interface structure for handover

The MAP handover procedures achieve the functionality required to set up an MSC-MSC dialogue, to optionally allocate a handover number or one or several relocation numbers and to transport BSSAP or RANAP messages.

Minimum applicable MAP AC for intersystem MSC GSM BSS to UTRAN handover shall be MAP handover AC version 3.

The transported BSSAP or RANAP messages are controlled and handled by the Handover Control Application in the MSCs. This information will be transparent to the MAP protocol. If the MSC receives via the MAP protocol BSSAP or RANAP messages, this information will be forwarded to the Handover Control Application (shown in the handover SDL diagrams with the internal HO_CA signalling, it is an internal process in the MSC) and vice versa if the Handover Control Application requires the sending of BSSAP or RANAP messages via the MAP protocol.
For detailed interworking between the A-interface and MAP procedures or the Iu-interface and MAP procedures, see 3G TS 23.009 and 3G TS 29.010.

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CHANGE REQUEST

⌘	**29.002** CR	**307** ⌘ rev	**2** ⌘	Current version:	**4.4.1** ⌘

for

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

Title: ⌘	Minimum MAP application context for intersystem MSC handover from GSM to UMTS	
Source: ⌘	CN4	
Work item code: ⌘	Handover	*Date:* ⌘ 2001-08-29
Category: ⌘	**A** (Agreed by consensus)	*Release:* ⌘ R4

Use one of the following categories:
F (essential 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 ensure multi-vendor inter-working for intersystem GSM to UMTS handover, a minimum MAP Application Context for the relevant handover operations needs to be defined.
Summary of change: ⌘	Minimum applicable MAP AC for intersystem MSC GSM BSS to UTRAN handover shall be MAP AC version 3.
Consequences if not approved: ⌘	The minimum MAP Application Context required to establish Inter MSC handover is not clearly specified which could lead to multi-vendor interworking problems.

Clauses affected: ⌘	19.2.1

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

Other comments: ⌘	

19.2.1   General

The handover or relocation between different MSCs is called Inter-MSC handover. The interfaces involved for Inter-MSC handover are shown in figure 19.2/1. Following two Inter-MSC handover procedures apply:
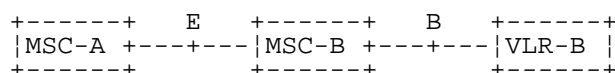
1) Basic Inter-MSC handover:

The call is handed over from the controlling MSC, called MSC-A to another MSC, called MSC-B (figure 19.2/1a).

Figure 19.2/2 shows a successful handover between MSC-A and MSC-B including a request for handover number allocation by MSC-B to VLR-B.
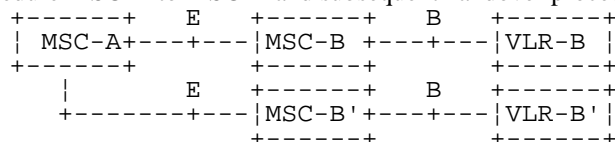
2) Subsequent Inter-MSC handover:

After the call has been handed over from MSC-A to MSC-B, a handover to either MSC-A (figure 19.2/1a) or to a third MSC (MSC-B') (figure 19.2/1b) is necessary in order to continue the connection.

Figure 19.2/3 shows a successful subsequent handover.

```
+------+    E    +------+    B    +------+
¦MSC-A +---+---¦MSC-B +---+---¦VLR-B ¦
+------+         +------+         +------+
```

a) Basic handover procedure MSC-A to MSC-B and subsequent handover procedure MSC-B to MSC-A.

```
+------+    E    +------+    B    +------+
¦ MSC-A+---+---¦MSC-B +---+---¦VLR-B ¦
+------+         +------+         +------+
   ¦         E    +------+    B    +------+
   +------+---¦MSC-B'+---+---¦VLR-B'¦
                  +------+         +------+
```

b) Subsequent handover procedure MSC-B to MSC-B'.
Figure 19.2/1: Interface structure for handover

The MAP handover procedures achieve the functionality required to set up an MSC-MSC dialogue, to optionally allocate a handover number or one or several relocation numbers and to transport BSSAP or RANAP messages.

Minimum applicable MAP AC for intersystem MSC GSM BSS to UTRAN handover shall be MAP handover AC version 3.

The transported BSSAP or RANAP messages are controlled and handled by the Handover Control Application in the MSCs. This information will be transparent to the MAP protocol. If the MSC receives via the MAP protocol BSSAP or RANAP messages, this information will be forwarded to the Handover Control Application (shown in the handover SDL diagrams with the internal HO_CA signalling, it is an internal process in the MSC) and vice versa if the Handover Control Application requires the sending of BSSAP or RANAP messages via the MAP protocol.
For detailed interworking between the A-interface and MAP procedures or the Iu-interface and MAP procedures, see 3G TS 23.009 and 3G TS 29.010.

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CHANGE REQUEST

| | ⌘ | **29.002** CR | **308** | ⌘ | rev | **2** | ⌘ | Current version: | **3.9.0** | ⌘ |

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

Title:	⌘	Minimum MAP application context for intersystem MSC handover from UMTS to GSM

Source:	⌘	CN4

Work item code:	⌘	Handover	**Date:** ⌘	2001-08-29

Category:	⌘	**F** (Agreed by consensus)	**Release:** ⌘	R99

Use <u>one</u> of the following categories:
F (essential 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 <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)

Reason for change:	⌘	To ensure multi-vendor inter-working for intersystem UMTS to GSM handover, a minimum MAP Application Context for the relevant handover operations needs to be defined.

Summary of change:	⌘	Minimum applicable MAP AC for intersystem MSC UTRAN to GSM BSS handover shall be MAP AC version 2.

Note: If MAP AC version 2 is used, subsequent handover to MSC UTRAN is not possible. |

Consequences if not approved:	⌘	The minimum MAP Application Context required to establish Inter MSC handover is not clearly specified which could lead to multi-vendor interworking problems.

Clauses affected:	⌘	19.2.1

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

Other comments:	⌘	

19.2.1   General

The handover or relocation between different MSCs is called Inter-MSC handover. The interfaces involved for Inter-MSC handover are shown in figure 19.2/1. Following two Inter-MSC handover procedures apply:

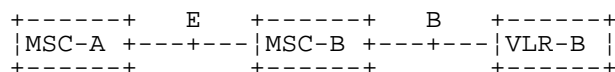1) Basic Inter-MSC handover:

   The call is handed over from the controlling MSC, called MSC-A to another MSC, called MSC-B (figure 19.2/1a).

   Figure 19.2/2 shows a successful handover between MSC-A and MSC-B including a request for handover number allocation by MSC-B to VLR-B.
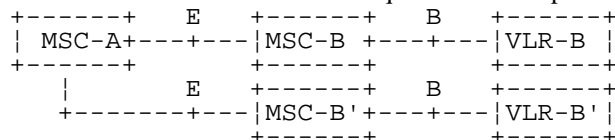
2) Subsequent Inter-MSC handover:

   After the call has been handed over from MSC-A to MSC-B, a handover to either MSC-A (figure 19.2/1a) or to a third MSC (MSC-B') (figure 19.2/1b) is necessary in order to continue the connection.

   Figure 19.2/3 shows a successful subsequent handover.

```
        +------+   E   +------+   B   +------+
        |MSC-A +---+---|MSC-B +---+---|VLR-B |
        +------+       +------+       +------+
```

a) Basic handover procedure MSC-A to MSC-B and subsequent handover procedure MSC-B to MSC-A.

```
        +------+   E   +------+   B   +------+
        | MSC-A+---+---|MSC-B +---+---|VLR-B |
        +------+       +------+       +------+
           |       E   +------+   B   +------+
           +-------+---|MSC-B'+---+---|VLR-B'|
                       +------+       +------+
```

b) Subsequent handover procedure MSC-B to MSC-B'.
Figure 19.2/1: Interface structure for handover

The MAP handover procedures achieve the functionality required to set up an MSC-MSC dialogue, to optionally allocate a handover number or one or several relocation numbers and to transport BSSAP or RANAP messages.

Minimum applicable MAP AC for intersystem MSC UTRAN to GSM BSS handover shall be MAP handover AC version 2.
NOTE: If MAP AC version 2 is used, subsequent handover to an MSC UTRAN is not possible.

The transported BSSAP or RANAP messages are controlled and handled by the Handover Control Application in the MSCs. This information will be transparent to the MAP protocol. If the MSC receives via the MAP protocol BSSAP or RANAP messages, this information will be forwarded to the Handover Control Application (shown in the handover SDL diagrams with the internal HO_CA signalling, it is an internal process in the MSC) and vice versa if the Handover Control Application requires the sending of BSSAP or RANAP messages via the MAP protocol.
For detailed interworking between the A-interface and MAP procedures or the Iu-interface and MAP procedures, see 3G TS 23.009 and 3G TS 29.010.

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27 - 31 August 2001

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CHANGE REQUEST

| | ⌘ | **29.002** CR | **309** ⌘ rev | **2** | ⌘ Current version: | **4.4.1** | ⌘ |

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

Title:	⌘	Minimum MAP application context for intersystem MSC handover from UMTS to GSM
Source:	⌘	CN4
Work item code:	⌘ Handover	*Date:* ⌘ 2001-08-29
Category:	⌘ **A** (Agreed by consensus)	*Release:* ⌘ R4

Use *one* of the following categories:
F (essential 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 ensure multi-vendor inter-working for intersystem UMTS to GSM handover, a minimum MAP Application Context for the relevant handover operations needs to be defined.
Summary of change:	⌘	Minimum applicable MAP AC for intersystem MSC UTRAN to GSM BSS handover shall be MAP AC version 2. Note: If MAP AC version 2 is used, subsequent handover to MSC UTRAN is not possible.
Consequences if not approved:	⌘	The minimum MAP Application Context required to establish Inter MSC handover is not clearly specified which could lead to multi-vendor interworking problems.

Clauses affected:	⌘	19.2.1

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

Other comments:	⌘	

19.2.1　General

The handover or relocation between different MSCs is called Inter-MSC handover. The interfaces involved for Inter-MSC handover are shown in figure 19.2/1. Following two Inter-MSC handover procedures apply:

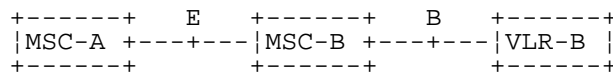1) Basic Inter-MSC handover:

   The call is handed over from the controlling MSC, called MSC-A to another MSC, called MSC-B (figure 19.2/1a).

   Figure 19.2/2 shows a successful handover between MSC-A and MSC-B including a request for handover number allocation by MSC-B to VLR-B.
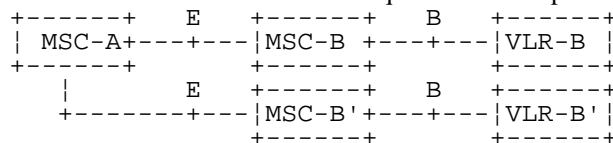
2) Subsequent Inter-MSC handover:

   After the call has been handed over from MSC-A to MSC-B, a handover to either MSC-A (figure 19.2/1a) or to a third MSC (MSC-B') (figure 19.2/1b) is necessary in order to continue the connection.

   Figure 19.2/3 shows a successful subsequent handover.

```
        +------+   E   +------+   B   +------+
        |MSC-A +---+---|MSC-B +---+---|VLR-B |
        +------+       +------+       +------+
```

 a) Basic handover procedure MSC-A to MSC-B and subsequent handover procedure MSC-B to MSC-A.
```
        +------+   E   +------+   B   +------+
        | MSC-A+---+---|MSC-B +---+---|VLR-B |
        +------+       +------+       +------+
           |       E   +------+   B   +------+
           +-------+---|MSC-B'+---+---|VLR-B'|
                       +------+       +------+
```

b) Subsequent handover procedure MSC-B to MSC-B'.
Figure 19.2/1: Interface structure for handover

The MAP handover procedures achieve the functionality required to set up an MSC-MSC dialogue, to optionally allocate a handover number or one or several relocation numbers and to transport BSSAP or RANAP messages.

Minimum applicable MAP AC for intersystem MSC UTRAN to GSM BSS handover shall be MAP handover AC version 2.
Note: If MAP AC version 2 is used, subsequent handover to MSC UTRAN is not possible.

The transported BSSAP or RANAP messages are controlled and handled by the Handover Control Application in the MSCs. This information will be transparent to the MAP protocol. If the MSC receives via the MAP protocol BSSAP or RANAP messages, this information will be forwarded to the Handover Control Application (shown in the handover SDL diagrams with the internal HO_CA signalling, it is an internal process in the MSC) and vice versa if the Handover Control Application requires the sending of BSSAP or RANAP messages via the MAP protocol.
For detailed interworking between the A-interface and MAP procedures or the Iu-interface and MAP procedures, see 3G TS 23.009 and 3G TS 29.010.