3GPP TSG CN Meeting #27   **NP-050098**
9th - 11th March 2005. Tokyo, Japan.

Source:	**CN3**
Title:	**CRs to Rel-4 on Work Item "Circuit Switched Data Bearer Services"**
Agenda item:	**7.12**
Document for:	**APPROVAL**

Introduction:

This document contains 2 CRs to Rel-4 on Work Item "CS Data" that have been agreed by TSG CN WG3, and are forwarded to TSG CN Plenary for approval.

WG_tdoc	Spec	CR	R	Cat	Title	Rel	C_Ver	Work Item
N3-050194	23.910	049	2	F	Nb transport for handover between UMTS and GSM	Rel-4	4.8.0	CS Data
N3-050198	29.007	107	3	F	Nb transport for handover between UMTS and GSM	Rel-4	4.11.0	CS Data

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **23.910** CR **049** | ⌘ **rev** | **2** | ⌘ | 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 **X**

Title: ⌘	**Nb transport for handover between UMTS and GSM**	
Source: ⌘	Siemens	
Work item code:⌘	CS Data	***Date:*** ⌘ 31/01/2005
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:
   Ph2   *(GSM Phase 2)*
   R96   *(Release 1996)*
   R97   *(Release 1997)*
   R98   *(Release 1998)*
   R99   *(Release 1999)*
   Rel-4 *(Release 4)*
   Rel-5 *(Release 5)*
   Rel-6 *(Release 6)*
   Rel-7 *(Release 7)*

Reason for change: ⌘	Transport and Mc Configuration for IP or ATM not clearly specified for Inter-MSC Handover GSM <-> UMTS and vice versa, and GSM -> GSM.
Summary of change:⌘	For Inter-MSC Handover GSM <-> UMTS and vice versa, and GSM -> GSM, packet transport is described in a similar manner as for Inter-MSC Handover with Iu Interfaces (compare to Clause 11.4) , and Mc configuration parameters are provided.
Consequences if not approved: ⌘	Missing specifications of details of packet transport may lead to interoperability problems for Inter-MSC Handover GSM <-> UMTS and vice versa at the Nb Interface

Clauses affected: ⌘	10.2.1, 10.2.2

Other specs affected: ⌘		**Y**	**N**		
	X		Other core specifications	⌘	TS 29.007 CR 107
		X	Test specifications		
		X	O&M Specifications		

Other comments: ⌘	

10.2   User Plane

10.2.1   Handover from UMTS to GSM

After a handover from UMTS to GSM the user plane between the anchor MSC and the visited MSC shall comply to:

- the standard GSM A-interface protocols, i.e.:

  - A-TRAU or modified V.110 frames as defined in 3GPP TS 44.021 [18] and 3GPP TS 48.020 [19].

  - up to four 16kbit/s substreams are multiplexed in one 64 kbit/s channel (Split/Combine function and Multiplexing function as defined in 3GPP TS 44.021 [18] and 3GPP TS 48.020 [19]).

- the Nb UP protocol if the anchor MSC or MGW and the visited MSC or MGW are connected via an ATM interface or IP interface. The NbUP shall be configured in support mode, the data is transported in a 64 kbit/s bit stream, formatted in SDUs of 40 octets and transmitted every 5 ms, in accordance with Annex P of ITU-T Recommendation I.366.2 [25]. PDU type 0 is used, i.e., payload CRC is applied. This is needed for the framing to be handled the same for all transports but the Frame Quality Classification control shall be ignored (3GUP property Delivery Of Erroneous SDUs = yes) and therefore interim nodes shall only pass on the CRC. The data is encoded between MSC-B/MGW-B (non-Anchor) and MSC-A/MGW-A (Anchor) as for the TDM case.

10.2.2   Handover from GSM to UMTS

After a handover from GSM to UMTS the user plane between the anchor MSC and the visited MSC shall comply to:

- the A-TRAU' protocol except for FNUR = 56 kbit/s (ITC=RDI) and FNUR = 64 kbit/s (ITC=UDI). For both exceptions a plain 64 kbit/s channel is used between the MSCs.

- the Nb UP protocol if the anchor MSC or MGW and the visited MSC or MGW are connected via an ATM interface or IP interface. The NbUP shall be configured in support mode, the data is transported in a 64 kbit/s bit stream, formatted in SDUs of 40 octets and transmitted every 5 ms, in accordance with Annex P of ITU-T Recommendation I.366.2 [25]. PDU type 0 is used, i.e., payload CRC is applied. This is needed for the framing to be handled the same for all transports but the Frame Quality Classification control shall be ignored (3GUP property Delivery Of Erroneous SDUs = yes) and therefore interim nodes shall only pass on the CRC. The data is encoded between MSC-B/MGW-B (non-Anchor) and MSC-A/MGW-A (Anchor) as for the TDM case (A-TRAU' protocol or plain 64kbits/s).

The A-TRAU' protocol is defined as follows:

- A-TRAU' frames are transmitted in regular intervals of 10 ms;

- an A-TRAU' frame consists of two consecutive A-TRAU frames (as defined in 3GPP TS 48.020 [19]) each with a length of 320 bit;

- the A-TRAU' protocol is used on a plain 64 kbit/s channel without substreams;

- the same A-TRAU' format is used for the transparent and non-transparent transmission mode;

- in transparent mode the number of data bits in an A-TRAU' frame depend on the user rate only, each user rate corresponds to a fixed number of data bits (see below);

- in non-transparent mode A-TRAU' frames contain always complete RLP frames, rate adaptation is performed by means of the M2 bit;

- the M1-bit is used to identify 1st and 2nd frame in both transmission modes.

CR-Form-v7.1

CHANGE REQUEST

⌘   **29.007** CR **107**   ⌘**rev** **3** ⌘   Current version: **4.11.0** ⌘

*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 **X**

Title: ⌘	**Nb transport for handover between UMTS and GSM**
Source: ⌘	Siemens
Work item code: ⌘	CS Data ***Date:*** ⌘ 31/01/2005
Category: ⌘ **F**	***Release:*** ⌘ Rel-4

Use one of the following categories:
  F *(correction)*
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Use one of the following releases:
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  R97   *(Release 1997)*
  R98   *(Release 1998)*
  R99   *(Release 1999)*
  Rel-4   *(Release 4)*
  Rel-5   *(Release 5)*
  Rel-6   *(Release 6)*
  Rel-7   *(Release 7)*

Reason for change: ⌘	Transport and Mc Configuration for IP or ATM not clearly specified for Inter-MSC Handover GSM <-> UMTS and vice versa, and GSM -> GSM. For non-64kbit transparent CS data calls, bandwidth information is missing at IWF.
Summary of change: ⌘	For Inter-MSC Handover GSM <-> UMTS and vice versa, and GSM -> GSM, packet transport is described in a similar manner as for Inter-MSC Handover with Iu Interfaces (compare to Clause 11.4) , and Mc configuration parameters are provided. PLMN-BC Parameter added at A-MSC for non-64kbit transparent CS data calls.
Consequences if not approved: ⌘	Missing specification of details of packet transport may lead to interoperability problems for Inter-MSC Handover GSM <-> UMTS and vice versa: • At the Nb Interface • At the Mc Interface Non-64kbit transparent CS data calls are not supported at the Mc interface.

Clauses affected: ⌘	11.1, 11.2, 11.5.3, 11.5.3.1, 11.5.3.2

	Y	N		
Other specs ⌘	X		Other core specifications ⌘	TR 23.910 CR 049
affected:		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘	

11 Interworking between GSM and UMTS

11.1 Handover from UMTS to GSM

After a handover from UMTS to GSM the user plane between the anchor MSC and the visited MSC shall comply to:

- the standard GSM A-interface protocols if both MSCs are connected via a TDM interface, i.e.:

  - A-TRAU or modified V.110 frames as defined in 3GPP TS 44.021 [27] and 3GPP TS 48.020 [28];

  - up to four 16kbit/s substreams are multiplexed in one 64kbit/s channel (Split/Combine function and Multiplexing function as defined in 3GPP TS 44.021 [27] and 3GPP TS 48.020 [28]).

- the Nb UP protocol if the anchor MSC or MGW and the visited MSC or MGW are connected via an ATM interface or IP interface. The NbUP shall be configured in support mode, the data is transported in a 64 kbit/s bit stream, formatted in SDUs of 40 octets and transmitted every 5 ms, in accordance with Annex P of ITU-T Recommendation I.366.2 [81]. PDU type 0 is used, i.e., payload CRC is applied. This is needed for the framing to be handled the same for all transports but the Frame Quality Classification control shall be ignored (3GUP property Delivery Of Erroneous SDUs = yes) and therefore interim nodes shall only pass on the CRC. The data is encoded between MSC-B/MGW-B (non-Anchor) and MSC-A/MGW-A (Anchor) as for the TDM case. Furthermore, Clause 11.5.3 is applicable.

11.2 Handover from GSM to UMTS

After a handover from GSM to UMTS the user plane between the anchor MSC and the visited MSC shall comply to:

- the A-TRAU' protocol if both MSCs are connected via a TDM interface except for FNUR = 56 kbit/s (ITC=RDI) and FNUR = 64 kbit/s (ITC=UDI). For both exceptions a plain 64 kbit/s channel is used between the MSCs.

- the Nb UP protocol if the anchor MSC or MGW and the visited MSC or MGW are connected via an ATM interface or IP interface. The NbUP shall be configured in support mode, the data is transported in a 64 kbit/s bit stream, formatted in SDUs of 40 octets and transmitted every 5 ms, in accordance with Annex P of ITU-T Recommendation I.366.2 [81]. PDU type 0 is used, i.e., payload CRC is applied. This is needed for the framing to be handled the same for all transports but the Frame Quality Classification control shall be ignored (3GUP property Delivery Of Erroneous SDUs = yes) and therefore interim nodes shall only pass on the CRC. The data is encoded between MSC-B/MGW-B (non-Anchor) and MSC-A/MGW-A (Anchor) as for the TDM case (A-TRAU' protocol or plain 64kbits/s). Furthermore, Clause 11.5.3 is applicable.

The A-TRAU' protocol is defined as follows:

- A-TRAU' frames are transmitted in regular intervals of 10ms;

- an A-TRAU' frame consists of two consecutive A-TRAU frames (as defined in 3GPP TS 48.020 [28]) each with a length of 320 bit;

- the A-TRAU' protocol is used on a plain 64 kbit/s channel without substreams;

- the same A-TRAU' format is used for the transparent and non-transparent transmission mode;

- in transparent mode the number of data bits in an A-TRAU' frame depend on the user rate only, each user rate corresponds to a fixed number of data bits (see below);

- in non-transparent mode A-TRAU' frames contain always complete RLP frames, rate adaptation is performed by means of the M2 bit;

- the M1-bit is used to identify 1st and 2nd frame in both transmission modes.

Next modified Clause

11.5.3   Transport on the access side of the IWF after inter-MSC relocation

Clauses 11.1 to 11.3 ~~is~~ are applicable. Furthermore, the Nb UP is used in support mode; all interim Server nodes are assumed not to be aware of the relocation case – i.e. receive BICC IAM with same information as for connections beyond the IWF (clause 11.5.2). Figure 17 indicates the relevant connections, where MSC-A/MGW-A are the Anchor nodes and MSC-B/MGW-B are the Non-Anchor nodes.
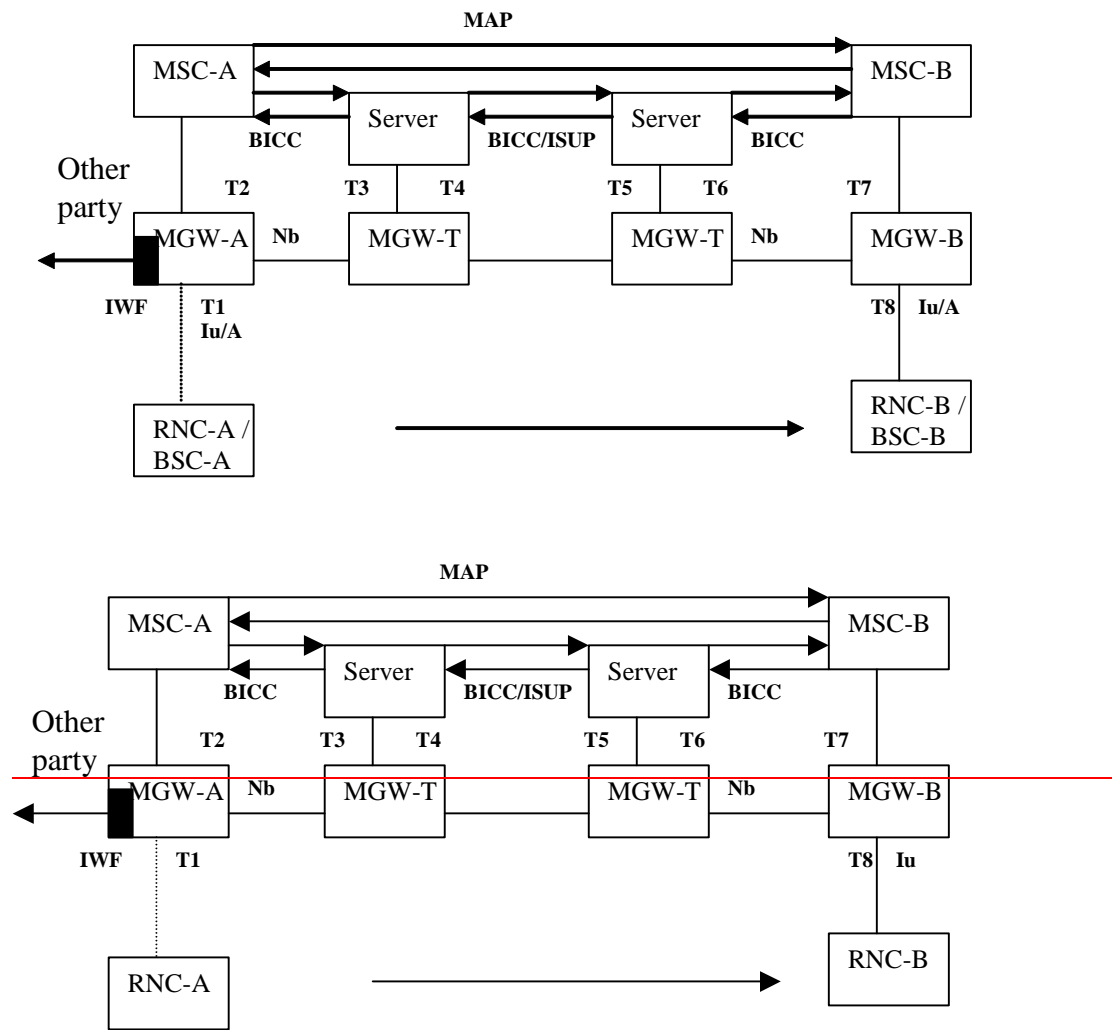
Figure 17: Bearer Independent connections for Inter-MSC SRNS Relocation

The IuUP shall be initialised on each Nb leg in a forward direction (regardless if Forward Bearer or Backward Bearer procedures are used), i.e. in the direction of the IAM. For further details see TS 23.205 [83]

11.5.3.1 Non-Transparent CSD

Table 14: Non-Transparent CSD MGW Termination Properties For Inter-MSC SRNS Relocation

Termination Packages/Parameters	MSC-A			MSC-B			Intermediate Nodes
	T1 (Iu)	**T1 (A)**	**T2**	**T7**	**T8 (Iu)**	**T8 (A)**	**T3, T4, T5, T6**
TMR	-	-	-	UDI	-	-	UDI
threegcsd:plmnbc	PLMN_BC	PLMN_BC	PLMN_BC	-	-	-	-
threegup:interface	RAN	-	CN (NOTE 2)	CN (NOTE 2)	RAN	-	CN (NOTE 2)
threegup:initdir	IN	-	OUT (NOTE 2)	IN (NOTE 2)	OUT	-	IN (NOTE 2)
threegup:mode	support	-	Support (NOTE 2)	Support (NOTE 2)	support	-	support (NOTE 2)
threegcsde:bitrate	-		-	-	BITRATE	-	-
threegcsd:gsmchancod	-	GSM CC	GSM CC (NOTE 1)	-	-	-	-
NOTE 1: GSM CC shall only be provided if T8 is an A interface. GSM CC shall not be provided if T8 is an Iu interface. NOTE 2: Only applicable for a BICC network							

11.5.3.2   Transparent CSD

Table 15: Transparent CSD MGW Termination Properties For Inter-MSC SRNS Relocation

Termination Packages/Parameters	MSC-A			MSC-B			Intermediate Nodes
	T1 (iu)	T1 (A)	T2	T7	T8 (iu)	T8 (A)	T3, T4, T5, T6
TMR	-	-	UDI	UDI	-	-	UDI
threegcsd:plmnbc	PLMN_BC	PLMN_BC	PLMN_BC	-	-	-	-
threegup:interface	RAN	-	CN (NOTE 3)	CN (NOTE 3)	RAN	-	CN (NOTE 3)
threegup:mode	transparent	-	support (NOTE 3)	support (NOTE 3)	transparent	-	support (NOTE 3)
threegup:initdir	-	-	OUT (NOTE 3)	IN (NOTE 3)	-	-	IN (NOTE 3)
threegcsden:bitrate	-	-	-	-	BITRATE (~~note~~ NOTE 1)	-	-
threegcsd:gsmchancod	-	GSM CC	GSM CC (NOTE 2)	-	-	-	-
NOTE 1: This is optional for the case when rate is 64kb/s then no rate adaptation is required. NOTE 2: GSM CC shall only be provided if T8 is an A interface. GSM CC shall not be provided if T8 is an Iu interface. NOTE 3: Only applicable for a BICC network							

~~Note 1: This is optional for the case when rate is 64kb/s then no rate adaptation is required.~~