3GPP TSG CN Plenary Meeting #18 **NP-020616**
4th - 6th December 2002. New Orleans, USA.

Source: TSG CN WG3

Title: CRs on R99 Work Item CSSPLIT

Agenda item: 7.8

Document for: APPROVAL

Introduction:

This document contains **4** CRs on **R99 WI CSSPLIT** including the corresponding mirror CRs (as required).

These CRs have been agreed by TSG CN WG3 and are forwarded to TSG CN Plenary meeting #18 for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	Version_old
N3-020846	Usage of Iu UP in support mode in core	23.910	043	1	F	Rel-4	4.5.0
N3-020847	Usage of Iu UP in support mode in core	23.910	042	1	A	Rel-5	5.1.0
N3-020844	Usage of Iu UP in support mode in core	29.007	057	1	F	Rel-4	4.5.0
N3-020845	Usage of Iu UP in support mode in core	29.007	058	1	A	Rel-5	5.3.0

3GPP TSG-CN WG3 Meeting #25
Miami, USA, 23rd - 27th September 2002.

Tdoc ⌘N3-020844

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CHANGE REQUEST

⌘ **29.007** **CR** **057** ⌘ **rev** **1** ⌘ Current version: **4.5.0** ⌘

*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 ☒

Title:	⌘	Use of Iu UP in support mode for transparent data services at the Nb interface
Source:	⌘	TSG_CN WG3
Work item code:	⌘	CSSPLIT
Date:	⌘	20/09/2002
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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Not all nodes in the core network are able to discriminate between transparent and non-transparent CS data services, since this information is only contained within the PLMN BC. Thus, it is not possible to discrimate between Iu UP transparent and support mode at the Nb interface, since intermediates notes are not able to configure the attached MGWs accordingly. Section 11.5.3 (inter-MSC handover) contains information that is applicable also for Section 11.5.1 (transport at access side of IWF)
Summary of change:	⌘	Always use Iu UP support mode for transparent Cs data services at Nb interface, also at access side of IWF. Make Section 11.5.1 applicable also for inter-MSC handover. Small Change in Table 14: no UDI for termination 2, because TMR should not be applied at core network terminations.
Consequences if not approved:	⌘	Inter-MSC Handover for transaprent CS data services not possible.

Clauses affected:	⌘	11.5			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	23.910
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

11.5 Transport within the Core Network

The Nb UP protocol is used to transport user data in the Core Network, see 3GPP TS 29.415 [80]. Figure 16 below shows different cases to consider:

1. Transport on the access side of the IWF
2. Transport beyond the IWF, i.e., between the IWF and the fixed network

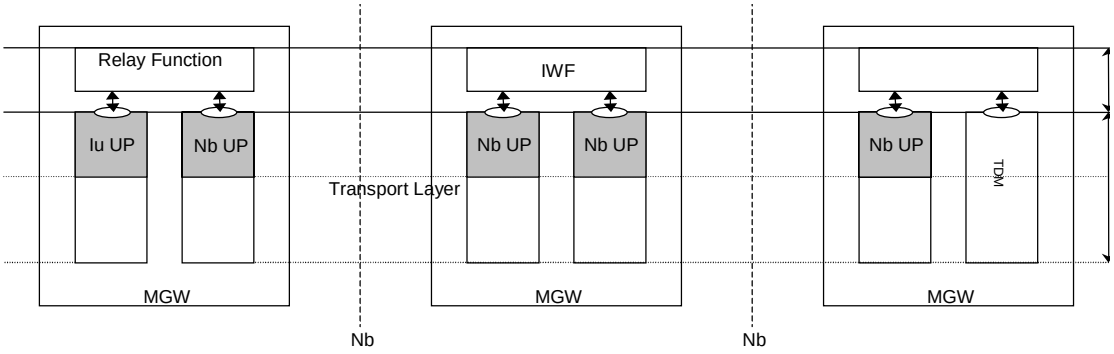

Figure 16: Transport of data within the Core Network

11.5.1 Transport on the access side of the IWF

This section is applicable in cases where the IWF is not interfacing an Iu UP layer protocol entity, ~~with the exception of~~e.g due to an Inter-MSC Relocation – see also 11.5.3.

11.5.1.1 Non-transparent case

The Nb UP is used in support mode. The same SDU sizes and transmission intervals that are used on the Iu interface are used over the Nb interface, see 3GPP TR 23.910 [53] and 3GPP TS 27.001 [43]. A Relay Function (see 3GPP TS 29.232 [82]) is used to relay the user data and control information (such as rate control) in MGWs between the MGW where the IWF is residing and the Iu interface.

11.5.1.2 Transparent case

The Nb UP is used in ~~transparent~~ support mode. ~~The same SDU sizes and transmission intervals that are used on the Iu interface are used over the Nb interface, see 3GPP TR 23.910 [53] and 3GPP TS 27.001 [43]. The PDUs are passed unmodified through all MGWs between the MGW where the IWF is residing and the Iu interface.~~

11.5.2 Transport beyond the IWF

11.5.2.1 UDI and RDI

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 I.366.2 [81]. PDU type 0 is used, i.e., payload CRC is applied.

At the border between the CN and the fixed (ISDN) network, conversion between Nb UP and TDM shall be applied. In case of RDI interworking, the 56 kbit/s RDI bit stream is transmitted within the CN as 64 kbit/s bit stream where the last bit of each octet is ignored. For this reason the octet alignment shall be preserved in the SDUs transported in the CN.

11.5.2.2 Modem

The modem signals are PCM encoded and transported on a 64 kbit/s bit stream. The transmission is otherwise identical to the UDI/RDI case, see Section 11.5.2.1

11.5.3 Transport between Anchor MGW and Non-Anchor MGW

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.

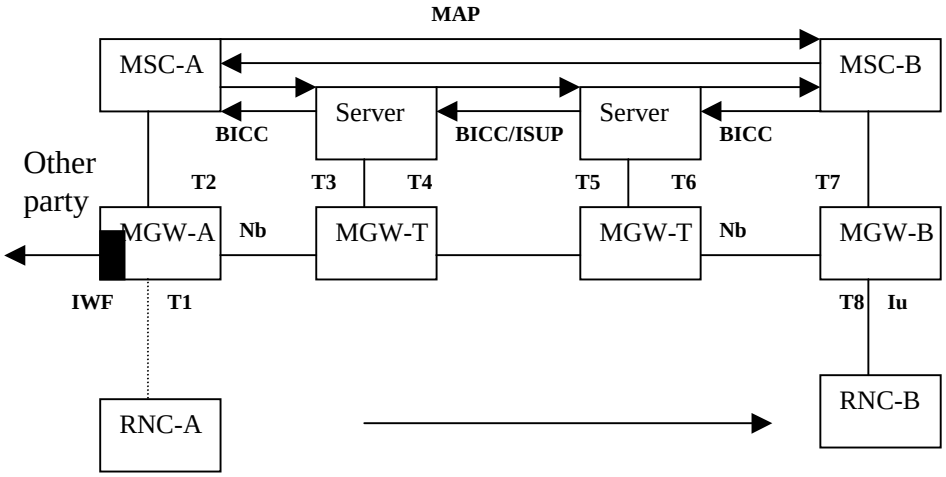

Figure 17: Bearer Independent connections for Inter-MSC SRNS Relocation

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	T2	T7	T8	T3, T4, T5, T6
TMR	-	~~UDI~~	UDI	-	UDI
threegcsd:plmnbc	PLMN_BC	PLMN_BC	-	-	-
threegup:interface	RAN	CN	CN	RAN	CN
threegup:initdir	IN	OUT	IN	OUT	IN
threegup:mode	support	support	support	support	support
threegcsde:bitrate	-	-	-	BITRATE	-

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CHANGE REQUEST

⌘ **29.007** **CR** **058** ⌘ **rev** **1** ⌘ Current version: **5.3.0** ⌘

*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 ☒

Title:	⌘	Use of Iu UP in support mode for transparent data services at the Nb interface
Source:	⌘	TSG_CN WG3
Work item code:	⌘	CSSPLIT
Date:	⌘	20/09/2002
Category:	⌘	**A**
Release:	⌘	Rel-5

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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Not all nodes in the core network are able to discriminate between transparent and non-transparent CS data services, since this information is only contained within the PLMN BC. Thus, it is not possible to discrimate between Iu UP transparent and support mode at the Nb interface, since intermediates notes are not able to configure the attached MGWs accordingly. Section 11.5.3 (inter-MSC handover) contains information that is applicable also for Section 11.5.1 (transport at access side of IWF)
Summary of change:	⌘	Always use Iu UP support mode for transparent Cs data services at Nb interface, also at access side of IWF. Make Section 11.5.1 applicable also for inter-MSC handover. Small Change in Table 14: no UDI for termination 2, because TMR should not be applied at core network terminations.
Consequences if not approved:	⌘	Inter-MSC Handover for transaprent CS data services not possible.

Clauses affected:	⌘	11.5			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	23.910
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

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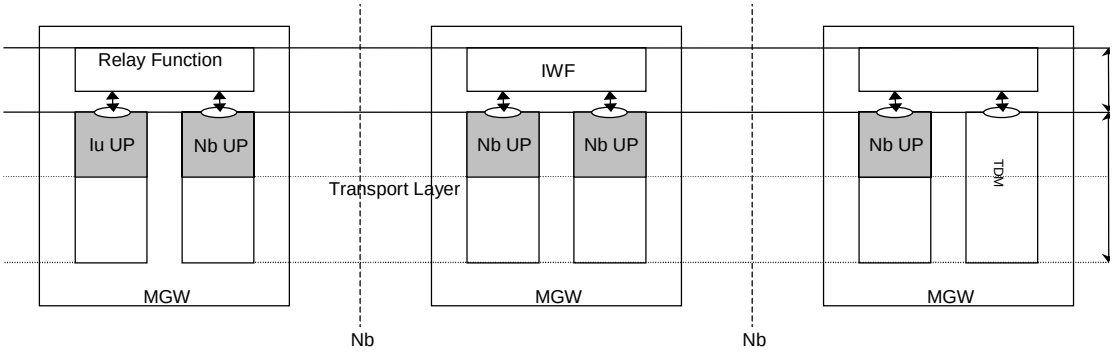

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11.5.1.1 Non-transparent case

The Nb UP is used in support mode. The same SDU sizes and transmission intervals that are used on the Iu interface are used over the Nb interface, see 3GPP TR 23.910 [53] and 3GPP TS 27.001 [43]. A Relay Function (see 3GPP TS 29.232 [82]) is used to relay the user data and control information (such as rate control) in MGWs between the MGW where the IWF is residing and the Iu interface.

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At the border between the CN and the fixed (ISDN) network, conversion between Nb UP and TDM shall be applied. In case of RDI interworking, the 56 kbit/s RDI bit stream is transmitted within the CN as 64 kbit/s bit stream where the last bit of each octet is ignored. For this reason the octet alignment shall be preserved in the SDUs transported in the CN.

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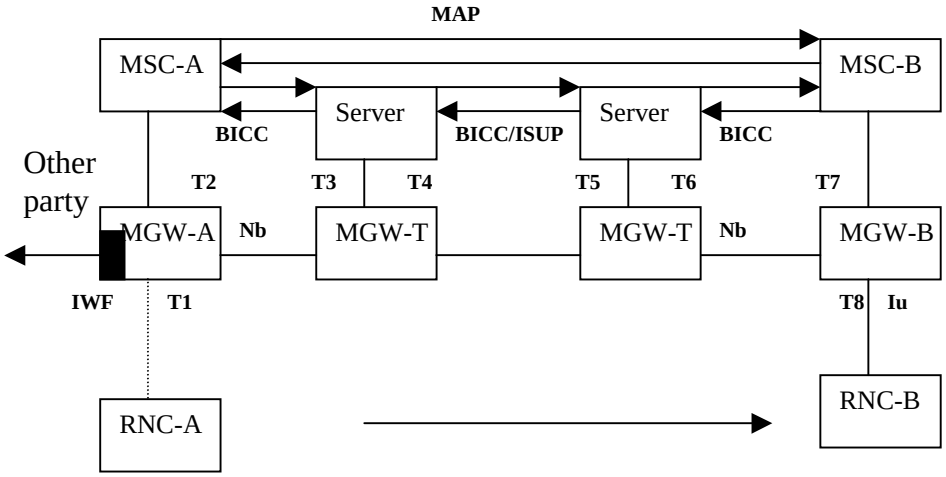

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threegup:interface	RAN	CN	CN	RAN	CN
threegup:initdir	IN	OUT	IN	OUT	IN
threegup:mode	support	support	support	support	support
threegcsde:bitrate	-	-	-	BITRATE	-

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CHANGE REQUEST

⌘ **23.910** **CR** **043** ⌘ **rev** **1** ⌘ Current version: **4.5.0** ⌘

*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 ☒

Title:	⌘	Use of Iu UP in support mode for transparent data services at the Nb interface
Source:	⌘	TSG_CN WG3
Work item code:	⌘	CSSPLIT
Date:	⌘	20/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-4

Use one of the following categories:
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Use one of the following releases:

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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Not all nodes in the core network are able to discriminate between transparent and non-transparent CS data services, since this information is only contained within the PLMN BC. Thus, it is not possible to discrimate between Iu UP transparent and support mode at the Nb interface, since intermediates notes are not able to configure the attached MGWs accordingly.
Summary of change:	⌘	Always use Iu UP support mode for transparent Cs data services at Nb interface.
Consequences if not approved:	⌘	Transparent mode calls cannot be supported through the core network. Contradiction between Section 6.2 and 11.3

Clauses affected:	⌘	6.2

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

Other comments:	⌘	

6 Iu and Nb User Plane

6.1 NT services

On the Iu interface and on the Nb interfaces between the access network and the IWF, the Iu and Nb user planes are used in support mode, see 3GPP TS 25.415 and 3GPP TS 29.415. Each SDU corresponds to one RLP frame and, consequently, is 576 bits long. Each SDU is transported in one Iu or Nb UP PDU of Type 1. The range of AIUR values is 14,4, 28,8, 57,6, limited by the maximum bit rate, and varies with the transmission period on the Uu interface, which is 10 ms, 20 ms or 40 ms. A change in the transmission period is signalled to the IWF through the Iu and Nb UP protocols. The Iu or Nb UP primitive Iu- or Nb-UP-DATA-REQUEST is invoked each time an RLP frame is ready to be sent from the IWF towards the UE. DTX indication is not used.

If TDM is not used, then between the IWF and the fixed network (ISDN or PSTN), the Nb UP protocol is applied in support mode and the SDU size is 320 bits, transmitted every 5 ms. PDU type 0 is used.

6.2 T services

On the Iu interface, ~~T~~the Iu UP ~~and Nb UP are~~is used in transparent mode, see 3GPP TS 25.415~~ and 3GPP TS 29.415~~. The payload of the Iu and Nb frames will consist of user data bits only for synchronous data, and RA0 synchronous bit streams for asynchronous data.

On the Iu ~~and Nb~~ interfaces, the payload (SDU) size is fixed, determined by the bit rate. Following table shows SDU size defined by GSM Association - IMT-2000 Steering Group (Typical Radio Interface Parameter Sets). AAL2 is used. The AAL2 SSCS layer must be supported for segmentation and re-assembly.

Bit rate	SDU size (= RLC PDU payload size)
28.8 kbit/s	576 bits
33.6 kbit/s	672 bits
32 kbit/s	640 bits
56/64 kbit/s	640 bits

The primitive Iu-UP ~~or Nb~~ _UNIT-DATA-REQUEST is invoked at regular intervals in order to have a constant bit rate (every SDU).

If TDM is not used at the Nb interface, then ~~between the IWF and the fixed network (ISDN or PSTN),~~ the Nb UP protocol is applied in support mode and the SDU size is 320 bits, transmitted every 5 ms. PDU type 0 is used.

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CHANGE REQUEST

⌘ **23.910** **CR** **042** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

*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 ☒

Title:	⌘	Use of Iu UP in support mode for transparent data services at the Nb interface
Source:	⌘	TSG_CN WG3
Work item code:	⌘	CSSPLIT
Date:	⌘	20/09/2002
Category:	⌘	**A**
Release:	⌘	Rel-5

Use one of the following categories:
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Reason for change:	⌘	Not all nodes in the core network are able to discriminate between transparent and non-transparent CS data services, since this information is only contained within the PLMN BC. Thus, it is not possible to discrimate between Iu UP transparent and support mode at the Nb interface, since intermediates notes are not able to configure the attached MGWs accordingly.
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Consequences if not approved:	⌘	Transparent mode calls cannot be supported through the core network. Contradiction between Section 6.2 and 11.3

Clauses affected:	⌘	6.2

Other specs affected: ⌘	Y	N			
	X		Other core specifications	⌘	29.007
		X	Test specifications		
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Other comments:	⌘	

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