3GPP TSG_CN **Tdoc NP-000463**
Plenary Meeting #9, Oahu, Hawaii
20th – 22nd September 2000.

Source: **TSG_N WG 3**

Title: **All LSs sent from CN3 since CN#8 Meeting**

Agenda item: **6.3.1**

Document for: **INFORMATION**

Introduction:

This document contains all LSs sent from **TSG_N WG3** since CN#8 meeting, and is forwarded to TSG_N Plenary meeting #9 for information.

DOC N3-00	Subject	To	Cc	Attachment
N3-000373	32 kbit/s UDI/RDI multimedia	SA1 SMG2/GERAN		none
N3-000389	3.1 kHz multimedia calls at 33.6 kbit/s data rate	N1		
N3-000390	Specifying IuUP PDU Type in 3G TS 26.102	R3	S4	none
N3-000486	Updated Iu UP CR on selection of PDU Type 1 for NT CS data services	R3	S4	N3-000424 N3-000425 N3-000426 N3-000427
N3-000487	Multimedia 32 kbit/s UDI/RDI in GSM/EDGE	N1		GP-000384 N3-000452 N3-000453 N3-000455 N3-000456 N3-000474
N3-000488	DHCP lease renewal	T2		N3-000401 N3-000411 N3-000457

3GPP TSG-CN3 / ETSI SMG3 WPD
Meeting #11, Oslo, Norway
10th – 14th July 2000

Tdoc N3-000373

Title: **LS on 32 kbit/s UDI/RDI multimedia**

Source: **TSG_CN WG3**

To: **TSG_SA WG1 and SMG2/GERAN**

Cc:

Contact Person:

Name: **Juha Räsänen**
E-mail Address: **juha.a.rasanen@nokia.com**
Tel. Number: +358 40 543 9058

---

1. Overall Description:

The circuit switched multimedia service was specified in the 3GPP R99 for both UMTS and GSM. However, there are still some minor restrictions in some specifications that prevent the use of the 32 kbit/s UDI/RDI multimedia, based on the use of a single TCH/F32 ECSD channel, in GSM.

TSG-CN3 sees several advantages on removing those restrictions from the specifications. Fully digital UDI/RDI video/multimedia calls could be made also to/from GSM terminals

- with a single radio channel, i.e. cheaper (than at 64kbit/s) and saving radio resources,
- with a faster setup (than with modems),
- with a more reliable connection (than with modems),
- with a bit higher data rate (than with modems) and
- with less processing power required in the mobile station, expediting the introduction of integrated video phones.

TSG-CN3 has preliminarily checked its own specifications and found out that only minor corrections are required. It is TSG-CN3's understanding that corrections are required also in specifications of TSG-SA1 and SMG2/GERAN.

Consequently, TSG-CN3 would like to ask TSG-SA1 and SMG2/GERAN to check the impact of the 32 kbit/s UDI/RDI GSM multimedia on their specifications and evaluate the feasibility of making the required changes.

2. Actions:

To TSG SA1:

ACTION: TSG_N WG3 asks **TSG SA WG1** to consider the above comments, check the impact on TS 22.002 and evaluate the feasibility of introducing the required changes as corrections in R99 rather than as a new feature or function in R00.

To SMG2/GERAN:

ACTION: TSG_N WG3 asks **SMG2/GERAN** to consider the above comments, check the impact on TS 08.08 and possible other SMG2/GERAN's specifications and evaluate the feasibility of making the required changes as a correction in R99 rather than as a new feature or function in R00.

3. Attachments:

None.

3GPP TSG-CN3 / ETSI SMG3 WPD **Tdoc N3-000389**
Meeting #11, Oslo, Norway
10th – 14th July 2000

Title: **LS on 3.1 kHz multimedia calls at 33.6 kbit/s data rate**

Source: **TSG_CN WG3**

To: **TSG_CN WG1**

Cc:

Contact Person:

Name: **Juha Räsänen**
E-mail Address: **juha.a.rasanen@nokia.com**
Tel. Number: +358 40 543 9058

---

1. Overall Description:

Circuit switched 3.1 kHz multimedia calls in UMTS can be made at rates 28.8 kbit/s and 33.6 kbit/s. The 28.8 kbit/s rate is in practice supported by all networks and terminals offering the 3.1 kHz multimedia service. As for the 33.6 kbit/s rate there are several practical problems:

- The transparent 33.6 kbit/s rate is not specified for all networks (e.g. GSM),
- The 33.6 kbit/s rate is not supported by all terminals,
- The 33.6 kbit/s rate does not work in all digital environments due to the bandwidth limitations of the used PCM codec/filter implementations.

Any of the above mentioned problems causes a failure in the setup phase of a 33.6 kbit/s multimedia call originating from UMTS. The success of a 33.6 kbit/s multimedia call can be guaranteed only if the UMTS user knows the capabilities of the used networks and the called terminal. The user also has to reconfigure parameters at the terminal before making a call.

In order to make the multimedia service usable with the 33.6 kbit/s data rate in the setup, TSG-CN3 considers introducing an automatic data rate change procedure supported by ITU-T V.34 modems. One possible solution under consideration is as follows:

- The IWF modem is set up to operate in a limited automode, i.e. automode with an upper data rate limit of 33.6 kbit/s and lower data rate limit of 28.8 kbit/s.
- If the 33.6 kbit/s handshaking fails, the modems end up with either 31.2 kbit/s or 28.8 kbit/s.
- If the modems handshake either 31.2 or 28.8 kbit/s, the MSC IWF uses the MODIFY procedure to inform the MS about the new data rate. H.223 flag stuffing is used to adapt the 31.2 or 28.8 kbit/s rate to the 33.6 kbit/s channel between the MS and the MSC IWF.

The MODIFY procedure is used in an exceptional way in this proposal. The procedure indicates a new data rate to the MS, but no channel mode modification shall take place in conjunction with the operation. Normally a MODIFY procedure requesting a new user rate 28.8 kbit/s would invoke a Channel Mode Modify (CMM) procedure resulting in a new radio interface data rate of 28.8 kbit/s.

TSG-CN3 would like to ask TSG-CN1 to check the feasibility of the use of the MODIFY procedure for this purpose and the impact of the solution on TS 24.008.

2. Actions:

To TSG CN1:

ACTION: TSG_N WG3 asks **TSG CN WG1** to consider the above comments, to verify the usability of the MODIFY procedure for changing the radio interface user rate as described above, to check the impact of the solution on TS 24.008 and to evaluate the feasibility of introducing the required changes as corrections in R99 rather than as a new feature or function in R00.

3. Attachments:

None.

3GPP TSG-CN3 / ETSI SMG3 WPD **Tdoc N3-000390**
Meeting #11, Oslo, Norway
10th – 14th July 2000

TITLE: REPLY TO LIAISON STATEMENT on specifying IuUP PDU Type in 3G TS 26.102

TO: RAN WG3

CC: SA WG4

Contact: Erik.A.Colban@ericsson.no

N3 thanks R3 for the information provided in their LS (tdoc R3-001933/N3-000354) to S4 and N3. It is N3's opinion that it is necessary to specify the criteria for selecting PDU type in order to avoid vendor dependent product discrepancies and to guarantee that PDU type 1 is always selected by the UTRAN for the CS NT data services.

3GPP TSG-CN3 **Tdoc N3-000486**
Meeting #12, Seattle, USA
28th August – 1st September 2000

TITLE: LS ON Updated Iu UP CR on selection of PDU Type 1 for NT CS data services

SOURCE: TSG N, WG3

TO: TSG R, WG3

CC: TSG S, WG4

Contact: Erik.A.Colban@ericsson.no

TSG N, WG3 would like to expresses their gratitude and relief towards TSG R WG3 for amending TS 25.415 in such a way that the Core Network can rely on the UTRAN to always select PDU type 1 for NT CS data bearers. N3 has produced CRs to 27.001 and 23.910 R99 and R00 as requested by TSG R WG3.

Attachments: N3-000424, N3-000425, N3-000426, N3-000427.

3GPP N3 Meeting #12
Seattle, USA, 28 Aug-1 Sept 2000

Document N3-000424
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

27.001	CR		Current Version:	3.5.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio	X	Core Network	X

Source: Ericsson **Date:** 2000-08-17

Subject: Delivery of erroneous SDUs parameter value

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction	X	
A	Corresponds to a correction in an earlier release		
B	Addition of feature		
C	Functional modification of feature		
D	Editorial modification		

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:
3G TS 25.413 defines three possible values for the 'Delivery of erroneous SDUs' parameter:
Yes: error detection applied, erroneous SDU delivered
No: Error detection is applied , erroneous SDU discarded
no-error-detection-consideration: SDUs delivered without considering error detection.
For NT bearers, the third option is appropriate, since RLP provides the error detection mechanism.

Clauses affected:

Other specs affected:

Other 3G core specifications		→ List of CRs:	23.910 CR ??
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

B.1.13.2 Non-transparent services

Depending on the WAIUR signalled by the MS, the network is allowed to assign any radio resources with a radio access bearer parameter indicating a Quality of Service specifying

QoS Parameter	Value	Comments
Traffic Class	Streaming	Subject to operator tuning
RAB Asymmetry Indicator	Symmetric	
Maximum bit rate	14.4, 28.8, 57.6 kbit/s	Maximum bit rate is set to the highest value ≤ WAIUR (note 1)
Guaranteed bit rate	14.4 kbit/s	Operator can choose 14.4, 28.8 or 57.6 kbit/s.
Delivery Order	Yes	
Maximum SDU size	576 bits	
Transfer Delay	< 250 ms	Subject to operator tuning
Traffic Handling Priority	-	Not applicable to the streaming traffic class
Source statistics descriptor	Unknown	
SDU Parameters		
SDU error ratio	< 10 %	Subject to operator tuning
Residual bit error ratio	10^{-3}	Subject to operator tuning.
Delivery of erroneous SDUs	~~N~~no error detection consideration	
SDU format information		
RAB Subflow Combination bit rate	57.6 kbit/s	
RAB Subflow Combination bit rate	28.8 kbit/s	
RAB Subflow Combination bit rate	14.4 kbit/s	
RAB Subflow Combination bit rate	0 kbit/s	indicates DTX, RFCI is not assigned

NOTE: In case the WAIUR is less than Guaranteed bit rate, the Maximum bit rate is set to the Guaranteed bit rate.

The final decision about the radio interface configuration is taken by the RNC during the Assignment procedure.

3GPP N3 Meeting #12
Seattle, USA, 28 Aug-1 Sept 2000

***Document* N3-000425**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

27.001	CR		Current Version:	3.5.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio	X	Core Network	X

Source: Ericsson **Date:** 2000-08-17

Subject: Delivery of erroneous SDUs parameter value

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release	X		Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	
				Release 00	X

Reason for change:
3G TS 25.413 defines three possible values for the 'Delivery of erroneous SDUs' parameter:
Yes: error detection applied, erroneous SDU delivered
No: Error detection is applied , erroneous SDU discarded
no-error-detection-consideration: SDUs delivered without considering error detection.
For NT bearers, the third option is appropriate, since RLP provides the error detection mechanism.

Clauses affected:

Other specs affected:

Other 3G core specifications		→ List of CRs:	23.910 CR ??
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

B.1.13.2 Non-transparent services

Depending on the WAIUR signalled by the MS, the network is allowed to assign any radio resources with a radio access bearer parameter indicating a Quality of Service specifying

QoS Parameter	Value	Comments
Traffic Class	Streaming	Subject to operator tuning
RAB Asymmetry Indicator	Symmetric	
Maximum bit rate	14.4, 28.8, 57.6 kbit/s	Maximum bit rate is set to the highest value ≤ WAIUR (note 1)
Guaranteed bit rate	14.4 kbit/s	Operator can choose 14.4, 28.8 or 57.6 kbit/s.
Delivery Order	Yes	
Maximum SDU size	576 bits	
Transfer Delay	< 250 ms	Subject to operator tuning
Traffic Handling Priority	-	Not applicable to the streaming traffic class
Source statistics descriptor	Unknown	
SDU Parameters		
SDU error ratio	< 10 %	Subject to operator tuning
Residual bit error ratio	10^{-3}	Subject to operator tuning.
Delivery of erroneous SDUs	~~N~~no error detection consideration	
SDU format information		
RAB Subflow Combination bit rate	57.6 kbit/s	
RAB Subflow Combination bit rate	28.8 kbit/s	
RAB Subflow Combination bit rate	14.4 kbit/s	
RAB Subflow Combination bit rate	0 kbit/s	indicates DTX, RFCI is not assigned

NOTE: In case the WAIUR is less than Guaranteed bit rate, the Maximum bit rate is set to the Guaranteed bit rate.

The final decision about the radio interface configuration is taken by the RNC during the Assignment procedure.

3GPP N3 Meeting #12
Seattle, USA, 28 Aug-1 Sept 2000

Document N3-000426
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.910	CR		Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [X]

Source: Ericsson **Date:** 2000-08-24

Subject: Delivery of erroneous SDUs parameter value

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: 3G TS 25.413 defines three possible values for the 'Delivery of erroneous SDUs' parameter:
Yes: error detection applied, erroneous SDU delivered
No: Error detection is applied , erroneous SDU discarded
no-error-detection-consideration: SDUs delivered without considering error detection.
For NT bearers, the third option is appropriate, since RLP provides the error detection mechanism.

Clauses affected:

Other specs affected:

Other 3G core specifications		→ List of CRs:	27.001 CR ??
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

5.2.1 Non-transparent services, including Fax

Service identified by the BC IE			Non-transparent data	Comments
Traffic Class			Streaming	Subject to operator tuning
RAB Asymmetry Indicator			Symmetric	
Maximum bit rate (1)			14,4 kbit/s, 28,8 kbit/s, 57.6 kbit/s	Maximum bit rate is set to the highest value ≤ WAIUR (note)
Guaranteed bit rate			14,4 kbit/s	Operator can choose 14,4 kbit/s, 28,8 kbit/s or 57,6 kbit/s.
Delivery Order			Yes	
Maximum SDU size			576 bits	
Transfer Delay			< 250 ms	Subject to operator tuning
Traffic Handling Priority			-	Not applicable to the streaming traffic class
Source statistics descriptor			Unknown	
SDU Parameters				
	SDU error ratio		< 10 %	Subject to operator tuning
	Residual bit error ratio		10^{-3}	Subject to operator tuning.
	Delivery of erroneous SDUs		~~No~~no error detection consideration	
	SDU format information			
		RAB Subflow Combination bit rate	57,6 kbit/s	
		RAB Subflow Combination bit rate	28,8 kbit/s	
		RAB Subflow Combination bit rate	14,4 kbit/s	
		RAB Subflow Combination bit rate	0 kbit/s	indicates DTX, RFCI is not assigned
NOTE: In case the WAIUR is less than Guaranteed bit rate, the Maximum bit rate is set to the Guaranteed bit rate.				

3GPP N3 Meeting #12
Seattle, USA, 28 Aug-1 Sept 2000

Document N3-000427
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

23.910	CR		Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [X]

Source: Ericsson **Date:** 2000-08-24

Subject: Delivery of erroneous SDUs parameter value

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction		**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release	X		Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	
				Release 00	X

Reason for change: 3G TS 25.413 defines three possible values for the 'Delivery of erroneous SDUs' parameter:
Yes: error detection applied, erroneous SDU delivered
No: Error detection is applied , erroneous SDU discarded
no-error-detection-consideration: SDUs delivered without considering error detection.
For NT bearers, the third option is appropriate, since RLP provides the error detection mechanism.

Clauses affected:

Other specs affected:

Other 3G core specifications		→ List of CRs:	27.001 CR ??
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

5.2.1 Non-transparent services, including Fax

Service identified by the BC IE			Non-transparent data	Comments
Traffic Class			Streaming	Subject to operator tuning
RAB Asymmetry Indicator			Symmetric	
Maximum bit rate (1)			14,4 kbit/s, 28,8 kbit/s, 57.6 kbit/s	Maximum bit rate is set to the highest value ≤ WAIUR (note)
Guaranteed bit rate			14,4 kbit/s	Operator can choose 14,4 kbit/s, 28,8 kbit/s or 57,6 kbit/s.
Delivery Order			Yes	
Maximum SDU size			576 bits	
Transfer Delay			< 250 ms	Subject to operator tuning
Traffic Handling Priority			-	Not applicable to the streaming traffic class
Source statistics descriptor			Unknown	
SDU Parameters				
	SDU error ratio		< 10 %	Subject to operator tuning
	Residual bit error ratio		10^{-3}	Subject to operator tuning.
	Delivery of erroneous SDUs		~~No~~no error detection consideration	
	SDU format information			
		RAB Subflow Combination bit rate	57,6 kbit/s	
		RAB Subflow Combination bit rate	28,8 kbit/s	
		RAB Subflow Combination bit rate	14,4 kbit/s	
		RAB Subflow Combination bit rate	0 kbit/s	indicates DTX, RFCI is not assigned
NOTE: In case the WAIUR is less than Guaranteed bit rate, the Maximum bit rate is set to the Guaranteed bit rate.				

3GPP TSG-CN3 **Tdoc N3-000487**
Meeting #11, Seattle, USA
28th August – 01st September 2000

Title: **LS on 32 kbit/s UDI/RDI multimedia**

Source: **TSG_CN WG3**

To: **TSG_CN WG1**

Cc:

Contact Person:

Name: **Juha Räsänen**
E-mail Address: **juha.a.rasanen@nokia.com**
Tel. Number: +358 40 543 9058

---

1. Overall Description:

The circuit switched multimedia service was specified in the 3GPP R99 for both UMTS and GSM. However, there were restrictions in some specifications that prevented the use of the 32 kbit/s UDI/RDI multimedia, based on the use of a single TCH/F32 ECSD channel, in GSM.

TSG-SA WG1, TSG-GERAN WG2 and TSG-CN WG3 have updated their specifications to remove the restrictions. (Corresponding CN3 CRs attached in this LS.)

It is CN3's understanding that there may be some minor incompatibilities with the single channel 32 kbit/s concept in 3GTS 24.008. Consequently, CN3 would like to ask CN1 to check 24.008 against the attached CRs.

2. Actions:

To TSG CN1:

ACTION: TSG_N WG3 asks **TSG CN WG1** to check 24.008 against the attached CRs by CN3 and, in case incompatibilities are found, update 24.008 accordingly.

3. Attachments:

CRs to 3GTSs 29.007 (N3-000452), 27.001 (N3-000453), 04.21 (N3-000474), 08.20 (N3-000455) and 03.10 (N3-000456) from CN3.

An LS from TSG-GERAN (GP-000384).

3GPP TSG GERAN #1

Tdoc GP-000384
revised **Tdoc GP-000264**

28th August – 1 thSeptember 2000
Seattle, USA

Agenda Item 8.2.5.12

SOURCE: NOKIA

Title: Proposed Answer to LS on 32 kbit/s UDI/RDI multimedia
Source: TSG GERAN WG2
To: TSG_CN WG3, TSG_SA WG1,
Cc:

Contact Person:

Name:	Shkumbin Hamiti
E-mail Address:	shkumbin.hamiti@nokia.com
Tel. Number:	+358 40 733 9658

TSG GERAN has reviewed the LS on 32 kbit/s UDI/RDI multimedia and recognized the advantages of providing 32 kbit/s UDI/RDI channels in a singleslot configuration using E-TCH/F32.

TSG GERAN concluded that the impact on TSG GERAN specifications is minor and agreed to draft corresponding CRs as correction to R99. Affected specifications are 08.08 and 08.58 and corresponding agreed CRs are following: CR 08.58 A054, CR 08.08 A215 and CR 48.008 007 The CRs are attached (Tdocs GP-000263, GP-000382 and GP-000383).

3GPP TSG-CN3 Meeting #12
Seattle, USA 28th August – 01st September 2000

Document N3-000452
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

29.007	CR		Current Version:	3.5.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG_N #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSG_N3 **Date:** 28/08/00

Subject: 32 kbit/s UDI/RDI multimedia in GSM

Work item: Technical enhancements and improvements (TEI)

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Removal of barriers to use the 32 kbit/s UDI/RDI multimedia in GSM.

Clauses affected: Table 7A and 7B.

Other specs Affected:

Other 3G core specifications	X	→ List of CRs:	22.002, 27.001, 48.008
Other GSM core specifications	X	→ List of CRs:	03.10, 04.21, 08.08, 08.20, 08.58
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

Table 7A: Comparable setting of parameters in PLMN and ISDN: Mobile Originated

Octet	PLMN BC parameter value	Octet	ISDN BC parameter value
1	**Bearer Capability IEI**	1	**Bearer Capability IEI**
2	**Length of BC contents**	2	**Length of BC contents**
3 #7..6	**Radio channel requirement** half rate channel full rate channel dual, full, rate preferred dual, half rate preferred		No comparable field
3 #5	**Coding Standard** GSM standard coding	3 #7..6	**Coding Standard** CCITT standardized coding
3 #4	**Transfer mode** circuit mode packet mode (note7)	4 #7..6	Transfer mode circuit mode packet mode
3 #3..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio ex PLMN facsimile group 3 (note 1) other ITC (see octet 5a)	3 #5..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio 3,1 kHz audio no comparable value
5a #7..6	**Other ITC** restricted digital		(note 18)
4 #7	**Compression** (note 14) data compression allowed data compression not allowed		No comparable field
4 #6..5	**Structure** SDU integrity unstructured	4a #7..5	**Structure** (note 4)
4 #4	**Duplex mode** half duplex full duplex	5d #7	**Duplex mode** half duplex full duplex
4 #3	**Configuration** point to point	4a #4..3	**Configuration** (note 4)
4 #1	**Establishment** demand	4a #2..1	**Establishment** (note 4)
4	**NIRR** (note 12) no meaning Data ≤ 4.8kbit/s, FR nt, 6kbit/s radio interface is requested		No comparable field

(continued)

Table 7A (continued): Comparable setting of parameters in PLMN and ISDN: Mobile Originated

Octet	PLMN BC parameter value	Octet	ISDN BC parameter value
5 #5..4	**Rate adaptation** no rate adaptation (note 2) V.110, I.460/X.30 rate adaptation CCITT X.31 flag stuffing No comparable value (note 11) No comparable value (note 11) No comparable value (note 11) other rate adaptation (see octet 5a)	5 #5..1	**User information layer 1 protocol** no comparable value CCITT standardized rate adaption V.110, I.460/X.30 CCITT standardized rate adaption X.31 flag stuffing Recommendation G.711 μ-law Recommendation G.711 A-law (note 3) Recommendation G.721 32 kbit/s ADPCM and I.460 No comparable value No comparable value H.223 & H.245 (note 26)
5a #5..4	**Other rate adaptation** V.120 (note 17) PIAFS (note 27) H.223 & H.245		
5 #3..1	**Signalling access protocol** I.440/I.450 X.21 X.28, ded.PAD, indiv.NUI (note 24) X.28, ded PAD, univ.NUI (note 24) X.28, non-ded PAD X.32		No comparable field
6 #1	**Synchronous/asynchronous** synchronous asynchronous	5a #7	**Synchronous/asynchronous** synchronous asynchronous (note 25)
6 #5..2	**User info. layer 1 protocol** default layer 1 protocol	5 #5..1	**User info. layer 1 protocol** see section under rate adaptation for 3G TS 24.008 above
6a #7	**Number of stop bits** 1 bit 2 bits	5c #7..6	**Number of stop bits** 1 bit 2 bits
6a #6	**Negotiation** In band neg. not possible no comparable value	5a #6	**Negotiation** In band neg. not possible In band neg. possible (note 10)
6a #5	**Number of data bits** 7 bits 8 bits	5c #5..4	**Number of data bits excluding parity if present** 7 bits 8 bits
6a #4..1	**User rate** 0.3 kbit/s 1.2 kbit/s 2.4 kbit/s 4.8 kbit/s 9.6 kbit/s 12 kbit/s (note 7) 1.2 kbit/s / 75 bit/s (note 24) any value no comparable value	5a #5..1	**User rate** 0.3 kbit/s 1.2 kbit/s 2.4 kbit/s 4.8 kbit/s 9.6 kbit/s 12 kbit/s 75 bit/s / 1.2 kbit/s 19.2 kbit/s (note 14) Ebits or inband negotiation (note 10)

(continued)

Table 7A (continued): Comparable setting of parameters in PLMN and ISDN: Mobile Originated

Octet	PLMN BC parameter value	Octet	ISDN BC parameter value
6b #7..6	**Intermediate rate** 8 kbit/s 16 kbit/s any value	5b #7..6	**Intermediate rate** (note 13) 8 kbit/s or not used 16 kbit/s or not used 32 kbit/s or not used (note 14)
6b #5	**NIC on Tx** does not require requires (note7)	5b #5b	**NIC on Tx** does not require requires (note 8)
6b #4	**NIC on Rx** cannot accept can accept (note 7)	5b #4	**NIC on Rx** cannot accept can accept (note 8)
6b #3..1	**Parity information** odd even none forced to 0 forced to 1	5c #3..1	**Parity information** odd even none forced to 0 forced to 1
6c #7..6	**Connection element** transparent non-transparent (RLP) both, transp. preferred both, non-transp. preferred		No comparable field
6c #5..1	**Modem type** none V.21 V.22 V.22bis V.23 (note 24) V.26ter V.32 modem for undef. interface autobauding type 1	5d #6..1	**Modem type** no comparable value (note 5) V.21 V.22 V.22bis V.23 V.26ter V.32 No comparable value (note 5) No comparable value (note 5, note 10)
7 #5..1	**User info. layer 2 protocol** X.25 link level ISO 6429, codeset 0 COPnoFlCt videotex profile 1 (note 7) X.75 layer 2 modified (CAPI)	6	**User info.layer 2 prot.** (note 6) X.25 link level no comparable value no comparable value no comparable value X.25 link level
6d #5..1	**Fixed network user rate** (note 15) FNUR not applicable (note 7) 9,6 kbit/s 12 kbit/s (note 7) 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s 33.6 kbit/s 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s 64,0 kbit/s	5a #5..1	**User rate** no comparable value 9,6 kbit/s 12 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s no comparable value 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s no comparable value (note 16)

(continued)

Table 7A (concluded): Comparable setting of parameters in PLMN and ISDN: Mobile Originated

Octet	PLMN BC parameter value	Octet	ISDN BC parameter value
6e #3..1	**Maximum number of traffic channels** 1 TCH 2 TCH 3 TCH 4 TCH 5 TCH 6 TCH 7 TCH (note 7) 8 TCH (note 7)		No comparable field
6f #4..1	**Wanted air interface user rate (note 23)** air interface user rate not applicable (note 7) 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 38,4 kbit/s 43,2 kbit/s 57,6 kbit/s interpreted by the network as 38.4 kbit/s (note 7)		No comparable field
6d #7..6	**Other modem type** (note 15) No other modem type V.34	5d #6..1	**Modem type** no comparable value V.34
6e #7..4	**Acceptable channel coding(s)** TCH/F4.8 acceptable (note 19) TCH/F9.6 acceptable TCH/F14.4 acceptable		No comparable field
6f #7..5	**User initiated modification indicator (note 23)** User initiated modification not required User initiated modification upto 1 TCH/F may be requested User initiated modification upto 2 TCH/F may be requested User initiated modification upto 3 TCH/F may be requested User initiated modification upto 4 TCH/F may be requested		No comparable field
6g #7..5	**Acceptable channel coding(s) (note 20)** TCH/F28.8 acceptable TCH/F32.0 acceptable ~~(note 21)~~ TCH/F43.2 acceptable (note 22)		No comparable field
6g #4..3	**Asymmetry preference indication (Note 23)** no preference up link biased asymmetry preference down link biased asymmetry preference		No comparable field

The application rules for coding the information elements ISDN-BC/LLC/HLC as set out in ETR 018 and Q.931 (05/98) shall apply.

Other field values in the ISDN BC-IE not supported in 3G TS 24.008 are:

Information transfer rate: In this case default 64 kbit/s is selected.

Flow control on transmission: This shall be selected if outband flow control applies.

Flow control on reception: This shall be selected if outband flow control applies.

NOTE: Outband flow control is indicated by the absence of the UIL2P parameter for non-transparent connections.

User information layer 3 protocol:

Octet 7 shall not be sent unless specific application rules are given for particular cases (to be defined by PLMN). End-to-end significant User Information layer 3 protocol shall be sent by LLC.

NOTE 1: In the case where PLMN BC "Information Transfer Capability" indicates "Facsimile group 3" and only a single PLMN BC is contained in the call set-up request then this shall be mapped to an ISDN BC with:

Coding standard:	CCITT
Information Transfer capability:	3,1 kHz audio
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User layer 1 protocol:	G711 A-law or µ-law (PCS-1900)

and

- If an HLC is not present, the network will insert a "Facsimile group 2/3" HLC.
- If an HLC element is present, the network will pass it through unmodified.

In the case where PLMN BC "Information Transfer Capability" indicates "Facsimile group 3" and two PLMN BCs are contained in the call set-up request, then the same ISDN BC as mentioned above is created. If the first PLMN BC indicates "facsimile group 3" an HLC "facsimile group 2/3" will be inserted by the network (if not received from the MS). However if the first PLMN BC indicates "speech", the network will not send a HLC, irrespective where a HLC was received from the MS or not.

NOTE 2: This value is present in combination with information transfer capability parameter value "3,1 kHz audio Ex PLMN" or "facsimile group 3" and will therefore be mapped to the value "Recommendation G.711 A-law" or Recommendation G.711 µ-law" (PCS-1900) of the Q.931 (05/98) parameter user layer 1 protocol (see note 3).

NOTE 3: The value "Recommendation G.711 A-law" or "Recommendation G.711 µ-law" (PCS-1900) applies only when the Q.931 (05/98) parameter information transfer capability indicates "3,1 kHz audio" or "speech".

NOTE 4: When interworking with an ISDN according to ETS 300 102-1 octets 4a and 4b shall not be included because default values apply. In an ISDN according to Q.931 (05/98) these octets no more exist.

NOTE 5: In this case octet 5d shall not be included.

NOTE 6: Octet 6 shall not be sent unless specific application rules are given for a particular case (PLMN specified). End-to-end significant user information layer 2 protocol shall be sent by LLC.

NOTE 7: Not used for currently defined Bearer Services and Teleservices.

NOTE 8: These values will only be set if the "Information Transfer Capability" indicates "3,1 kHz audio", synchronous data transmission is used and octet 5b of the ISDN BC is present.

NOTE 9: (VOID).

NOTE 10: The PLMN BC-IE parameter value "autobauding modem type 1" will be mapped to the ISDN BC-IE parameter values "inband negotiation possible" and "user rate indicated by E-bits specified in ITU-T Recommendation I.460 or may be negotiated inband" (octet 5a of ISDN BC-IE). In case of data compression high speed modems, like V.32bis, V.34 and/or V.90 may be used in the IWF. Autobauding may also be used to support user rates less than 9.6 kbit/s towards the PSTN.

NOTE 11: The ITC value of the PLMN BC-IE "speech", "3,1 kHz audio Ex PLMN" will indicate these requirements.

NOTE 12: For the use of NIRR see 3G TS 27.001.

NOTE 13: The value of the Intermediate Rate field of the ISDN Bearer Capability information element shall only depend on the values of the User Rate and the Information Transfer Capability in the same information element. The correspondence is:

Intermediate Rate = not used if User Rate > than 19.2 kbit/s.
Intermediate Rate = 32 kbit/s if User Rate = 19,2 kbit/s or 14.4 kbit/s.

Intermediate Rate = 16 kbit/s if User Rate = 9,6 kbit/s.
Intermediate Rate = 8 kbit/s otherwise.

In case of Audio calls the value of the Intermediate Rate may be set to "not used".

NOTE 14: If compression is supported by the MSC and "data compression allowed" is indicated, then the ISDN user rate for UDI calls shall be set as follows. If the parameter “FNUR” is present the ISDN user rate shall be set to this value. Otherwise the PLMN user rate shall be mapped to an equal or any higher ISDN user rate value (in case of V.110 the highest ISDN user rate shall be 19,2 kbit/s). The Intermediate Rate shall be set to an appropriate value.(see subclause 10.2.4.11).

In case of "3,1 kHz audio" the modem shall try to negotiate data compression and flow control (see subclause 9.2.4.11). In case of "autobauding type 1" high speed modems may be used (see note 10).

NOTE 15: User rate of the PLMN -BC is overridden by the fixed network user rate of the PLMN BC-IE if available. When the MT indicates „autobauding“, „modem for undefined interface“ or „none“, the other modem type shall be set to „no other modem type“; any other value of the modem type is overridden by the other modem type value (see 3G TS 27.001). In UMTS, if octet 6d is not present in the PLMN BC, the MSC shall reject the call. The support of user rates lower than 9.6 kbit/s in UMTS are only possible in the scope of autobauding (see note 10).

NOTE 16: The ISDN-BC will consist of the octets 1 to 4 only, coded:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s

NOTE 17: V.120 interworking is selected.

If an LLC element is not present, the network will insert an LLC. If an LLC is present it may be modified. The PLMN -BC parameters negotiated with the MS shall be mapped to the LLC parameters. The LLC parameter Rate Adaptation will be set to "V.120".

When interworking with unrestricted 64 kbit/s networks the ISDN BC shall be coded according to note 16.

NOTE 18: When the MSC is directly connected to a restricted 64 kbit/s network, the ISDN BC-IE is coded with an ITC = RDI.
When indirectly interworking with a restricted 64 kbit/s network the ISDN BC-IE shall be coded according to ETR 018, as shown below:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	V.110/X.30
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
User rate:	56 kbit/s

If an LLC element is not present, the network will insert an LLC. If an LLC is present it may be modified. The PLMN -BC parameters negotiated with the MS shall be mapped to the LLC parameters according to the rules in this table. The LLC parameter Information Transfer Capability will be set to „restricted digital“

NOTE 19: In case the MS signals an ACC containing TCH/F4.8 only and the network does not support TCH/F4.8 channel coding, then the MSC may act as if TCH/F9.6 were included in the ACC.

NOTE 20: Extension of the 'Acceptable channel codings' field in octet 6e in case EDGE channel codings are supported.

NOTE 21: Void ~~Only applicable for bit transparent 56 and 64 kbit/s services.~~

NOTE 22: Only applicable for non-transparent services.

NOTE 23: This parameter shall be included if EDGE channel codings are indicated in ACC. In cases where this parameter would not otherwise be included, the value is set to 'Air interface user rate not applicable' or 'User initiated modification not requested' or 'No preference'.

NOTE 24: This value was used by services defined for former GSM releases and does not need to be supported.

NOTE 25: The case of FTM is identified by Rate adaptation in the PLMN BC-IE set to "CCITT X.31 flag stuffing", Connection element set to "non-transparent", and Synchronous/asynchronous set to "asynchronous". The parameter values shall be set according to Note 16 in case FNUR is 64 kbit/s and according to Note 18 if Other ITC is RDI.

NOTE 26: In the case FNUR=64 kbit/s the ISDN BC-IE shall be coded as follows:

Coding standard:	ITU-T
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	H.223 and H.245

In the case FNUR=56 kbit/s the ISDN BC-IE shall be coded as in note 18.

In the case FNUR=32 kbit/s the ISDN BC-IE shall be coded as follows:

Coding standard:	ITU-T
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	V.110, I.460 & X.30
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
User rate:	32 kbit/s

In the case FNUR=28.8 kbit/s the ISDN BC-IE shall be coded as follows:

Coding standard:	ITU-T
Information Transfer capability:	3.1 kHz Audio
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	G.711 A-law or µ-law
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
Modem type:	V.34
User rate:	28.8 kbit/s

In the case FNUR=33.6 kbit/s the ISDN BC-IE shall be coded as follows:

Coding standard:	ITU-T
Information Transfer capability:	3.1 kHz Audio
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	G.711 A-law or µ-law

NOTE 27: In the case the FNUR=32 kbit/s the ISDN BC-IE shall be coded for PIAFS as follows:

Coding standard:	ITU-T
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	V.110, I.460 and X.30
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
User rate:	32 kbit/s

In the case of a FNUR=64 kbit/s the ISDN BC-IE shall be coded for PIAFS as in note 16.

Table 7B: Comparable setting of parameters in PLMN and ISDN: Mobile Terminated

Octet	ISDN BC parameter value	Octet	PLMN BC parameter value
1	**Bearer Capability IEI**	1	**Bearer Capability IEI**
2	**Length of BC contents**	2	**Length of BC contents**
	no comparable field	3 #7..6	**Radio channel requirement** (note 1) half rate channel full rate channel both, half rate preferred both, full rate preferred
3 #7..6	**Coding standard** CCITT standardized coding	3 #5	**Coding standard** GSM standardized coding
3 #5..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio no comparable value no comparable value 7 kHz audio video (note 23)	3 #3..1	**Information transfer capability** speech unrestricted digital 3,1 kHz audio ex PLMN (note2) facsimile group 3 (note 3) other ITC (see octet 5a) not supported not supported
		5a #7..6	**Other ITC** restricted digital
4 #7..6	**Transfer mode** circuit mode packet mode	3 #4	**Transfer mode** circuit mode circuit mode
4 #5..1	**Information transfer rate** 64 kbit/s		 no comparable field
	No comparable field	4 #7	**Compression** (note 18) data compression possible data compression not possible
	No comparable field (note 4)	(4) 4 #6..5	**Structure** (note 9) SDU integrity unstructured
4a #4..3	No comparable field (note 4)	4 #3	**Configuration** point-to-point (note 5)
	No comparable field	4 #2	**NIRR** (note 17) No meaning Data ≤ 4.8 kbit/s, FR nt, 6 kbit/s radio interface requested
4a #2..1	No comparable field (note 4)	4 #1	**Establishment** demand (note 5)
4b #7..6			
4b #5..1			

(continued)

Table 7B (continued): Comparable setting of parameters in PLMN and ISDN: Mobile Terminated

Octet	ISDN BC parameter value	Octet	PLMN BC parameter value
5 #5..1	**User information layer 1 protocol** no comparable value CCITT V.110, I.460 / X.30 G.711 A-law CCITT X.31 flag stuffing no comparable value No comparable value H.221 & H.242(note 28) H.223 & H.245	5 #5..4	**Rate adaption** no rate adaption (note 11) V.110, I.460/X.30 rate adaption no comparable value CCITT X.31 flag stuffing other rate adaption (see octet 5a)
		5a #5..4	**Other rate adaptation** V.120 (note 24) PIAFS H.223 & H.245 H.223 & H.245
	no comparable field	5 #3..1	**Signalling access protocol** I.440/I.450 X.21 X.28, ded.PAD, indiv.NUI (note 26) X.28, ded.PAD, univ.NUI (note 26) X.28, non-ded.PAD X.32
	see above	6 #5..2	**User information layer 1 protocol** default layer 1 protocol
5a #7	**Synchronous / asynchronous** synchronous asynchronous	6 #1	**Synchronous/asynchronous** synchronous asynchronous
5a #6	**Negotiation** not possible inband neg, possible (note 16)	6a #6	**Negotiation** not possible no comparable value

(continued)

Table 7B (continued): Comparable setting of parameters in PLMN and ISDN: Mobile Terminated

Octet	ISDN BC parameter value	Octet	PLMN BC parameter value
5a #5..1	**User rate** 0,3 kbit/s 1,2 kbit/s 2,4 kbit/s 4,8 kbit/s 9,6 kbit/s 12 kbit/s rate is indicated by Ebit as specified in rec. I.460 0,6 kbit/s 3,6 kbit/s 7,2 kbit/s 8 kbit/s 14,4 kbit/s 16 kbit/s 19.2 kbit/s 28.8 kbit/s 32 kbit/s 38.4 kbit/s 48 kbit/s 56 kbit/s 57.6 kbit/s 0,1345 kbit/s 0,1 kbit/s 75 bit/s / 1,2 kbit/s 1,2 kbit/s / 75 bit/s 0,110 kbit/s 0,2 kbit/s	6a #4..1	**User rate (note 18 and 29)** 0,3 kbit/s 1,2 kbit/s 2,4 kbit/s 4,8 kbit/s 9,6 kbit/s 12 kbit/s (note 13) **(**note 16) not supported not supported not supported not supported (note 20) not supported (note 20) (note 20) (note 20) (note 20) (note 20) (note 20) not supported not supported not supported not supported not supported not supported not supported
5b #7..6	**Intermediate rate** not used (note 19) 8 kbit/s 16 kbit/s 32 kbit/s	6b #7..6	**Intermediate rate** (note 6) (note 18) 8 or 16 kbit/s 8 kbit/s 16 kbit/s
5b #5	**NIC on Tx** (note 14) does not require requires	6b #5	**NIC on Tx** does not require requires (note 13)
5b #4	**NIC on Rx** (note 14) cannot accept can accept	6b #4	**NIC on Rx** cannot accept can accept (note 13)
5b #3	**Flow control on Tx** (note 15) Not Required Required		no comparable field
5b #2	**Flow control on Rx** (note 15) Cannot Accept Accept		no comparable field
5c #7..6	**Number of stop bits** 1 bit 2 bits not used 1.5 bits	6a #7	**Number of stop bits** 1 bit 2 bits no comparable value not supported

(continued)

Table 7B (continued): Comparable setting of parameters in PLMN and ISDN: Mobile Terminated

Octet	ISDN BC parameter value	Octet	PLMN BC parameter value
5c #5..4	**Number of data bits** 7 bits 8 bits not used 5 bits	6a #5	**Number of data bits** 7 bits 8 bits no comparable value not supported
5c #3..1	**Parity information** odd even none forced to 0 forced to 1	6b #3..1	**Parity information** odd even none forced to 0 forced to 1
	no comparable field	6c #7..6	**Connection element** (note 1) transparent non-transparent (RLP) both, transp. preferred both, non-transp preferred
5d #7	**Duplex mode** half duplex full duplex	4 #4	**Duplex mode** half duplex (note 13) full duplex (note 5)
5d #6..1	**Modem type** reserved V.21 V.22 V.22bis V.23 V.26ter V.32 V.26 V.26bis V.27 V.27bis V.29 no comparable value	6c #5..1	**Modem type** (note 12) none (note 7) V.21 V.22 V.22bis not supported V.26ter V.32 not supported not supported not supported not supported not supported autobauding type 1 (note 16)
5a #5..1	**User rate** no comparable value 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s 38,4 kbit/s 48 kbit/s 56 kbit/s no comparable value	6d #5..1	**Fixed network user rate** (note 20) FNUR not applicable 9,6 kbit/s 14,4 kbit/s 19,2 kbit/s 28,8 kbit/s 32.0 kbit/s (note 27) 38,4 kbit/s 48,0 kbit/s 56,0 kbit/s 64,0 kbit/s (note 22)
	Modem type no comparable value (note 21) V.34	6d #7..6	**Other modem type** No other modem type V.34

(continued)

Table 7B (concluded): Comparable setting of parameters in PLMN and ISDN: Mobile Terminated

Octet	ISDN BC parameter value	Octet	PLMN BC parameter value
	No comparable field	6f #7..5	**User initiated modification indicator (note 1) (note 25)** User initiated modification not required User initiated modification upto 1 TCH/F may be requested User initiated modification upto 2 TCH/F may be requested User initiated modification upto 3 TCH/F may be requested User initiated modification upto 4 TCH/F may be requested
6 #5..1	**User information layer 2 protocol (note 10)** Q.921 (I.441) X.25, link level no comparable value	7	**User information layer 2 protocol (note 8)** no comparable value X.25, link level ISO 6429, codeset 0
7	**User information layer 3 protocol (note 10)** Q.931 (I.451) X.25, packet level		 not supported not supported

General notes:

1) Other ISDN BC parameter values than those listed in the table, if indicated in the BC-IE, will be rejected by clearing the call, exception see mapping note 4.

2) Only the PLMN BC parameter values listed in the table may be generated (comparable values) during a mobile-terminated call by mapping the ISDN BC parameter values, exception see (10).

3) According to Q.931 (05/98) and 3G TS 24.008, respectively, the octets are counted from 1 to n onwards; the bit position in a particular octet is indicated by #x..y, with {x,y} = 1..8 (bit 1 is the least and bit 8 the most significant bit).

4) If octets 5 to 5d of the ISDN BC are absent but present in the LLC, the LLC octets should apply for the mapping as indicated above. In the case of V.120 interworking (see note 24) these LLC octets shall apply.

5) If within the ISDN BC the parameters information transfer capability indicates "3,1 kHz audio" and user layer 1 protocol indicates "G711 A-law" or "G.711 µ-law" (PCS-1900) but no modem type is available and the HLC does not indicate "facsimile group 3", octets 5 to 5d of the LLC, if available, apply for the above mapping procedure.

6) The number of octets which shall be encoded for the PLMN BC-IE must comply to encoding rules in 3G TS 24.008 and the combination of the different parameter values shall be in accordance to 3G TS 27.001.

NOTES regarding the mapping:

1) This PLMN parameter value is inserted according to user rate requirements and network capabilities / preferences.

2) This PLMN parameter value is inserted, if the information transfer capability in ISDN BC is "3,1kHz audio" and a comparable modem type is specified.

3) This PLMN parameter value is inserted, if the information transfer capability is "3,1 kHz audio" and the content of the HLC-IE, if any, indicates "facsimile group 2/3", (for details refer to subclause 10.2.2 case 3 for HLR action and case 5 for VMSC action). Note that via MAP the value "alternate speech/facsimile group 3 - starting with speech" shall be used, when TS 61 applies.

4) When interworking with an ISDN according to ETS 300 102-1, octets 4a and 4b may be present. The values are ignored and PLMN values are set according to notes 5 and 9.

5) This PLMN parameter value is inserted if the comparable ISDN parameter value is missing.

6) The value of the Intermediate Rate field of the GSM Bearer Capability information element shall only depend on the values of the user rate or the radio channel requirement in the same information element. If the connection element is "transparent“, the value is 16 kbit/s, if the user rate is 9.6 or 12 kbit/s, and 8 kbit/s otherwise. For any other connection element setting the value is 16 kbit/s, if the radio channel requirements are "full rate" or "dual, full rate preferred", or "dual, half rate preferred", and 8 kbit/s, if the radio channel requirements is "half rate".

7) This PLMN BC parameter value is inserted, if the PLMN BC parameter "Information Transfer Capability" indicates "Unrestricted digital information", "facsimile group 3" or "alternate speech/facsimile group 3, starting with speech".

8) Where the network indicates "asynchronous" and connection elements "non-transparent", "both, transparent preferred" or "both, non-transparent preferred" , then the GSM BC should be forwarded without parameter user information layer 2 protocol, see also (10).

9) The PLMN parameter value shall be set to "unstructured" where the network indicates connection element "transparent". Where the network indicates connection elements "non transparent" "both, transparent preferred" or "both, non transparent preferred" the value of the parameter structure shall be set to "SDU Integrity".

10) Mapping of parameter values of this octet to PLMN BC parameters and values are subject to specific application rules, i.e. unless otherwise explicitly stated in an appropriate TS mapping to PLMN BC parameters shall not take place.

11) This value shall be used when the value of the PLMN BC parameter "Information Transfer Capability" indicates the value "3,1 kHz audio ex PLMN", "facsimile group 3" or "alternate speech/facsimile group 3, starting with speech" which is reserved for MAP operations.

12) The modem encoding of both Q.931 (05/98) and ETS 300 102-1 version 1 shall be accepted and mapped according to 3G TS 24.008.

13) Value not used for currently defined bearer services and Teleservices.

14) NIC is only supported in GSM for "3,1 kHz Ex PLMN audio" interworking with synchronous data transmission.

15) Because the required flow control mechanism can not be indicated to the MS (refer to 3G TS 27.001), the network shall check if the flow control mechanism selected by the MS and indicated in the CALL CONFIRMED message suits to the requirements requested by the ISDN terminal adaptor. In case of a mismatch the call shall be released in the IWF.

    Because an asymmetric flow control mechanism (with respect to transmitting and receiving side) is not supported in the PLMN, the different values of the ISDN BC-IE parameters "flow control on Tx" and "flow control on Rx" shall be interpreted in the following way:

    - "Flow control on Rx" set to "accepted" matches with "outband flow control", irrespective of the value of the parameter "flow control on Tx".

    - "Flow control on Rx" set to "not accepted" and "flow control on Tx" set to "not required" matches with "inband flow control" and "no flow control".

    - where "Flow control on Rx" is set to "not accepted" and "flow control on Tx" to "required" the call shall be released by the IWF.

16) If in case of 3,1 kHz audio interworking "inband negotiation possible" is indicated and the parameter user rate is set to "rate is indicated by E bits specified in Recommendation I.460 or may be negotiated inband" the user rate in the PLMN BC-IE shall be set according to a network preferred value, whereas the preferred value of the Radio Channel Requirement shall be considered. If ISDN-BC parameter modem type is present, its value shall be ignored. The PLMN-BC parameter modem type shall be set according to the user rate in case of connection element "transparent" and to "autobauding type 1" in case of connection element "non transparent", "both, transparent preferred" or "both, non transparent preferred". In case of data compression high speed modems, like V.32bis, V.34 and/or V.90 may be used in the IWF. Autobauding may also be used to support user rates less than 9.6 kbit/s towards the PSTN.

    For unrestricted digital interworking the call shall be rejected if these values are indicated.
    If the PLMN-BC parameter modem type indicates "autobauding type 1" or "none", then the PLMN-BC parameter other modem type shall be set to "no other modem type".

17) For the use of NIRR see 3G TS 27.001. The VMSC shall set this parameter dependent upon its capabilities and preferences.

18) If compression is supported by the MSC, the value "data compression possible" may be set. Depending on the capabilities of the MSC, the user rate value and the intermediate rate value is set to an appropriate value.

19) Only applicable if the parameter ISDN-BC ITC indicates "3,1 kHz audio" and for "UDI" calls if User Rate > "19.2 kbit/s".

20) The user rate of the PLMN BC is set to the value for the fall-back bearer service. In case the mobile station does not support the fixed network user rate (i.e. the call confirmation message does not contain the fixed network user rate parameter), the network may release the call for a transparent connection element.

21) The modem type parameter of the PLMN -BC is taken into account, only.

22) In case no LLC is received and the ISDN-BC received consists of octets 1 to 4 only, coded:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64kbit/s

the following PLMN -BC parameters, shall be set to:

fixed network user rate:	64 kbit/s
connection element:	transparent bothNT or bothT (If IWF supports FTM or PIAFS)

The other parameters of the PLMN -BC shall be set to values indicating a fall-back service.

23) When the MSC is directly connected to a restricted 64 kbit/s network, the ISDN BC-IE is coded with an ITC = RDI.
An ISDN BC-IE, as specified in ETR 018 and shown below, shall be taken to indicate that interworking with an indirectly connected restricted 64 kbit/s network is required:

Coding standard:	CCITT
Information Transfer capability:	UDI
Transfer mode:	circuit
Information transfer rate:	64 kbit/s
User information layer 1 protocol:	V.110/X.30
Synchronous/Asynchronous:	synchronous
Negotiation:	In-band negotiation not possible
User rate:	56 kbit/s

In this case the PLMN BC parameter Information Transfer Capability is set to „Other ITC“ and Other ITC parameter is set to „restricted digital“.If ISDN LLC exists, all the corresponding fields in the PLMN BC shall be derived from the ISDN LLC. Otherwise, the corresponding fields in the UMTS BC shall be derived from the ISDN BC. In the above both case, Connection element is set as follows.

Connection element:	transparent bothNT or bothT (If IWF supports FTM)

24) V.120 interworking is required if the ISDN LLC parameter User Information Layer 1 Protocol is set to „V.120“. In this case the PLMN BC parameter Rate Adaptation is set to „Other rate adaptation“ and Other Rate Adaptation parameter is set to „V.120“. All the corresponding fields in the GSM BC shall be derived from the ISDN LLC.

25) This parameter is only included in case of non-transparent multislot connections.

26) This value was used by services defined for former GSM releases and does not need to be supported.

27) Following ~~UMTS~~ BC parameters in SETUP message shall be set to:

Fixed network user rate	32 kbit/s
Connection element	transparent (for multimedia) bothNT or bothT (If IWF supports PIAFS, UMTS only)

28) UIL1P is set to “H.221 & H.242” or “H.223 & H.245” by H.324/I. In the case where UIL1P is set to “H.221 & H.242”, this should be mapped to “H.223 & H.245”.

29) In UMTS, if the User Rate of the ISDN BC is less than 9.6 kbit/s and the Connection Element is mapped to “NT”, then FNUR is fixed to 9.6 kbit/s.

3GPP TSG-CN3 Meeting #12
Seattle, USA 28th August – 01st September 2000

Document N3-000453
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

27.001	CR		Current Version:	3.5.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG_N #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]

Source: TSG_N3 **Date:** 28/08/00

Subject: 32 kbit/s UDI/RDI multimedia in GSM

Work item: Technical enhancements and improvements (TEI)

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Removal of barriers to use the 32 kbit/s UDI/RDI multimedia in GSM.

Clauses affected: Annex A, table B.5a, table B.1.3.1.6.

Other specs Affected:

Other 3G core specifications	X	→ List of CRs:	22.002, 29.007, 48.008
Other GSM core specifications	X	→ List of CRs:	03.10, 04.21, 08.08, 08.20, 08.58
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

Annex A (informative): List of Bearer Capability Elements

This annex lists the PLMN Bearer Capability Elements which need to be provided to support Terminal adaptation function to Interworking control procedures. Some parameters are ignored in UMTS although present in the BC-IE. The validity of parameter values may also differ from GSM to UMTS. The ignored parameters and the difference of parameter value vality in GSM and UMTS are listed in Table B.5a in Annex B.

Elements and their Values:

Information Transfer Capability:

This element is relevant between the IWF and the fixed network

Values:
- Speech
- Unrestricted Digital
- Group 3 Facsimile (note 1)
- 3.1 kHz Ex PLMN (note 2)
- Restricted Digital (note 3)

NOTE 1: Used for facsimile transmission, unrestricted digital between MT and IWF and 3.1 kHz audio from IWF towards the fixed network.

NOTE 2: Unrestricted digital between MT and IWF and 3.1 kHz audio from IWF towards the fixed network.

NOTE 3: Unrestricted digital between MT and IWF and restricted digital information from IWF towards the fixed network; this value is signalled in the "Other ITC" element, due to a lack of further code points in the "ITC" element.

Transfer Mode:

This element is relevant between MT and IWF

Values:
- Circuit
- Packet

Structure:

This element is relevant between MT and IWF.

Values:
- Service Data Unit Integrity (note 4)
- Unstructured (note 5)

NOTE 4: Applicable for connection element "non transparent".

NOTE 5: Applicable for connection element "transparent".

Configuration:

This element is relevant for a PLMN connection.

Values:
- Point to point

Establishment:

This element is relevant for a PLMN connection.

Values:
- Demand

Sync/Async:

This element is relevant between TE/TA and MT and between IWF and the fixed network.

Values:
- Synchronous
- Asynchronous

Negotiation:

This element is relevant between MT and IWF.

Values:
- In band negotiation not possible

User Rate:

This element is relevant between TE/TA and MT and between IWF and the fixed network, except in case the parameter FNUR is present.

Values:
- 0.3 kbit/s
- 1.2 kbit/s
- 2.4 kbit/s
- 4.8 kbit/s
- 9.6 kbit/s
- 19.2 kbit/s (see note 6)

NOTE 6: This value cannot be signalled between MT and IWF, but it can be used according to the rules in 3G TS 29.007 (Table 7A, 7B) for such connections.

Intermediate Rate:

This element is relevant between MT and BSS and BSS and IWF

Values:
- 8 kbit/s
- 16 kbit/s

Network Independent Clock on Tx:

This element is relevant between TE/TA and MT in the transmit direction.

Values:
- Not required
- Required

Network Independent Clock on Rx:

This element is relevant between TE/TA and MT in the receive direction.

Values:
- Not accepted
- accepted

Number of Stop Bits:

This element is relevant between the TE/TA and MT and between IWF and fixed network in case of asynchronous transmission.

Values:
- 1 bit
- 2 bit

Number of Data Bits Excluding Parity If Present:

This element is relevant between TE/TA and MT and between IWF and the fixed network in case of a character oriented mode of transmission.

Values:
- 7 bit
- 8 bit

Parity Information:

This element is relevant between TE/TA and MT and between IWF and the fixed network for a character oriented mode of transmission.

Values:
- Odd
- Even
- None
- Forced to 0
- Forced to 1

Duplex Mode:

This element is relevant between MT and IWF.

Values:
- Full Duplex

Modem Type:

This element is relevant between the IWF and the fixed network in case of 3.1 kHz audio ex-PLMN information transfer capability.

Values:
- V.21
- V.22
- V.22 bis
- V.26 ter
- V.32
- autobauding type 1
- none

Radio Channel Requirement:

This element is relevant between MT and BSS

Values:
- Full Rate support only Mobile Station
- Dual Rate support Mobile Station/Half Rate preferred
- Dual Rate support Mobile Station/Full Rate preferred

Connection Element:

This element is relevant between MT and IWF

Values:
- Transparent
- Non Transparent
- both, Transparent preferred
- both, Non transparent preferred

User Information Layer 2 Protocol:

This element is relevant between TE/TA and MT and between IWF and the fixed network.

Values:
- ISO 6429
- X.25
- X.75 layer 2 modified (CAPI)
- Character oriented Protocol with no Flow Control mechanism

Signalling Access Protocol:

This element is relevant between TE/TA and MT.

Values: - I.440/450
- X.32

Rate Adaptation:

This element is relevant between IWF and the fixed network.

Values: - V.110/X.30
- X.31 flagstuffing
- no rate adaptation
- V.120 (note 7)
- PIAFS (note 7) - H.223 and H.245 (note 7)

NOTE 7: This value is signalled in the "Other Rate Adaption" element, due to a lack of further code points in the "Rate Adaption" element.

Coding Standard:

This element refers to the structure of the BC-IE defined in 3G TS 24.008.

Values: - GSM

User Information Layer 1 Protocol:

This element characterize the layer 1 protocol to be used between MT and BSS (Um interface) according to GSM 05.01, or between the MT and the RNC (Uu interface).

Values: - default

Negotiation of Intermediate Rate requested:

This element is relevant between MT and BSS and BSS and IWF.

Values: - no meaning associated
- 6 kbit/s radio interface is requested for a full rate channel with a user rate up to and including 4.8 kbit/s, non transparent service

Compression:

This element is relevant between MT and IWF.

Values: - compression possible/allowed
- compression not possible/allowed

Rate adaption header / no header:

This element is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Rate adaption header not included
- Rate adaption header included

Multiple frame establishment support in data link:

This element is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Multiple frame establishment not supported. Only UI frames allowed.
- Multiple frame establishment supported.

Mode of operation:

This element is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Bit transparent mode of operation
- Protocol sensitive mode of operation

Logical link identifier negotiation:

This element is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Default, LLI=256 only
- Full protocol negotiation (note 8)

NOTE 8: A connection over which protocol negotiation will be executed is indicated in the „In-band / out-band negotiation" parameter.

Assignor / assignee:

This element is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Message originator is „default assignee"
- Message originator is „assignor only"

In-band / out-band negotiation:

This element is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Negotiation is done with USER INFORMATION messages on a temporary signalling connection
- Negotiation is done in-band using logical link zero.

Fixed network user rate, FNUR (Note 12)

This element is relevant between the IWF and the fixed network.

Values - Fixed network user rate not applicable (note 9)
- 9.6 kbit/s
- 14.4 kbit/s
- 19.2 kbit/s
- 28.8 kbit/s
- 32.0 kbit/s
- 38.4 kbit/s
- 48.0 kbit/s
- 56.0 kbit/s
- 64.0 kbit/s

NOTE 9: Not used by currently specified services.

Wanted air interface user rate, WAIUR (note 12)

This element is relevant between the MT and the IWF

Values - Air interface user rate not applicable
- 9.6 kbit/s
- 14.4 kbit/s
- 19.2 kbit/s
- 28.8 kbit/s
- 38.4 kbit/s
- 43.2 kbit/s
- 57.6 kbit/s

- interpreted by the network as 38.4 kbit/s (note 10)

NOTE 10: Certain code points, if used, will be interpreted by the network as 38.4 kbit/s in this version of the protocol, ref TS 24.008.

Acceptable channel codings, ACC (note 12)

This element is relevant between the MT and the IWF.

Value: - TCH/F4.8 acceptable
- TCH/F9.6 acceptable
- TCH/F14.4 acceptable
- TCH/F28.8 acceptable
- TCH/F32.0 acceptable (Applicable to multimedia 32, 56 and 64 kbit/s and bit transparent 56 and 64 kbit/s services only)
- TCH/F43.2 acceptable (Applicable to non-transparent services only.)

Maximum number of traffic channels, MaxNumTCH (Note 12)

This element is relevant between the MT and the IWF.

Value: - 1 TCH
- 2 TCH
- 3 TCH
- 4 TCH
- 5 TCH
- 6 TCH
- 7 TCH (note11)
- 8 TCH (note11)

NOTE11: Not used by currently specified services.

Other modem type, OMT (Note 12)

This element is relevant between the IWF and the fixed network in case of 3.1 kHz audio ex-PLMN

Values: - no other modem type specified in this field
- V.34

User initiated modification indication, UIMI (Note 12)

This element is relevant between the MT and the IWF.

Values: - user initiated modification not requested
- user initiated modification upto 1 TCH requested
- user initiated modification upto 2 TCH requested
- user initiated modification upto 3 TCH requested
- user initiated modification upto 4 TCH requested

Asymmetry preference indication (Note 12)

This element is relevant between the MT and the BSS.

Value: no preference
up link biased asymmetry preference
down link biased asymmetry preference

NOTE 12: These GBS-related parameters are optional.

For a multislot configuration, the following applies to the parameters contained in the BC-IE:

- Half rate channels are not supported. The MS shall code the radio channel requirement as "Full rate support only MS" or "Dual rate support MS, full rate preferred'. In the second case, the network shall assign full rate channel(s) only.

- The ‘fixed network user rate’ and ‘other modem type’ (ref. table B.4a) takes precedence over the ‘user rate’ and ‘modem type’.

- The ACC indicates which channel coding is acceptable and supported by the MS. In case of CE:NT the TCH/F4.8 and TCH/F9.6 acceptable is equivalent to the support of NIRR. If TCH/F4.8 acceptable only or TCH/F9.6 acceptable only or TCH/F14.4 acceptable only is indicated, the assigned channel type which can be chosen by the network is TCH/F4.8 or TCH/F9.6 or TCH/F14.4, respectively.

- The ‘intermediate rate’ parameter is overridden. The intermediate rate used per each TCH/F is derived from the chosen channel type:

channel type	**IR per TCH/F**
TCH/F4.8	8 kbit/s
TCH/F9.6	16 kbit/s
TCH/F14.4	intermediate rate is to be defined

- The user rate per TCH is derived from the chosen channel type:

channel type	**user rate per TCH**
TCH/F4.8	4.8 kbit/s
TCH/F9.6	9.6 kbit/s

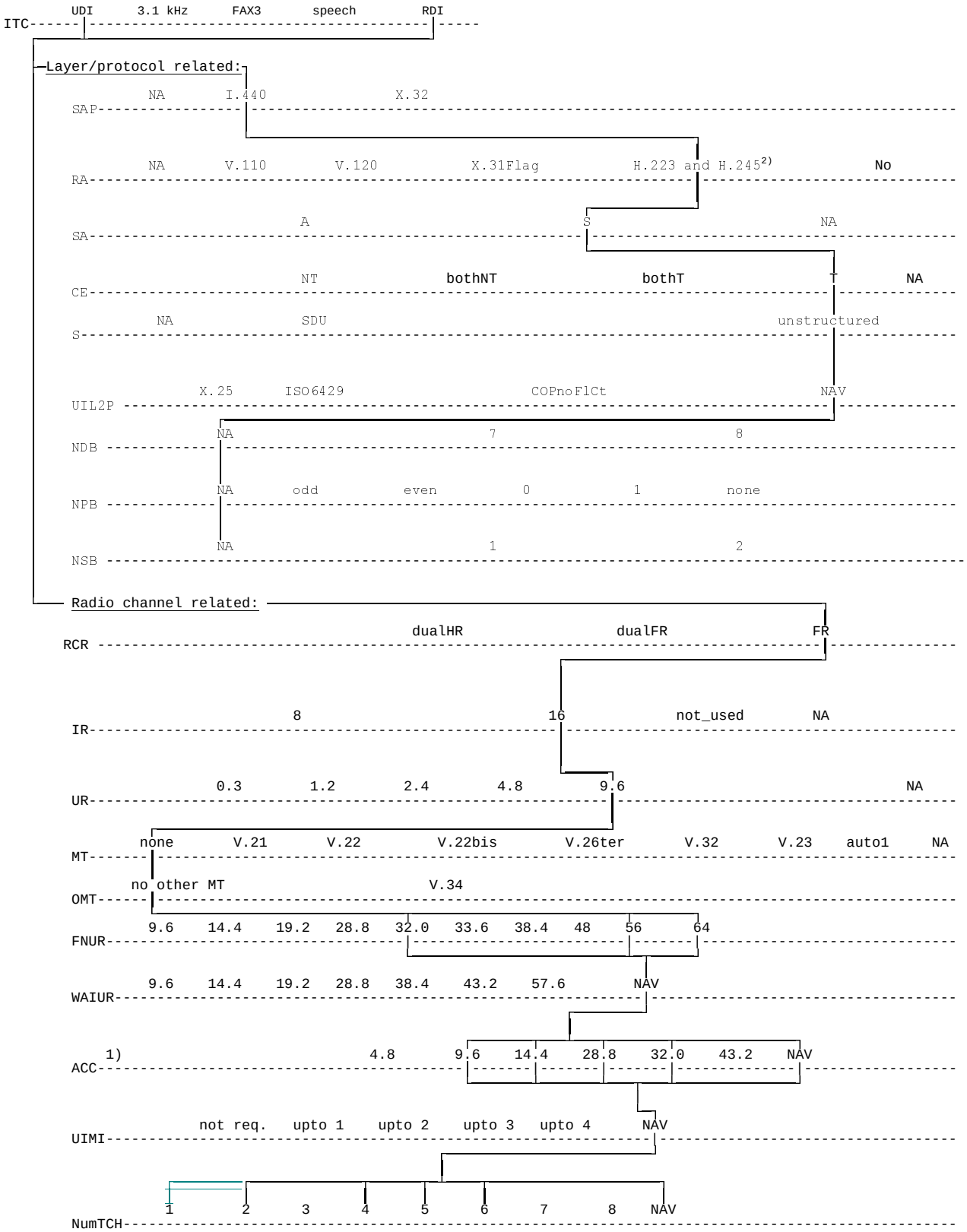
  For CE:T, the padding procedure described in GSM 04.21 can be applied.

Table B.5a: Differences in parameter value validity in GSM and UMTS

Parameter / *value*	GSM	UMTS
Radio Channel Requirements / *any*	valid	ignored
User rate / *any*	valid	ignored
Intermediate Rate / *any*	valid	ignored
NIC on transmission / *any*	valid	ignored
NIC on reception / *any*	valid	ignored
Negotiation of IR requested / *any*	valid	ignored
Acceptable Channel Codings / *any*	valid	ignored
Maximum number of traffic channels / *any*	valid	ignored
User initiated modification indication / *any*	valid	ignored
Asymmetry preference indication/ *any*	valid	ignored
Modem type /		
V.21, V.22, V.22bis, V.26ter	valid	invalid
V.32	valid	invalid for CE=T
Fixed Network User Rate /		
32 kbit/s	Invalid for CE = NT	valid
~~*32,*~~ *33.6 kbit/s*	invalid	valid
9.6, 14.4, 19.2, 38.4	valid	invalid for CE=T
48.0	valid	invalid
Other Rate adaptation /		
H.223 and H.245	valid	valid
PIAFS	invalid	valid

NOTE: Although a parameter value is marked as "valid", the validity may be restricted by rules given elsewhere in this specification.

B.1.3.1.6 3G-H.324/M Case



1) ACC may have several values simultaneously (bit map coding).

2) This value is interpreted as "No rate adaptation" in GSM.

3GPP TSG-CN3 Meeting #12
Seattle, USA 28th August – 01st September 2000

Document N3-000455
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

08.20	CR		Current Version:	8.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG_N #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSG_N3 **Date:** 28/08/00

Subject: 32 kbit/s UDI/RDI multimedia in GSM

Work item: Technical enhancements and improvements (TEI)

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Removal of barriers to use the 32 kbit/s UDI/RDI multimedia in GSM.

Clauses affected: 16.2

Other specs Affected:

Other 3G core specifications	X	→ List of CRs:	22.002, 27.001, 29.007, 48.008
Other GSM core specifications	X	→ List of CRs:	03.10, 04.21, 08.08, 08.58
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

16.2 TCH/F14.4, TCH/F28.8, and TCH/F32.0 channel codings

16.2.1 User rate adaptation on the A interface, AIUR less or equal to 56 kbit/s

The A-TRAU frame is used for transparent user data rates other than 32 kbit/s on the A interface. These A-TRAU frames are transmitted on up to four substreams multiplexed into one stream sent over the A interface. The split/combine function is applied on the substreams as specified in clause 7 of this TS. The relation between the AIUR and the number of channels is specified in table 12.

In a given A-TRAU frame on the A interface:

- for 14 400 bit/s there is no repetition of bits D within the 16 kbit/s stream in a given A-TRAU frame on the A interface.

The CCITT I.460 rate adaptation is used for the transparent 32 kbit/s user rate on the A interface, i.e. four bits of each octet in the 64 kbit/s time slot are used for transporting the 32 kbit/s user data.

16.2.2 User Rate Adaptation on the A-interface, AIUR greater than 56 kbit/s

For AIUR of 64 kbit/s one stream consisting of CCITT V.110 32 bit frames or 64 bit frames, as specified in GSM 04.21 is transmitted over the A-interface. Splitting/Combining which occurs in the BSS, is as specified in GSM 04.21.

Table 12 gives the relation between the User Rate, Substream Rate Channel Coding and the Intermediate Rate.

16.2.3 Relation between AIUR and the number of channels

Table 12: Relationship between the AIUR, AIUR per substream, channel coding, intermediate rate and number of substreams

AIUR	Number of substreams x AIUR per substream	Channel Coding	Multislot intermediate Rate (note 1)
14,4 kbit/s	14,4 kbit/s	TCH/F14.4	16 kbit/s
28,8 kbit/s	2X14,4 kbit/s	TCH/F14.4 TCH/F28.8	16 kbit/s
32 kbit/s	1x32 kbit/s	TCH/F32.0	32 kbit/s
38,4 kbit/s	3X14,4 kbit/s w/padding	TCH/F14.4	16 kbit/s
48 kbit/s	4X14,4 kbit/s w/padding	TCH/F14.4	16 kbit/s
56 kbit/s	4X14,4 kbit/s w/padding 1x64.0 kbit/s (Note 2)	TCH/F14.4 TCH/F32.0	16 kbit/s 64 kbit/s
64kbit/s	5X14,4 kbit/s w/padding 1x64.0 kbit/s (Note 2)	TCH/F14.4 TCH/F32.0	64 kbit/s
NOTE 1: For AIURs ≤ 56 kbit/s this column indicates the multislot intermediate rate: for higher AIURs it indicates the intermediate rate. Note 2: One substream over two air interface timeslots. No multislot intermediate rate.			

16.2.4 Handling of status bits X and SB

The X and SB bits are carried over the A interface in a multiframe structure as described in subclause 8.1.1.1 of GSM 04.21. SA bit is not carried over the A interface.

The handling of the status bits will comply with the synchronisation procedures for transparent services which are as described in GSM 09.07 (MSC), GSM 04.21 (BSS), GSM 07.01 (MS).

3GPP TSG-CN3 Meeting #12
Seattle, USA 28th August – 01st September 2000

Document N3-000456
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

03.10	CR		Current Version:	8.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG_N #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSG_N3 **Date:** 28/08/00

Subject: 32 kbit/s UDI/RDI multimedia in GSM

Work item: Technical enhancements and improvements (TEI)

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Removal of barriers to use the 32 kbit/s UDI/RDI multimedia in GSM.

Clauses affected: 6, 7, Annex A

Other specs Affected:

Other 3G core specifications	X	→ List of CRs:	22.002, 27.001, 29.007, 48.008
Other GSM core specifications	X	→ List of CRs:	04.21, 08.08, 08.20, 08.58
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

6.1.1 Rate adaptation

The RA0 rate adaptation is only used with asynchronous interfaces. Incoming asynchronous data is padded by the addition of stop elements to fit the same or nearest higher synchronous rate defined by 2 to the power n (where n≤ 6) times 600 bit/s, 14.4 kbit/s or 28.8 kbit/s. Thus 300 bit/s user data signalling rate shall be adapted to a synchronous 600 bit/s stream. This function is described in GSM 04.21. The RA0 used in GSM is not identical to that described in ITU-T Recommendation V.110 which converts the 14,4 and 28,8 kbit/s user rates to 19,2 and 38,4 kbit/s, respectively.

The intermediate rate adaptation function (RA1) is a rate adaptation function which turns either the output of the RA0 function or a synchronous user data stream into a data stream at 8, 16, or 32 kbit/s by bit repetition and frame addition. This function is described in GSM 04.21.

The adaptation of intermediate rates to 64 kbit/s (RA2) performs the final conversion from the intermediate rates generated by the RA1 function to 64 kbit/s.

The radio interface intermediate rate adaptation function (RA1') is in the case of transparent data transmission a variant of the RA1 function and it adapts synchronous user data stream or the output of the RA0 function to one of the following data rates: 3.6, 6.0 or 12.0 or 14.5 kbit/s over the radio path. In case of a TCH/F28.8 channel two 14.5 kbit/s substreams produced by the RA1' function are multiplexed into a 29.0 kbit/s air interface channel by an EDGE multiplexing function. For the non-transparent case, the RA1' function provides direct access to the 12.0 or 6.0 kbit/s data rates. This is achieved by allowing the V.110 frame status bits to be used as additional data bits. This function is described in GSM 04.21 and GSM 08.20. RA1' is not applied in TCH/F14.4 or EDGE non-transparent operation.

For TCH/F14.4 channel coding three GSM-specific adaptation functions are used: namely, RA1'/RAA', RAA', and RAA'' (GSM 08.20). On the network side of the air interface, the 14.5 kbit/s substreams multiplexed into a 29.0 or 43.5 kbit/s air interface channel are transferred just as in a multislot connection of TCH/F14.4 substreams. RA1'/RAA' adapts between the 14.5 air-interface rate and the 16 kbit/s rate used across the Abis-interface. RAA' adapts between the 16 kbit/s Abis Interface-rate and 16.0 kbit/s A-interface substream. (Up to four such A-interface substreams may be multiplexed into the 64kbit/s A-interface stream). RAA'' converts between the A-interface data substream(s) and the overall synchronous stream. In non-transparent operation the RAA'' converts between the A-interface stream and the 290-bit blocks containing bits M1, M2, and 288 data bits as described in GSM 04.21.

In multislot data configurations the intermediate rates 16, 32, and 64 kbit/s are supported on those sections of the network where the overall data stream is not split into multiple channels (GSM 04.21 and 08.20). RA1-adaptation is not applied to rates higher than 38.4 kbit/s. Instead, a GSM-specific rate adaptation function RA1'' to user rates 48 and 56 kbit/s is applied; this function adapts between these rates and the 64 kbit/s "intermediate" rate. The RA2 function passes rate 64 kbit/s on as such.

In multislot data connections, the rate adaptation functions are performed per TCH/F between the Split/Combine-functions. On the A-interface up to four TCH/Fs are multiplexed into one 64 kbit/s channel according to the procedures defined in GSM 08.20. However, multiplexing is not applied to those user rates which make use of more than four TCH/Fs; for such rates the Split/Combine-function is located at the BSS.

The splitting and recombining of the data flow into/from TCH/Fs takes place at the RA1-function or RAA“ function (transparent service) at the MSC/IWF and at the MS's RA1/RA1'- or RA1'-function, or between the RLP and RA1' (RA1' not applied to TCH/F14.4) (non-transparent service) at the MS and between RA1 or RAA”and RLP at MSC/IWF (figures 6 and 7). The TCH/Fs are treated as independent channels between the Split/Combine-functions.

For user rates requiring more than four TCH/Fs (transparent only) the Split/Combine-function is located at the RA1/RA1'-or RA1'-function at the MS and at the RA1'/RA1-function at the BSS (figures 6 and 7). The rate adaptation functions for the various user data rates are summarized in tables 1 to 3. It should be noted that in the case of synchronous data transmission, the RA0 is not present.

For 56 and 64 kbit/s connections using a 2×TCH/F32.0 channel configuration across the radio interface, no rate adaptation is applied as the PLMN offers a '64 kbit/s pipe' between TE and an external network.

For 32 kbit/s connections using a 1×TCH/F32.0 channel configuration across the radio interface, the ITU-T I.460 rate adaptation is applied as described in GSM TS 04.21.

Table 1: Rate adaptation functions for the support of TE2 in the transparent case

R I/F	RA0		RA1'	Radio I/F
async	<------>	sync		
▫ 2.4	<------>	▫ 2.4	<---------->	3.6
4.8	<------>	4.8	<---------->	6.0
9.6	<------>	9.6	<---------->	12.0 or 2 × 6.0
14.4	<------>	14.4	<---------->	14.5 or 2 × 12.0 or 3 × 6.0
19.2	<------>	19.2	<---------->	2 × 12.0 or 4 × 6.0
28.8	<------>	28.8	<---------->	1 x 29.0 or 2 x 14.5 or 3 × 12.0
		32	<---------->	1 × 32
38.4	<------>	38.4	<---------->	3 x 14.5 or 4 × 12.0
		48.0	<---------->	4 x 14.5 or 5 × 12.0
		56.0	<---------->	2 x 32.0 or 4 x 14.5 or 5 × 12.0 note 1
		64.0	<---------->	2 x 32.0 or 5 x 14.5 or 6 × 12.0 note 1

NOTE 1: AIUR of 11.2 kbit/s per 12.0 kbit/s air interface channel (GSM 04.21).

Table 2: Rate adaptation functions for the support of TE1/TA in the transparent case

	RA0		RA1		RA2	S I/F	RA2		RA1/RA1'	Radio I/F
async		sync								
▫ 2.4	<------>	▫ 2.4	<------>	8	<------>	64	<------>	8	<------>	3.6
4.8	<------>	4.8	<------>	8	<------>	64	<------>	8	<------>	6.0
9.6	<------>	9.6	<------>	16	<------>	64	<------>	16	<------>	12.0 or 2 × 6.0
14.4	<------>	14.4	<------>	32	<------>	64	<------>	32	<------>	14.5 or 2 × 12.0 or 3 × 6.0
19.2	<------>	19.2	<------>	32	<------>	64	<------>	32	<------>	2 × 12.0 or 4 × 6.0
28.8	<------>	28.8	<------>	64	<------>	64	<------>	64	<------>	1 x 29.0 or 2 x 14.5 or 3 × 12.0
				32	<------>	64	<------>	32	<------>	1 × 32
38.4	<------>	38.4	<------>	64	<------>	64	<------>	64	<------>	3 x 14.5 or 4 × 12.0

	RA1''		RA2	S I/F	RA2		RA1/RA1'	Radio I/F
48.0	<------>	64	<------>	64	<------>	64	<------>	4 x 14.5 or 5 × 12.0 note 1
56.0	<------>	64	<------>	64	<------>	64	<------>	2 x 32.0 or 4 x 14.5 or 5 × 12.0 notes 1, 2
		64	<------>	64	<------>	64	<------>	2 x 32.0 or 5 x 14.5 or 6 × 12.0 notes 1, 2

NOTE 1: RA2 not applicable.

NOTE 2: AIUR of 11.2 kbit/s per 12.0 kbit/s air interface channel (GSM 04.21).

Table 3: RA1' function in the non-transparent case

	RA1'	
6.0	<------>	6.0
12.0	<------>	12.0

NOTE: RA1' not applicable to TCH/F14.4, TCH/F28.8, or TCH/F43.2

6.3.2 Information transfer rate (kbit/s)

Attribute values for connection elements:

3.6 or 6.0 or 12.0 or 13.0 or 14.5 or 29.0 or 32.0 or 43.5 or 64.0

or n × 6.0 (1 ≤ n ≤ 4) or n × 12.0 (1 ≤ n ≤ 6) or n x 14.5 (1 ≤ n ≤ 5) or 2 x 29.0 or 2 x 32.0

Attribute values for overall connection type:

3.6 or 6.0 or 12.0 or 13.0 or 14.5 29.0 or 32.0 or 43.5 or 64.0;

or n × 6.0 (1 ≤ n ≤ 4) or n × 12.0 (1 ≤ n ≤ 6) or n x 14.5 (1 ≤ n ≤ 5) or 2 x 29.0 or 2 x 32.0..

Association Law:

The value for the overall connection type will be equal to the lowest value of any of its connection elements.

6.3.11 Further attributes and attribute values

This subclause has outlined the relationships between those attributes values presently existing, the possibility for new values being added remains.

Table 4 summarizes the attributes values for GSM PLMN connection elements.

Table 4: Values for attributes for GSM PLMN connection elements

Attributes	Values for attributes	
	Radio interface connection element	A interface connection element
1 Information Transfer Mode	Circuit	Circuit
2 Information Transfer Rate Layer 1	 3.6 or 6.0 or 12.0 or 13.0 or 14.5 or 29.0 or 32.0 or 43.5 or n × 6.0 (1 ≤ n ≤ 4) or n × 12.0 (1 ≤ n ≤ 6) or n x 14.5 (1 ≤ n ≤ 5) or 2 x 29.0 or 2 x 32.0 kbit/s	 64.0 kbit/s
3 Information Transfer Susceptance	Speech processing equipment, Echo suppression equipment, Null	Speech processing equipment, Echo suppression equipment, Null
4 Establishment of Connection	Demand	Demand
5 Symmetry	Bidirectional symmetric Bidirectional asymmetric	Bidirectional symmetric Bidirectional asymmetric
6 Connection Configuration Topology	 Point-to-point	 Point-to-point
7 Structure	Unstructured SDU integrity	Unstructured SDU integrity
8 Channel Rate Information Channel Signalling Channel	 TCH/F(s) or TCH/H Dm	 64.0 kbit/s Common channel signalling system
9 Connection Control Protocol Layer 1 Layer 2 Layer 3	 GSM 04.03 and 05 series GSM 04.05 and 04.06 GSM 24.007, 24.008, 24.011	 GSM 08.04 GSM 08.06 GSM 24.007, 24.008, 08.08
10 Information Transfer Coding/Protocol Layer 1 Layer 2 Layer 3	 GSM 04.21 05 and 06 series GSM 24.022 and 27.002 or 24.022 and 27.003 04.06 or transparent Transparent, 24.011	 GSM 08.04 and 08.20 GSM 24.022 and 27.002 or 24.022 and 27.003 or transparent Transparent

6.6 Limited set of GSM PLMN connection types **(for EDGE channels)**

Figure 8 provides the information transfer protocol models for the identified set of GSM PLMN connection types for support of TCH/F28.8 or TCH/F43.2. The description of models given in subclause 6.4 applies also to figure 8.

When a TCH/F28.8 channel is used in multislot configurations, multiple EDGE multiplexing functions are applied on both sides of the air-interface; i.e. one multiplexing function — on each side of the air interface — is associated with each air-interface channel.

When TCH/F32.0 channels are ~~only~~ used in double slot configurations, ~~(for details refer to GSM 04.21).~~ ~~N~~no rate adaptation is applied as the PLMN offers a '64 kbit/s pipe' between TE and an external network. When TCH/F32.0 channels are used in single slot configurations, the ITU-T I.460 rate adaptation is applied. (For details refer to GSM 04.21).

Table 5: Relationship between Bearer services and GSM PLMN Connection elements

Connection description	Bearer service user data rate	Radio interface connection element	Intermediate rate at the BSS-MSC interface	BSS-MSC connection element	Protocol model in figure 6, 7 or 8
Circuit mode unstructured with unrestricted digital capability transparent.	Data circuit duplex async n × 4 800 (n ≤ 4) or n × 9 600 bit/s (n ≤ 4). Data circuit duplex sync n × 4 800 (n ≤ 4) or n × 9 600 bit/s (n ≤ 5) or n × 1 1200 bit/s (n = 5 or 6).	cct mode unstructured unrestricted n × 6 kbit/s (n ≤ 4) or n × 12 kbit/s (n ≤ 6) on n full rate channels.	8 or 16 kbit/s per TCH/F. For data connections using 5 or 6 TCH/Fs no intermediate rate(s) .	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 :1 d, 1 e, 2 d, 2 e
	Data circuit duplex async n × 14 400 bit/s (n ≤ 3). Data circuit duplex sync n × 14 400 bit/s (n ≤ 5)	cct mode unstructured unrestricted n x 14.5 kbit/s (n ≤ 5) on n full rate channels	16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 1 d, 1 e, 2 d, 2 e
	Data circuit duplex async 28 800 bit/s. Data circuit duplex sync 28 800 bit/s Data circuit duplex Sync 32 000 bit/s Data circuit duplex sync 64 000 bit/s	cct mode unstructured unrestricted 29.0 kbit/s on full rate channel cct mode unstructured unrestricted 32 kbit/s on full rate channel cct mode unstructured unrestricted 2 x 32.0 kbit/s on full rate channels	16 kbit/s per TCH/F. 32 kbit/s No intermediate rate for the 64 000 bit/s rate	cct mode unstructured unrestricted 64 kbit/s.	Fig 8 : 1 a, 1 b, 2 a, 2 b None
	Data circuit duplex async 14 400 bit/s Data circuit duplex sync 14 400 bit/s	cct mode unstructured unrestricted 14.5 kbit/s on full rate Channel	16 kbit/s	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 1 a, 1 b 2 a, 2 b
	Data circuit duplex async 9 600 bit/s. Data circuit duplex sync 9 600 bit/s.	cct mode unstructured unrestricted 12 kbit/s on full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 :1 a, 1 b Fig 6 2 a, 2 b
	Data circuit duplex async 4 800 bit/s. Data circuit duplex sync 4 800 bit/s.	cct mode unstructured unrestricted 6 kbit/s on full rate channel and half rate channel.	8 kbit/s.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 1 a, 1 b Fig 6 2 a, 2 b
	Data circuit duplex async 300. Data circuit duplex async 1 200. Data circuit duplex async 2 400. Data circuit duplex sync 1 200. Data circuit duplex sync 2 400.	cct mode unstructured unrestricted 3.6 kbit/s on full rate channel and half rate channel.	8 kbit/s.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 : 1 a, 1 b Fig 6 1 a, 1 b Fig 6 1 a, 1 b Fig 6 2 a, 2 b Fig 6 2 a, 2 b

Connection description	Bearer service user data rate	Radio interface connection element	Intermediate rate at the BSS-MSC interface	BSS-MSC connection element	Protocol model in figure 6, 7 or 8
Circuit mode unstructured with unrestricted digital capability non transparent.	Data circuit duplex async n × 4 800 (n ≤ 4) or n × 9 600 bit/s (n ≤ 4).	cct mode SDU unrestricted n × 6 kbit/s (n ≤ 4) or n × 12 kbit/s (n ≤ 4) on full rate channels.	8 or 16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 3 d, 3 e
	Data circuit duplex async n × 14 400 bit/s (n ≤ 4).	cct mode SDU unrestricted n × 14.5 kbit/s (n ≤ 4) on full rate channels.	16 kbit/s	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 3 d, 3e
	Data circuit duplex async n x 28 800 bit/s (n ≤ 2). Data circuit duplex async 43 200 bit/s	cct mode SDU unrestricted n × 29.0 kbit/s (n ≤ 2) on full rate channels. cct mode SDU unrestricted 43.5 kbit/s on a full rate channel.	16 kbit/s per TCH/F. 16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbit/s.	Fig 8 : 3a, 3 b
	Data circuit duplex async 14 400 bit/s	cct mode SDUunrestricted 14.5 kbit/s on full rate channel	16 kbit/s	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 3 a, 3 b
	Data circuit duplex async 9 600 bit/s.	cct mode SDU unrestricted 12 kbit/s on full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 : 3 a, 3 b
	Data circuit duplex async 4 800 bit/s.	cct mode SDU unrestricted full rate channel, 12 kbit/s or half rate channel, 6 kbit/s.	16 kbit/s FR 8 kbit/s HR.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 : 3 a, 3 b
	Data circuit duplex async 300. Data circuit duplex async 1 200. Data circuit duplex async 2 400.	cct mode SDU unrestricted full rate channel, 12 kbit/s or half rate channel, 6 kbit/s.	16 kbit/s FR 8 kbit/s HR.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6: 3 a, 3 b Fig 6 : 3 a, 3 b Fig 6 3 a, 3 b

Connection description	Bearer service user data rate	Radio interface connection element	Intermediate rate at the BSS-MSC interface	BSS-MSC connection element	Protocol model in figure 6, 7 or 8
Circuit mode unstructured with 3.1 kHz audio ex PLMN transparent.	Data circuit duplex async n × 4 800 bit/s (n ≤ 4) or n × 9 600 bit/s (n ≤ 3). Data circuit duplex sync n × 4 800 bit/s (n ≤ 4) or n × 9 600 bit/s (n ≤ 3).	cct mode unstructured unrestricted n × 6 kbit/s (n ≤ 4) or n × 12 kbit/s (n ≤ 3) on n full rate channels.	8 or 16 kbit/s TCH/F.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 1 d, 1 e, 2 d, 2 e
	Data circuit duplex async n × 14 400 bit/s (n ≤ 2). Data circuit duplex sync n × 14 400 bit/s (n ≤ 2)	cct mode unstructured unrestricted x 14.5 kbit/s (n ≤ 2) on n full rate channels	16 kbit/s per TCH/F	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 1 d, 1 e, 2 d, 2e
	Data circuit duplex async 28 800 bit/s. Data circuit duplex sync 28 800 bit/s	cct mode unstructured unrestricted 29.0 kbit/s on a full rate channel	16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbit/s.	Fig 8 : 1 a, 1 b, 2 a, 2 b
	Data circuit duplex asynch 14 400 bit/s synch 14 400 bit/s	cct mode unstructured unrestricted 14.5 kbit/s on full rate channels	16 kbit/s	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 1 a, 1 b for async Fig 7 2 a 2 b for synch
	Data circuit duplex async 9.6 kbit/s sync 9.6 kbit/s.	cct mode unstructured unrestricted 12 kbit/s full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 1 a, 1 b for asynch. Fig 6 : 2 a, 2 b for synch.
	Data circuit duplex async 4.8 kbit/s sync 4.8 kbit/s.	cct mode unstructured unrestricted 6 kbit/s full and half rate channel.	8 kbit/s.		
	Data circuit duplex async ≤ 2 400 sync ≤ 2 400.	cct mode unstructured unrestricted 3.6 kbit/s full and half rate channel.	8 kbit/s.		

Connection description	Bearer service user data rate	Radio interface connection element	Intermediate rate at the BSS-MSC interface	BSS-MSC connection element	Protocol model in figure 6, 7 or 8
Circuit mode unstructured with 3.1 kHz audio ex PLMN non transparent.	Data circuit duplex async n × 4 800 (n ≤ 4) or n × 9 600 (n ≤ 4) bit/s. Data circuit duplex sync n × 4 800 (n ≤ 4) or n × 9 600 bit/s (n ≤ 4).	cct mode SDU unrestricted n × 6 kbit/s (n ≤ 4) or n × 12 kbit/s (n ≤ 4) on full rate channels.	8 or 16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 : 3 d, 3 e for async. Fig 6 : 4 d, 4 e, 4 f for sync.
	Data circuit duplex async n × 14 400 bit/s (n ≤ 4). Data circuit duplex sync n × 14 400 bit/s (n ≤ 4)	cct mode SDU unrestricted n x 14.5 kbit/s (n ≤ 4) on n full rate channels	16 kbit/s per TCH/F	cct mode unstructured unrestricted 64 kbits/s.	Fig 7 : 3 d, 3 e for asynch Fig 7 : 4 d, 4 e 4 f for synch
	Data circuit duplex async 28 800 bit/s. Data circuit duplex async 43 200 bit/s	cct mode SDU unrestricted 29.0 kbit/s on a full rate channel. cct mode SDU unrestricted 43.5 kbit/s on a full rate channel.	16 kbit/s per TCH/F. 16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbits/s.	Fig 8 : 3a, 3 b
	Data circuit duplex sync 28 800 bit/s	cct mode SDU unrestricted 29.0 kbit/s on a full rate channel.	16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbits/s.	Fig 8 : 4a, 4 b, 4c
	Data circuit duplex asynch 14 400 bit/s synch 14 400 bit/s	cct mode SDU unrestricted 14.5 kbit/s full rate channel	16 kbit/s	cct mode unstructured unrestricted 64 kbits/s.	Fig 7 : 3a, 3b for asynch Fig 7 : 4 a, 4 b, 4 c for synch
	Data circuit duplex async 9.6 kbit/s sync 9.6 kbit/s.	cct mode SDU unrestricted 12 kbit/s full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 3 a, 3 b for asynch. Fig 6 : 4 a, 4 b, 4 c for synch.
	Data circuit duplex async 4.8 kbit/s sync 4.8 kbit/s.	cct mode SDU unrestricted half rate channel, 6 kbit/s or full rate channel, 12 kbit/s.	16 kbit/s FR 8 kbit/s HR.		
	Data circuit duplex async ≤ 2 400 sync ≤ 2 400.	cct mode SDU unrestricted half rate channel, 6 kbit/s or full rate channel, 12 kbit/s.			

Table 5 (continued): Relationship between Bearer services and GSM PLMN Connection elements

Connection description	Bearer service user data rate	Radio interface connection element	Intermediate rate at the BSS-MSC interface	BSS-MSC connection element	Protocol model in figure 6, 7 or 8
Packet services basic access transparent.	Data circuit duplex sync n × 4 800 (n ≤ 4) or n × 9 600 bit/s (n ≤ 5) or n × 11200 bit/s (n = 5 or 6).	cct mode unstructured unrestricted n × 6 kbit/s (n ≤ 4) or n × 12 kbit/s (n ≤ 6) on n full rate channels.	8 or 16 kbit/s per TCH/F. For data connections using 5 or 6 TCH/Fs no intermediate rate(s).	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 2 d, 2 e
	Data circuit duplex sync n × 14 400 bit/s (n ≤ 5)	cct mode unstructured unrestricted n × 14.5 kbit/s (n ≤ 5) on n full rate channels.	16 kbit/s per TCH/F	cct mode unstructured unrestricted 64 kbits/s.	Fig 7 : 2 d, 2 e
	Data circuit duplex synch 14 400 bit/s	cct mode unstructured unrestricted 14.5 kbit/s on full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 7 : 2 a, 2 b
	Data circuit duplex sync 9 600 bit/s.	cct mode unstructured unrestricted 12 kbit/s on full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 2 a, 2 b
	Data circuit duplex sync 4 800 bit/s.	cct mode unstructured unrestricted 6 kbit/s on full rate channel and half rate channel.	8 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 2 a, 2 b
	Data circuit duplex sync 2 400 bit/s.	cct mode unstructured unrestricted 3.6 kbit/s on full rate channel and half rate channel.	8 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 2 a, 2 b

Connection description	**Bearer service user data rate**	**Radio interface connection element**	**Intermediate rate at the BSS-MSC interface**	**BSS-MSC connection element**	**Protocol model in figure 6, 7 or 8**
Packet services basic access non transparent.	Data circuit duplex sync n × 4 800 (n ≤4) or n × 9 600 bit/s (n ≤ 4).	cct mode SDU unrestricted n × 6 kbit/s (n ≤ 4) or n × 12 kbit/s (n ≤ 4) on full rate channels.	8 or 16 kbit/s per TCH/F.	cct mode unstructured unrestricted 64 kbits/s.	Fig 6 : 4 d, 4 e, 4 f
	Data circuit duplex sync n × 14 400 bit/s (n ≤ 4).	cct mode SDU unrestricted n × 14.5 kbit/s (n ≤ 4) on full rate channels	16 kbit/s per TCH/F	cct mode unstructured unrestricted 64 kbits/s.	Fig 7 : 4 d, 4 e, 4 f
	Data circuit duplex sync n × 28 800 bit/s (n ≤ 2).	cct mode SDU unrestricted n × 29.0 kbit/s (n ≤ 2) on full rate channels	16 kbit/s per TCH/F	cct mode unstructured unrestricted 64 kbits/s.	Fig 8 : 4 a, 4 b, 4 c
	Data circuit duplex sync 43 200 bit/s.	cct mode SDU unrestricted 43.5 kbit/s on a full rate channel	16 kbit/s per TCH/F		Fig 8 : 4 a, 4 b, 4 c
	Data circuit duplex synch 14 400 bit/s	cct mode SDU unrestricted 14.5 kbit/s on full rate channel	16 kbit/s	cct mode unstructured unrestricted 64 kbits/s.	Fig 7 : 4 a, 4 b, 4 c
	Data circuit duplex sync 9 600 bit/s.	cct mode SDU unrestricted 12 kbit/s on full rate channel.	16 kbit/s.	cct mode unstructured unrestricted 64 kbit/s.	Fig 6 : 4 a, 4 b, 4 c
	Data circuit duplex sync 4 800 bit/s.	cct mode SDU unrestricted full rate channel, 12 kbit/s or half rate channel, 6 kbit/s.	16 kbit/s FR 8 kbit/s HR.	cct mode unstructured unrestricted 64 kbit/s.	4 a,b,c
	Data circuit duplex sync 2 400 bit/s.	cct mode SDU unrestricted full rate channel, 12 kbit/s or half rate channel, 6 kbit/s.	16 kbit/s FR 8 kbit/s HR.	cct mode unstructured unrestricted 64 kbit/s.	4 a,b,c

Annex A (informative): List of definitions of GSM PLMN connection type attributes and values

A.1 Attribute definition and their values

Information transfer mode:

This attribute describes the operational mode for transferring (transportation and switching) user information through a GSM PLMN connection in the network.

Value: - Circuit

Information transfer capability:

This attribute describes the capability associated with the transfer of different types of information through a GSM PLMN connection.

Values: - Unrestricted digital information

- Speech

- Group 3 facsimile

- 3.1 kHz audio ex PLMN

- Restricted digital information (Note: this value is signalled in the "Other ITC" element, due to a lack of further code points in the "ITC" element.)

Information transfer rate:

This attribute describes either the bit rate (circuit mode) or the throughput (packet mode, for further study). It refers to the transfer of digital information on a GSM PLMN connection.

Values: - Appropriate bit rate

- Throughput rate

Establishment of connection:

This attribute describes the mode of establishment used to establish and release GSM PLMN connections.

Value: - Demand

Symmetry:

This attribute describes the relationship of information flow between two (or more) access points or reference points involved in a GSM PLMN connection.

Values: - Bidirectional symmetric

- Bidirectional asymmetric (Multislot configurations for data)

Connection configuration:

This attribute describes the spatial arrangement for transferring information on a given GSM PLMN connection.

Value: - Point-to-point

Structure:

This attribute refers to the capability of a GSM PLMN connection to deliver information to the destination access point or reference point in a structure that was presented in a corresponding signal structured at the origin (access point or reference point).

Values: - Service data unit integrity (see note 1)

- Unstructured (see note 2)

NOTE 1: Applicable for connection element "non transparent".

NOTE 2: Applicable for connection element "transparent".

Channel rate:

This attribute describes the channels and their bit rate used to transfer the user information and/or signalling information.

Value: - Name of channel (designation) and/or the corresponding bit rate

NOTE 3: This attribute can be used several times for connection characterization.

Connection control protocol, information transfer coding/protocol (layer 1 to 3):

These attributes characterize the protocols on the connection control and/or user information transfer channel.

Value: - Appropriate protocol for each layer

NOTE 4: This attribute can be used several times for connection characterization.

Synchronous/Asynchronous:

This attribute describes the type of transmission between the reference access points.

Values: - Synchronous

- Asynchronous

Negotiation:

This attribute describes the possibility of inband parameter exchange (according to V.110) between reference access points.

Value: - In band negotiation not possible

User Rate:

This element is relevant between the IWF and the fixed network.

Values: - 0.3 kbit/s

- 1.2 kbit/s

- 2.4 kbit/s

- 4.8 kbit/s

- 9.6 kbit/s

Intermediate rate:

This attribute defines the intermediate rate (according to GSM 08.20 and ITU-T V.110) at the A interface connection element part.

Values: - 8 kbit/s

- 16 kbit/s

Fixed network user rate FNUR ~~(Multislot configurations for data)~~:

This element is relevant between the ~~IWF~~MSC and the fixed network.

Values: - 9.6 kbit/s

- 14.4 kbit/s

- 19.2 kbit/s

- 28.8 kbit/s

- 32.0 kbit/s

- 38.4 kbit/s

- 48.0 kbit/s

- 56.0 kbit/s

- 64.0 kbit/s

Acceptable channel coding(s) ACC:

This attribute indicates the channel codings acceptable to the MS. This parameter is given at call set-up and it is non negotiable.

Values: 4.8 kbit/s

and/or 9.6 kbit/s

and/or 14.4 kbit/s

and/or 28.8 kbit/s

and/or 32.0 kbit/s

and/or 43.2 kbit/s

Maximum number of TCH/Fs (Multislot configurations for data):

This attribute is given at call set-up and it enables the mobile user to limit the number of TCH/Fs used during the call.

Values: 1

2

3

4

5

6

7 (note 5)

8 (note 5)

NOTE 5: Not used by the currently specified services.

Wanted air interface user rate (AIUR) ~~(Multislot configurations for data)~~:

This attribute is applicable to non-transparent services only, and it gives the AIUR that the mobile user wants and which the network tries to achieve but which it is not allowed to exceed.

Values: Not applicable

9.6 kbit/s

14.4 kbit/s

19.2 kbit/s

28.8 kbit/s

38.4 kbit/s

43.2 kbit/s

57.6 kbit/s

User initiated modification indication (Multislot configurations for data):

This element is relevant between the MT and the IWF.

Values: - User initiated modification not requested

- User initiated modification up to 1 TCH/F requested

- User initiated modification up to 2 TCH/F requested

- User initiated modification up to 3 TCH/F requested

- User initiated modification up to 4 TCH/F requested

The parameters where it is indicated that they are related to Multislot configurations for data are optional.

For multislot configuration, the following applies to the parameters contained in the BC-IE:

- Half rate channels are not supported. The MS shall code the radio channel requirement as "Full rate support only MS" or "Dual rate support MS, full rate preferred". In the second case, the network shall assign full rate channel(s) only.
- The "fixed network user rate" and "other modem type" take precedence over the "user rate" and "modem type", except for modem types “autobauding”, “modem for undefined interface” or “none”.
- The "intermediate rate" parameter is overridden. The intermediate rate used per each TCH/F is derived from the chosen channel type:

channel type	IR per TCH/F
TCH/F4.8	8 kbit/s
TCH/F9.6	16 kbit/s
TCH/F14.4	16 kbit/s (on the A interface but 32 kbit/s inside the MS)

- The user rate per TCH is derived from the chosen channel type:

channel type	user rate per TCH
TCH/F4.8	4.8 kbit/s
TCH/F9.6	9.6 kbit/s
TCH/F14.4	14.4 kbit/s

For CE: T, the padding procedure described in GSM 04.21 can be applied.

Network independent clocking on Tx:

This attribute defines the usage of NIC at the reference access point in the transmit direction.

Values: - Not required

- Required

Network independent clocking on Rx:

This attribute defines the usage of NIC at the reference access point in the receive direction.

Values: - Not accepted

- Accepted

Number of stop bits:

This attribute describes the number of stop bits for the asynchronous type of transmission between reference access points.

Values: - 1 bit

- 2 bit

Number of data bits excluding parity if present:

This attribute describes the number of data bits for a character oriented mode of transmission between reference access points.

Values: - 7 bit

- 8 bit

Parity information:

This attribute describes the type of parity information for a character oriented mode of transmission between the reference access points.

Values: - Odd

- Even

- None

- Forced to 0

- Forced to 1

Duplex mode:

This attribute describes the kind of transmission of the GSM PLMN between reference access points.

Value: - Full duplex

Modem type:

This attribute describes the modem allocated by the IWF/MSC in the case of a 3.1 kHz audio used outside the GSM PLMN information transfer capability.

Values: - V.21

- V.22

- V.22bis

- V.26ter

- V.32

- Autobauding type 1

- None

-

Other Modem Type (OMT):

This element is relevant between the MS and IWF.

Values: - No other modem type

- V.34

Compression

This attribute describes the possible usage of data compression between the reference access points. In the network to MS direction, it indicates the possibility of using data compression. In the MS to network direction, it indicates the allowance of data compression.

Values: - Data compression not possible/not allowed

- Data compression possible/allowed (see note 6)

NOTE 6: Only applicable for the asynchronous transmission between the reference access points, if connection element is "non transparent".

Radio channel requirement:

This attribute describes the available channels for the transfer of the user information between the reference access points.

Values: - Full rate channel (Bm)

- Half rate channel (Lm)

- dual rate/full rate preferred

- Dual rate/half rate preferred

Negotiation of Intermediate Rate Requested (NIRR)

This attribute indicates if 6 kbit/s radio interface rate is requested.

Values: - NIRR not requested/not accepted

- NIRR requested/accepted

Connection element:

This attribute describes the possible usage of GSM layer 2 protocol between the reference access points.

Values: - Transparent

- Non-transparent (RLP)

- Both, transparent preferred

- Both, non transparent preferred

User information layer 2 protocol:

This attribute describes the layer 2 relay protocol used between the reference access points in non-transparent transmissions.

Values: - ISO 6429, code set 0

- X.25

- Character oriented protocol with no flow control

Signalling access protocol:

This attribute characterizes the protocol on the signalling or user information transfer channel at the mobile reference access point.

Values: - I.440/450

- X.21

- X.28, dedicated PAD, individual NUI (note 7)

- X.28, dedicated PAD, universal NUI(note 7)

- X.28, non dedicated PAD

- X.32

- X.32

NOTE 7: This value was used by services defined for former GSM releases and does not need to be supported.

Rate adaptation:

This attribute describes the rate adaptation used at the fixed reference access point.

Values: - V.110/X.30

- X.31 flag stuffing

- No rate adaptation

- V.120 (Note: This value is signalled in the "Other Rate Adaption" element, due to a lack of further code points in the "Rate Adaptation" element.)

Coding standard:

This attribute refers to the structure of the BC-IE defined in the TS 24.008.

Value: - GSM

User information layer 1 protocol:

This attribute characterizes the layer 1 protocol to be used at the Um interface according to the GSM 05.01.

Value: - Default

Rate adaption header/no header:

This attribute is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Rate adaption header not included

- Rate adaption header included

Multiple frame establishment support in data link:

This attribute is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Multiple frame establishment not supported. Only UI frames allowed

- Multiple frame establishment supported

Mode of operation:

This attribute is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Bit transparent mode of operation

- Protocol sensitive mode of operation

Logical link identifier negotiation:

This attribute is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Default, LLI=256 only

- Full protocol negotiation (note 8)

NOTE 8: A connection over which protocol negotiation will be executed is indicated in the "In-band/out-band negotiation" parameter.

Assignor/assignee:

This attribute is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Message originator is "default assignee"

- Message originator is "assignor only"

In-band/out-band negotiation:

This attribute is relevant between IWF and the fixed network. It is only applicable for V.120 rate adaptation.

Values: - Negotiation is done with USER INFORMATION messages on a temporary signalling connection

- Negotiation is done in-band using logical link zero.

3GPP TSG-CN3 Meeting #12
Seattle, USA 28th August – 01st September 2000

Document N3-000474
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

04.21	CR		Current Version:	8.0.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG_N #9	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSG_N3 **Date:** 28/08/00

Subject: 32 kbit/s UDI/RDI multimedia in GSM

Work item: Technical enhancements and improvements (TEI)

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Removal of barriers to use the 32 kbit/s UDI/RDI multimedia in GSM.

Clauses affected: 3 and 8

Other specs Affected:

Other 3G core specifications	X	→ List of CRs:	22.002, 27.001, 29.007, 48.008
Other GSM core specifications	X	→ List of CRs:	03.10, 08.08, 08.20, 08.58
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:


help.doc

<--------- double-click here for help and instructions on how to create a CR.

3 General approach

GSM 03.10 defines the PLMN connection types necessary to support the GSM PLMN data and telematic services.

Within the MS there are several different data rate adaptation functions - and a Split/Combine-function in case of a multislot data configuration - which are combined as shown in GSM 03.10 as part of the connection type.

The rate adaptation functions are RA0, RA1, RA2, RA1', RA1'' and RA1/RA1'. The RA0, RA1 and RA2 are equivalent to those functions described in CCITT recommendation V.110 [11].

The RA1' function is similar to RA1 but has a reduced bit rate output compatible with the coding scheme proposed for data services on the radio interface.

The RA1'' function is used for converting between synchronous user rates of 48 and 56 kbit/s and the rate 64 kbit/s. The equivalent function in CCITT recommendation V.110 does not have a name.

The RA1/RA1' is a relay function, used as indicated in GSM 03.10.

In multislot data-configurations the overall data stream is split into parallel substreams between the Split/Combine-functions.

3.1 Overview of data rates and configurations

In Table 1, an overview of the supported transparent air-interface user rates is given. For each rate, also intermediate rates per channel between BTS and MSC, overall radio interface rates, and channel configurations are given. For single slot connections the intermediate rates are per channel carrying the overall data stream, whereas for multislot connections, the intermediate rates are per substream.

In Table 2, intermediate rates within the MS, overall radio interface rates, and channel configurations are given for the air-interface user rates. The intermediate rates are per overall data stream.

For single slot rates up to 4,8 kbit/s, the used intermediate rate is 8 kbit/s, and for the 9,6 kbit/s single slot rate 16 kbit/s.

For TCH/F9.6 and TCH/F4.8 channel codings, the multislot intermediate rates are 16 and 8 kbit/s per TCH/F, respectively.

For TCH/F14.4 channel coding, the multislot intermediate rate is 16 kbit/s per TCH/F.

Connections utilising TCH/F28.8 or TCH/F43.2 across the radio interface, use multislot combinations of TCH/F14.4 between BTS and MSC. Thus the corresponding multislot intermediate rate is 16 kbit/s.

No multislot intermediate rates are applicable to 56 and 64 kbit/s connections using TCH/F32.0 radio interface channels. The intermediate rate for the 32 kbit/s user rate using the TCH/F32.0 channel is 32 kbit/s.

Between the TE and the Split/Combine-function at the MS, where the overall data stream is not split, intermediate rates of 8, 16, 32 and 64 kbit/s are applicable

Table 1: AIUR/Multislot intermediate rates

Air interface user rate	DTE/DCE statuses	RA0	RA1'/RA1 RA1'/RAA'		RA1'	
			Multislot intermediate rate	Frame type	Radio interface rate	Padding
≤ 600 bit/s	X	X	8 kbit/s	80 bit frames	3,6 kbit/s	
1200 bit/s	X	X	8 kbit/s	80 bit frames	3,6 kbit/s	
2,4 kbit/s	X	X	8 kbit/s	80 bit frames	3,6 kbit/s	
4,8 kbit/s	X	X	8 kbit/s	80 bit frames	6 kbit/s	
9,6 kbit/s	X	X	16 kbit/s or 2×8 kbit/s	80 bit frames	12 kbit/s or 2×6 kbit/s	
14,4 kbit/s	X	X	2×16 kbit/s or 3×8 kbit/s	80 bit frames	2×12 kbit/s or 3×6 kbit/s	P (note 1)
			16 kbit/s Note 7	Note 8	14,5 kbit/s	
19,2 kbit/s	X	X	2×16 kbit/s or 4×8 kbit/s	80 bit frames	2×12 kbit/s or 4×6 kbit/s	
28,8 kbit/s	X	X	3×16 kbit/s	80 bit frames	3×12 kbit/s	
			2 x 16 kbit/s Note 7	Note 8	2×14,5 kbit/s	
					1x29 kbit/s	
32 kbit/s			1 x 32 kbit/s		1 x 32 kbit/s	
38,4 kbit/s	X	X	4×16 kbit/s	80 bit frames	4×12 kbit/s	
			3 x 16 kbit/s Note7	Note 8	3×14,5 kbit/s	P (note 6)
43.2 kbit/s Note 10	X		3 x 16 kbit/s Note7	Note 8	1×43.2 kbit/s	
48 kbit/s	X		Note 2	Note 2	5×12 kbit/s	
			4 x 16 kbit/s Note7	Note 8	4×14,5 kbit/s	P (note 6)
56 kbit/s			Note 2	Note 2	5×12 kbit/s (note 3)	
			4x16 kbit/s Note7	Note 8	4×14,5 kbit/s	P (note 6)
			Note 9	Note 9	2×32.0 kbit/s	
64 kbit/s			Note 2	Note 2	6×12 kbit/s (note 3)	P (note 1)
					5×14,5 kbit/s	(note 6)
			Note 9	Note 9	2×32.0 kbit/s	

P=Padding used

Table 2: AIUR / Intermediate rates

Air interface user rate	DTE/DCE statuses	RA0	RA1		RA1'	
			Intermediate rate	Frame type	Radio interface rate	**Padding**
≤ 600 bit/s	X	X	8 kbit/s	80 bit frames	3,6 kbit/s	
1200 bit/s	X	X	8 kbit/s	80 bit frames	3,6 kbit/s	
2,4 kbit/s	X	X	8 kbit/s	80 bit frames	3,6 kbit/s	
4,8 kbit/s	X	X	8 kbit/s	80 bit frames	6 kbit/s	
9,6 kbit/s	X	X	16 kbit/s	80 bit frames	12 kbit/s or 2×6 kbit/s	
14,4 kbit/s	X	X	32 kbit/s	80 bit frames	2×12 kbit/s	P (note 1)
					3×6 kbit/s 1x14,5 kbit/s	
19,2 kbit/s	X	X	32 kbit/s	80 bit frames	2×12 kbit/s or 4×6 kbit/s	
28,8 kbit/s	X	X	64 kbit/s	80 bit frames	3×12 kbit/s 2×14,5 kbit/s 1×29 kbit/s	
32 kbit/s			32 kbit/s		1 x 32 kbit/s	
38,4 kbit/s	X	X	64 kbit/s	80 bit frames	4×12 kbit/s	
					3×14,5 kbit/s	P (note 6)
43.2 kbit/s Note 10	X		Note 11	Note 11	1×43.2 kbit/s	
48 kbit/s	X		64 kbit/s Note 4	Note 4	5×12 kbit/s	
					4×14,5 kbit/s	P (note 6)
56 kbit/s			64 kbit/s Note 4	Note 4	5×12 kbit/s (note 3)	
					4×14,5 kbit/s	P (note 6)
					2×32.0 kbit/s	
64 kbit/s			64 kbit/s Note 5	Note 5	6×12 kbit/s (note 3)	P (note 1)
					5×14,5 kbit/s	(note 6)
					2×32.0 kbit/s	

P =Padding used

NOTE 1: For information on the padding procedure, please refer to clause 10 of the present document.

NOTE 2: No multislot intermediate rate; substreams combined at the BSS with a resulting data rate of 64 kbit/s.

NOTE 3: AIUR 11,2 kbit/s per channel

NOTE 4: For this rate GSM-specific rate adaptation function RA1'' rather than RA1is applied.

NOTE 5: For this rate RA1- and RA2- adaptations are not applied.

NOTE 6: Padding used as specified for TCH/F14.4 channel codings

NOTE 7: At the network side, RA1'/RA1 not applied; instead a TCH/F14,4-specific adaptation RA1'/RAA' used (GSM 08.20)

NOTE 8: A 320-bit frame format described in GSM 08.60.

NOTE 9: No multislot intermediate rate. Data rate between BSS and MSC 64 kbit/s.

NOTE 10: Used only in non-transparent configurations.

NOTE 11: In NT cases there is no direct relationship between AIUR and Intermediate rate.

8 The RA1/RA1' Function

The RA1/RA1' function is used in transparent cases to convert between the intermediate rate and the input rate to the channel coder or the multiplexing function. This conversion also appears on the infrastructure side in both transparent and non-transparent cases as specified in GSM 08.20 except for channel codings TCH/F14.4, TCH/F28.8, TCH/F32.0, and TCH/F43.2.

8.1 Single slot rates

~~Intermediate rate~~	~~Radio interface rate~~
~~8 kbit/s~~	~~3,6 kbit/s~~
~~8 kbit/s~~	~~6 kbit/s~~
~~16 kbit/s~~	~~12 kbit/s~~
~~32 kbit/s~~	~~14,5 kbit/s~~

There are seven data rates (known as Radio Interface data rates) used for data transfer to the channel coder. These are 43.5 kbit/s (NT only), ~~(~~32.0 kbit/s (T only)~~; not used in single slot configurations)~~, 29 kbit/s (In cases where EDGE channel codings TCH/F43.2 or TCH/F28.8 are used, the RA1/RA1' function adapts the data stream to 14.5 kbit/s substreams as if multiple 14.5 kbit/s radio interface channels were used.), 14,5 kbit/s, 12 kbit/s, 6 kbit/s and 3.6 kbit/s~~,~~.

The 32 kbit/s user rate is identical to the 32 kbit/s intermediate rate. In this case the 32 kbit/s intermediate rate is directly mapped to the 32 kbit/s radio interface data rate.

~~and in order to adapt t~~The 8,16~~, 32~~ and 64 kbit/s intermediate rates and the 32 kbit/s intermediate rate with other than 32 kbit/s user rates are adapted to the~~se~~ radio interface data rates as follows:~~, three processes are used.~~

Intermediate rate	Radio interface data rate
8 kbit/s	3,6 kbit/s
8 kbit/s	6 kbit/s
16 kbit/s	12 kbit/s
32 kbit/s	14,5 kbit/s

For the adaptation the following three processes are used:

Firstly the 17 synchronization bits are removed.

Secondly the E1, E2 and E3 bits are removed. For transparent services, the values of the E1, E2, E3 bits are determined at the MT and in case of TCH/F9.6 and TCH/F4.8, at the BTS based on the indication given by outband signalling (either in the User Rate field of the BC-IE of the SETUP message for the MT or in the Channel Type information in the ASSIGNMENT REQUEST message for the BSS). For non transparent services, the coding of the E1, E2 and E3 bits is described in GSM 08.20.

Thirdly, in the 3.6 kbit/s case, half the data bits are discarded. These processes result in modified CCITT V.110 frames of sizes 60,60 and 36 bits for the 12, 6 and 3.6 kbit/s data rates respectively. The resultant modified CCITT V.110 frames for the various user data rates are shown in figures 5 - 9.

Further procedures for TCH/F14.4, TCH/F 28.8, and TCH/F43.2 channel coder input rates in subclauses 8.1.1, 9.1 and 9.3, respectively.

3GPP TSG CN3#12 **Tdoc N3-000488**
28th August – 1 thSeptember 2000
Seattle, USA

Title: LS on DHCP lease renewal

Source: TSG CN3

To: TSG T2

Contact Person:

Name:	Achim Braun
E-mail Address:	achim.braun@alcatel.de
Tel. Number:	+49 711 82141817

During the last CN3 meetings, CN3 discussed the DHCP lease renewal process. Especially the entity that should trigger the PDP Context Deactivation on DHCP lease expiry. Several solutions have been discussed, however it was not possible to come to an agreement. The discussed solutions are outlined below.

CN3 would prefer a solution not impacting the GGSN. CN3 asks T2 to verify whether solution 1 is feasible. Draft CRs to 27.060 and 29.061 for both solutions are attached to this LS.

1. Background:

The following two solutions have been discussed, each has certain drawbacks:

1. **PDP Context Deactivation initiated by MS**: it is unclear to CN3 whether this solution is feasible. Concerns were raised whether this would result in a DHCP client non-compliant to RFC2131.
2. **PDP Context Deactivation initiated by GGSN**:
   Based on a timer in GGSN that triggers an ICMP Echo request message from GGSN towards the TE. If the lease expired or a different IP address has been allocated to the DHCP client, it would not answer the request. In this case the GGSN would deactivate the PDP Context. Following drawbacks have been identified:
   - if the MS is out of coverage during the ICMP Echo procedure this results in unneccessary PDP Context Deactivations
   - the ICMP Echo procedure adds additional traffic
   - complexity is added to the GGSN
   - the GGSN acts as slave during the DHCP procedures, therefore the GGSN has to be able to adapt a large range of possible timer T values assigned by DHCP servers. With a small value a lot of load is produced, with a large value a PDP Context Deactivation may not be triggered.

Another solution based on IP packet monitoring in GGSN has been discussed. However this solution is not feasible and has been discarded as it leads to a significant decrease of the GGSN performance since the GGSN will have to monitor each IP packet going to or coming from the external network for which end-to-end DHCP is used.

2. PDP Context Deactivation procedure initiated by the MS:

The protocol stack for access with DHCP end-to-end is described in the figure 16c from the 29.061 v3.3.0 recommendation:

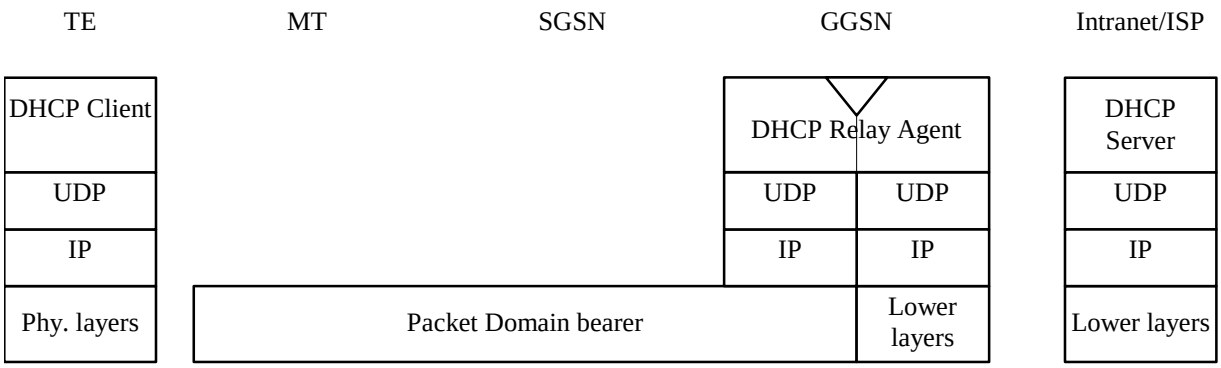


Figure 16c: Protocol stack for access with DHCP end-to-end

From the figure above, it is clear that the DHCP packets are seen by the MT as user packet. Therefore, the TE is the only entity aware of the DHCP renewal procedure.

Currently neither 23.060 nor 29.061 deal with the PDP Context Deactivation caused by DHCP problems. According to RFC2131 a DHCP client has to stop to use an IP address assigned by a DHCP server in the following cases

- State transition from RENEW to INITIALIZE caused by DHCPNACK; i.e. the server disapproves the new request of the client
- State transition from REBIND to INITIALIZE caused by Lease Expiry or DHCPNACK; i.e. the server disapproves the new request of the client

In these cases the DHCP client (i.e. the TE) has to stop to use the previously assigned IP address, i.e. the TE has to trigger a PDP Context Deactivation.

An abnormal case that might occur is that the DHCP server (e.g. due to sloppy configuration of the DHCP server or change of the DHCP server) assigns a different IP address to the client. RFC2131 states that in this case the 'DHCP client MUST NOT use the old IP address and the local USER should be notified'. Therefore the TE has to trigger a PDP Context Deactivation.

It is unclear to CN3 whether the PDP Context Deactivations could be triggered by a TE compliant to RFC2131. T2 is asked to verify this solution.
For more information see Draft CRs to 27.060 (N3-000457) and 29.061 (N3-000401).

3. PDP Context Deactivation procedure initiated by the GGSN

The GGSN takes the lease time value from the DHCPACK message and starts a timer T (T > half the lease time (= T1 in RFC2131), T < lease time, ref. to RFC2131) in order to be aware when the DHCP client is going to start renewing its address lease from the DHCP server. On expiration of the timer T the GGSN sends (an) ICMP ECHO message(s) to the TE in order to check whether the TE still recognizes its IP address. If no response is received, the GGSN clears the PDP context. If the GGSN receives a response from the TE, it means that the TE still has its old IP address (the TE either has not yet renewed its address lease or has got its old address on the renewal) – from now on the GGSN will periodically send ICMP ECHO messages to the TE.
For more information see Draft CR 29.061 (N3-000411).

3GPP TSG CN3 #12
Seattle, US, 28 August – 1 September 2000

***Document* N3-000401**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

29.061	CR		Current Version:	3.3.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: *list expected approval meeting # here ↑*		for approval	X	strategic		*(for SMG use only)*
		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*	(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: CN3 **Date:** 22 August, 2000

Subject: Implications of DHCP lease renewal process

Work item: TEI

Category: *(only one category shall be marked with an X)*				**Release:**		
F	Correction	X		Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Clarifications needed on the lease time configuration and the behaviour when the lease expires. Incorrect behaviour will occur unless the PDP Context is deactivated and reactivated again if the IP address is changed following a DHCP lease renewal.

Clauses affected: 13.1

Other specs affected:				
Other 3G core specifications		→	List of CRs:	
Other GSM core specifications		→	List of CRs:	
MS test specifications		→	List of CRs:	
BSS test specifications		→	List of CRs:	
O&M specifications		→	List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

13 Interworking with PDN (DHCP)

13.1 General

In current LAN environments the most commonly used configuration protocol is DHCP (Dynamic Host Configuration Protocol, [20]). It provides a mechanism for passing a large set of configuration parameters to hosts connected to a TCP/IP network (IP address, sub-net mask, domain name, MTU, etc.) in an automatic manner. Moreover DHCP may assign IP addresses to clients for a finite lease time, allowing for sequential reassignment of addresses to different users.

The lease time is chosen by the administrator of the DHCP server (in the external network), and is therefore out of the scope of this specification.

The Packet Domain offers the end user the possibility to run DHCP end-to-end the same way as he does when connected directly to a LAN (e.g. an enterprise Intranet). No modifications should be required in common implementations of DHCP clients and servers. However a Packet Domain-specific DHCP relay agent [21] is needed in the GGSN so as to allow correct routing of DHCP requests and replies between the TE and the DHCP servers.

At PDP context activation no IP address is allocated, this is done afterwards through DHCP. After the TE's configuration has been completed by DHCP, the PDP context is updated by means of the GGSN-initiated PDP Context Modification Procedure in order to reflect the newly assigned IP address.

In the following cases the corresponding PDP context shall be deactivated and the whole procedure starting with PDP context activation shall be restarted by the MS

- if the DHCP lease expires
- if the DHCP renewal is rejected by the DHCP server
- if the IP address is changed during the renewal process. Usually when the lease is renewed, the IP address remains unchanged. However, if for any reason (e.g. sloppy configuration of the DHCP server), a different IP address is allocated during the lease renewal process the PDP Context shall be deactivated.

3GPP TSG-CN3 Meeting #12
Seattle, USA 28th August – 01st September 2000

Document N3-000411
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

29.061	CR		Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	TSG_N #10	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)*

(U)SIM		ME	X	UTRAN / Radio		Core Network	X

Source: TSG_N3 **Date:** 28/08/00

Subject: Change of IP address in renewal

Work item: Technical enhancements and improvements (TEI)

Category: *(only one category Shall be marked With an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: The IP address of a TE may change in a renewal procedure with the DHCP. The MT, SGSN and GGSN are not aware of the changed IP address. In order to recover the PDP context shall be deactivated.

Clauses affected: 13

Other specs Affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

13 Interworking with PDN (DHCP)

13.1 General

In current LAN environments the most commonly used configuration protocol is DHCP (Dynamic Host Configuration Protocol, [20]). It provides a mechanism for passing a large set of configuration parameters to hosts connected to a TCP/IP network (IP address, sub-net mask, domain name, MTU, etc.) in an automatic manner. Moreover DHCP may assign IP addresses to clients for a finite lease time, allowing for sequential reassignment of addresses to different users.

The lease time is chosen by the administrator of the DHCP server (in the external network), and is therefore out of the scope of this specification.

The Packet Domain offers the end user the possibility to run DHCP end-to-end the same way as he does when connected directly to a LAN (e.g. an enterprise Intranet). No modifications should be required in common implementations of DHCP clients and servers. However a Packet Domain-specific DHCP relay agent [21] is needed in the GGSN so as to allow correct routing of DHCP requests and replies between the TE and the DHCP servers.

At PDP context activation no IP address is allocated, this is done afterwards through DHCP. After the TE's configuration has been completed by DHCP, the PDP context is update by means of the GGSN-initiated PDP Context Modification Procedure in order to reflect the newly assigned IP address.

Usually when the lease is renewed, the IP address remains unchanged. However, if a different IP address is allocated during the lease renewal process, the corresponding PDP context shall be deactivated and the whole procedure starting with PDP context activation shall be restarted.

13.2 PDN Interworking Model for DHCP

A DHCP relay agent shall be located in the GGSN used for interworking with the IP network as illustrated in the following figure 16b.

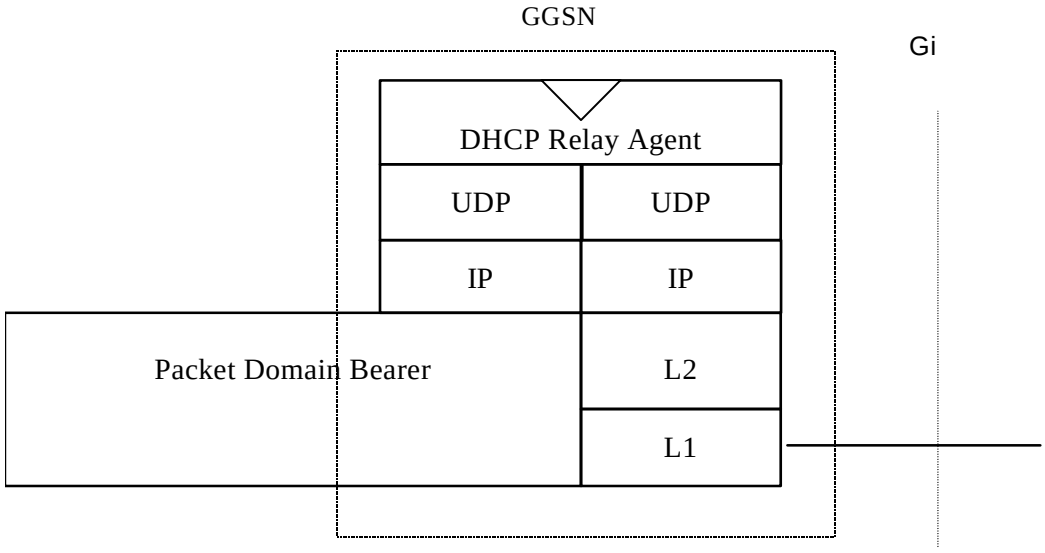


Figure 16b: The protocol stacks for the Gi IP reference point for DHCP

The DHCP relay agent relays the requests received from the DHCP client to the DHCP server(s), and the replies received from the server(s) to the corresponding client. The DHCP relay agent allows for the replies from DHCP servers to be delivered to the correct terminal, as the logical connection from the MT terminates in the GGSN, and consequently only the GGSN holds enough information to locate the DHCP client. How the DHCP relay agent identifies the MT based on the DHCP messages is out of the scope of UMTS standardisation.

DHCP provides mechanisms for user authentication and integrity protection, but does not offer any message confidentiality, therefore additional mechanisms (e.g. IPsec tunnel) may be provided if the link towards the external network is not secure. However this is out of the scope of the present document.

Apart from the particulars mentioned above, this model is basically the same as the one for interworking with IP networks described elsewhere in the present document. Using DHCP corresponds to the transparent access case as the GGSN does not take part in the functions of authentication, authorisation, address allocation, etc.

13.2.1 Address allocation by the Intranet or ISP

The MS is given an address belonging to the Intranet/ISP addressing space. The address is given dynamically immediately after the PDP context activation. This address is used for packet forwarding between the Intranet/ISP and the GGSN and within the GGSN.

The MS may authenticate itself to the Intranet/ISP by means of the relevant DHCP procedures (DHCP authentication is currently described in an Internet Draft).

The protocol configuration options are retrieved from the DHCP server belonging to the Intranet/ISP.

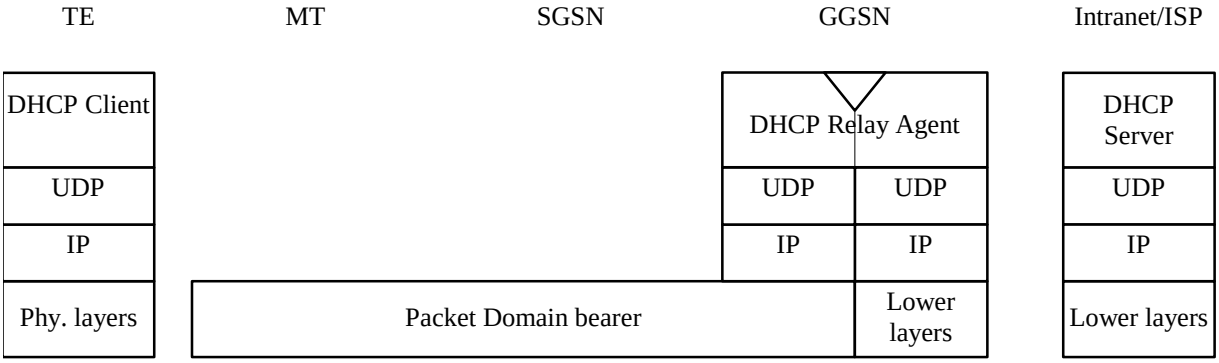


Figure 16c: Protocol stack for access with DHCP end-to-end

The following description bullet items describe the signal flow. For a detailed description of the DHCP messages refer to [26], [27]. The end-to-end protocol configuration is depicted in figure 16c.

1) The TE and MT exchange several AT commands carrying the QoS and other parameters requested by the TE, and requesting the activation of a PDP context of PDP type IP. The TE selects the APN of the configured Intranet/ISP offering a DHCP service, or the APN consisting of the Reserved Service Label for DHCP that the user has subscribed to. In the latter case the TE will be connected to a PLMN operator-configured service provider offering a DHCP service (according to the APN selection rules).

2) The MT sends the Activate PDP Context Request message to the SGSN with an empty PDP address field.

3) The SGSN selects a GGSN based on the APN requested by the MS and sends a Create PDP Context Request message to that GGSN. The GGSN replies with a Create PDP Context Response message. If the GGSN has not been configured by the operator to use external PDN address allocation with DHCP for the requested APN, the cause shall be set to 'Service not supported'. No IP address is assigned at this point; the PDP address returned by the GGSN is set to 0.0.0.0, indicating that the IP address is not yet assigned and shall be negotiated by the TE with the Intranet/ISP after the PDP context activation procedure.

4) Depending on the cause value received in the Create PDP Context Response the SGSN sends either an Activate PDP Context Accept or an Activate PDP Context Reject back to the MT. In case of a successful activation the PDP context is established with the PDP address set to 0.0.0.0.

5) Upon reception of the Activate PDP Context Accept, the MT sends an AT response to the TE that acknowledges the completion of the PDP context activation procedure.

6) The TE sends a DHCPDISCOVER message with the IP destination address set to the limited broadcast address (all 1s). The GGSN will pass the DHCPDISCOVER to the DHCP relay agent which will relay the request to the DHCP server configured for the APN of the PDP context. If more than one DHCP server is configured for a given APN, the request will be sent to all of them. The DHCP relay agent will add enough information to the

DHCPDISCOVER message to be able to relay the replies back to the MS. How this is done is out of the scope of UMTS standardisation.

7) DHCP servers receiving the DHCPDISCOVER request reply by sending a DHCPOFFER message including an offered IP address. The DHCP relay agent forwards the replies to the proper MS.

8) The TE chooses one of the possibly several DHCPOFFERs and sends a DHCPREQUEST confirming its choice and requesting additional configuration information. The relay agent relays the DHCPREQUEST~~OFFER~~ as explained in step 6.

9) The selected DHCP server receives the DHCPREQUEST and replies with a DHCPACK containing the configuration information requested by the TE. The DHCP relay agent relays the DHCPACK to the TE.

10) The DHCP relay agent passes the allocated IP address and the IP address lease time to the GGSN which stores ~~it~~the information in the corresponding PDP context. The GGSN then starts a timer T_a (0.5 * lease time < T_a < lease time) to supervise the validity of th IP address and initiates a PDP context modification procedure by sending an Update PDP Context Request to the appropriate SGSN with the End User Address information element set to the allocated IP address.

11) The SGSN sends a Modify PDP Context Request to the MT with the allocated IP address in the PDP Address information element. The MT acknowledges by sending a Modify PDP Context Accept to the SGSN.

12) The SGSN sends an Update PDP Context Response to the GGSN. The PDP context has been successfully updated with the allocated IP address.

EXAMPLE: In the following example a successful PDP context activation with use of DHCP from end to end is shown.

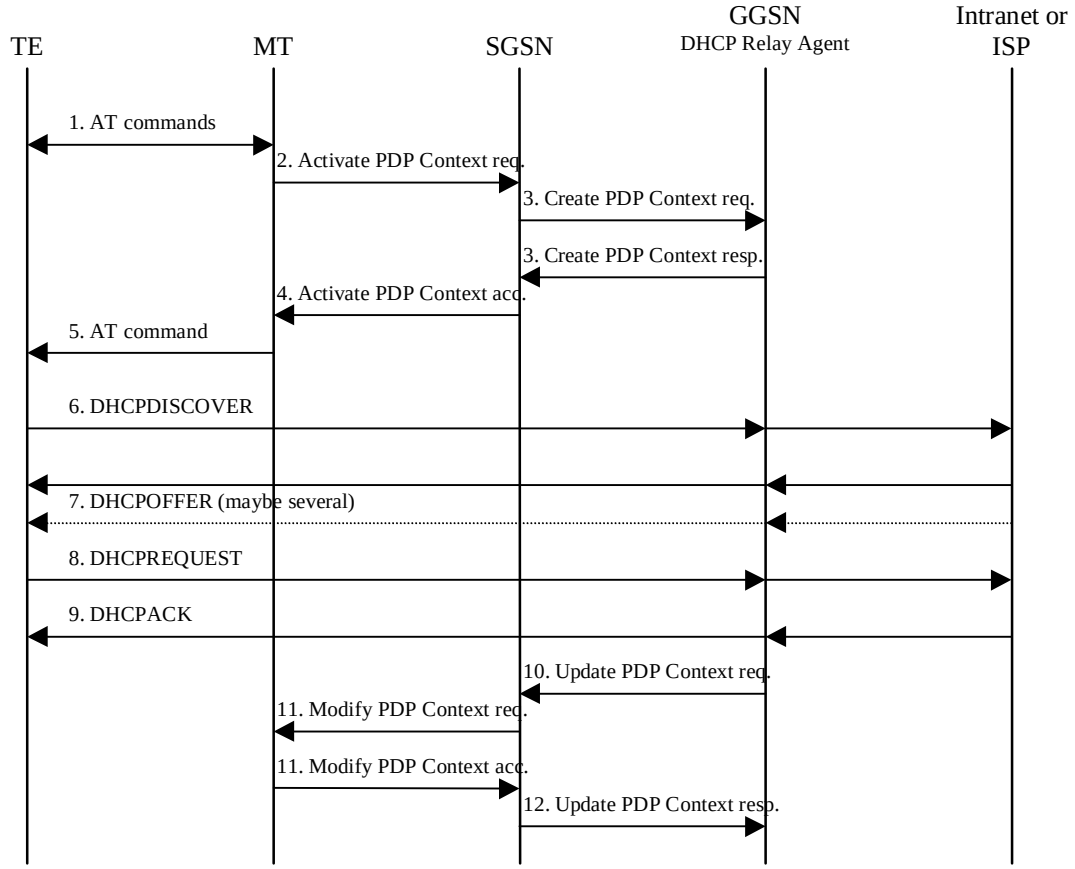


Figure 16d

13.2.2 Address renewal by the Intranet or ISP

The IP address renewal is performed as described in [26].

The IP address allocated to a TE may change during the renewal procedure. The GGSN shall supervise the validity of the IP address by a timer T_a started when the DHCPREQUEST message is sent in the address allocation phase.

If the timer T_a expires, the GGSN sends an ICMP ECHO message to the TE, repeating the message with no reply from the TE. If no ECHO REPLY message is received from the TE after N trials (N = implementation dependent), the GGSN requests the deactivation of the PDP context by sending a Delete PDP Context Request message to the SGSN [3].

If the GGSN receives an ECHO REPLY message from the TE, the GGSN uses a timer T_b ($T_b << T_a$) in order to repeat the address validity check by the ECHO message as long as the PDP context is active.

3GPP TSG CN3 #12
Seattle, US, 28 August 1 September 2000

***Document* N3-000457**
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

27.060	CR		Current Version:	3.4.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:		for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [X] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: CN3 **Date:** 22 August 2000

Subject: Implications of DHCP lease renewal process

Work item: TEI

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: Clarifications needed on the lease time configuration and the behaviour when the lease expires. Incorrect behaviour will occur unless the PDP Context is deactivated and reactivated again if the IP address is changed following a DHCP lease renewal.

Clauses affected: 7.3.7

Other specs affected:

Other 3G core specifications		→ List of CRs:	
Other GSM core specifications		→ List of CRs:	
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

7.3.7 PDP Context Deactivation

The PDP Deactivation may be performed automatically or manually depending on the manufacturer's implementation and configuration. The following cases are valid:

- if the connection between the MT and the TE is broken then the MT may perform the PDP Context Deactivation procedure;

- ~~-~~if the radio connection is broken then the MT may inform the TE;

- if the DHCP lease expires or the renewal is rejected by the DHCP server or the IP Address is changed during DHCP lease renewal, the TE may deactivate the PDP context.

- if the TE deactivates the last PDP context then the MT may perform the PS Detach procedure.