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For <u>HELP</u> on u	sing this fo	rm, see b	ottom of th	nis page or	· look a	t the	pop-up text	over ti	he  syn	nbols.
Proposed change	affects: ೫	(U)SI	M M	E/UE X	Radio	Acc	ess Networl	<	Core Ne	twork X
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### How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: <u>http://www.3gpp.org/3G\_Specs/CRs.htm</u>. Below is a brief summary:

- 1) Fill out the above form. The symbols above marked **#** contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <u>ftp://ftp.3gpp.org/specs/</u> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

## 10.5.4.5 Bearer capability

The purpose of the bearer capability information element is to describe a bearer service. The use of the bearer capability information element in relation to compatibility checking is described in annex B.

The bearer capability information element is coded as shown in figure 10.5.88/3GPP TS 24.008 and tables 10.5.102/3GPP TS 24.008 to 10.5.115/3GPP TS 24.008.

The bearer capability is a type 4 information element with a minimum length of 3 octets and a maximum length of 16 octets.

8	7	6	5	4	3	2	1	-
			Beare	r capability	y IEI			octet 1
	1	ength of t.	he bearer	capability	contents			octet 2
0/1		dio	CO-	trans		formatio	n	
ext	cha	nnel	ding	fer		transfer		octet 3
	requir	ement	std	mode	1	capability	/	
0/1	0		0					
ext	CO-	CTM			speech			octet 3a *
	ding		spar		indica	ation		
		е						
0/1	0	0	0					_
ext	CO-	spare	spare		Speech			octet 3b etc*
	ding				Indica			=
1	comp			dupl.	confi	NIRR	esta-	
ext	-ress.	struc		mode	gur.		bli.	octet 4*
0/1	0	0		te		signalling		a atat 5*
ext 0/1	acce	ss id.		otion r rate	0 acc	ess prote	000	octet 5*
ext	Otho	r ITC	ada		0	Spare	0	octet 5a*
1	Hdr/	Multi	Mode	LLI	Assig	Inb.	0	UCIEI Da
ext	noHdr	frame	Nioue		nor/e	neg	Spare	octet 5b*
0/1	0	1		User info		neg	sync/	00101 00
ext	•	1 id.		layer 1 p			async	octet 6*
0/1	numb.	nego-	numb.					
ext	stop	tia-	data		user	rate		octet 6a*
	bits	tion	bits					
0/1	inter	med.	NIC	NIC				
ext	ra	te	on TX	on RX		Parity		octet 6b*
0/1	conne	ection						
ext		nent		ma	odem typ	Э		octet 6c*
0/1		her						
ext	moder	n type		Fixed ne	twork us		. ,	octet 6d*
0/1			otable			num num		*
ext			nnel		trat	fic chanr	iels	octet 6e*
0/1		UIMI	ings	١٨	/anted ai	intorfag	•	-
ext		UIIVII		V V	user		5	octet 6f*
1		Acceptable	2		0361	0	0	
ext		annel codi		Asym	metrv	0	0	
- OAC		extended		Indica		Sp	are	octet 6g*
1	1	0			informat		-	
ext	layer	2 id.		laye	r 2 proto	col		octet 7*

## Figure 10.5.88/3GPP TS 24.008 Bearer capability information element

- NOTE 1: The coding of the octets of the bearer capability information element is not conforming to ITU Q.931.
- NOTE 2: An MS shall encode the Bearer Capability infomation element according to GSM call control requirements also if it is requesting for a UMTS service.
- NOTE 3: For UTRAN access the following parameter is irrelevant, because multiple traffic channels (multislot) are not deployed [3GPP TS 23.034]. The parameter shall, however, be stored in MSC, and forwarded at handover:
  - UIMI, User initiated modification indication (octet 6f, bits 5-7)
- NOTE 4: The following parameters are relevant in UMTS for non transparent data calls for deciding which RLP version to negotiate in order to avoid renegotiation of RLP version in case of inter-system handover, see 3GPP TS 24.022 [9]. They are otherwise irrelevant for specifying the UTRAN radio access bearer: -
- NOTE 5: Maximum number of traffic channels (octet 6e, bits 1-3)
  - Acceptable Channel coding(s) (octet 6e, bits 4, 5 and 7)
    - Acceptable Channel Codings extended (octet 6g, bits 5-7).

NOTE 6: A mobile station not supporting GSM shall set the following parameters to the value "0":

- Maximum number of traffic channels (octet 6e, bits 1-3)
- Acceptable Channel coding(s) (octet 6e, bits 4, 5 and 7)
- UIMI, User initiated modification indication (octet 6f, bits 5-7)
- Acceptable Channel Codings extended (octet 6g, bits 5-7).

### Table 10.5.102/3GPP TS 24.008: Bearer capability information element

Radio channel requirement (octet 3), network to MS direction In GSM, i.e. not applicable for UMTS data services.

Bits 6 and 7 are spare bits. The sending side (i.e. the network) shall set bit 7 to value 0 and bit 6 to value 1.

Radio channel requirement (octet 3) MS to network direction

When information transfer capability (octet 3) indicates other values than speech: Bits

- 76
- 0 0 reserved
- 0 1 full rate support only MS
- 1 0 dual rate support MS/half rate preferred
- 1 1 dual rate support MS/full rate preferred

When information transfer capability (octet 3) indicates the value speech and no speech version indication is present in octet 3a etc.:

- Bits
- 76
- 0 0 reserved
- 0 1 full rate support only MS/fullrate speech version 1 supported
  - 1 0 dual rate support MS/half rate speech version 1 preferred, full rate speech version 1 also supported
    - 1 1 dual rate support MS/full rate speech version 1 preferred, half rate speech version 1 also supported

When information transfer capability (octet 3) indicates the value speech and speech version indication(s) is(are) present in octet 3a etc.:

- Bits
- **76** 00

reserved

- 0 1 the mobile station supports at least full rate speech version 1 but does not support half rate speech version 1. The complete voice codec preference is specified in octet(s) 3a etc.
- 1 0 The mobile station supports at least full rate speech version 1 and half rate speech version1. The mobile station has a greater preference for half rate speech version 1 than for full rate speech version 1. The complete voice codec preference is specified in octet(s) 3a etc.
- 1 1 The mobile station supports at least full rate speech version 1 and half rate speech version1. The mobile station has a greater preference for full rate speech version 1 than for half rate speech version 1. The complete voice codec preference is specified in octet(s) 3a etc.

(continued...)

## Table 10.5.102/3GPP TS 24.008: Bearer capability information element (continued)

Coding standard (octet 3) Bit 5 0 GSM standardized coding as described below reserved 1 Transfer mode (octet 3) Bit 4 0 circuit mode packet mode 1 Information transfer capability (octet 3) Bits 321 000 speech 001 unrestricted digital information 010 3.1 kHz audio, ex PLMN 011 facsimile group 3 Other ITC (See Octet 5a) 101 111 reserved, to be used in the network. The meaning is: alternate speech/facsimile group 3 - starting with speech. All other values are reserved

# Table 10.5.103/3GPP TS 24.008 Bearer capability information element

	a etc. MS to network direction
	a etc., bits 1 to 4 shall only be used to convey speech coding information belonging to a
	o access. When included for a UMTS call establishment they shall be used for handover
	Radio Acess.
	station supporting CTM text telephony, but not supporting GSM radio access shall
encode od	ctet 3a, bits 1 to 4 as "no speech version supported for GSM radio access".
Coding	
-	
Bit	
7	
0 0	octet used for extension of information transfer capability
	octet used for other extension of octet 3
When info	prmation transfer capability (octet 3) indicates speech and coding (bit 7 in octet 3a etc.) is
	0, bits 1 through 6 are coded:
coucu ac	
CTM text	telephony indication (octet 3a)
Bit	
6	
	xt telephony is not supported
	xt telephony is supported
	xi telephony is supported
	tat(a) 2h ata in anara
Bit 6 in oc	tet(s) 3b etc. is spare.
Bit 5 in oc	tet(s) 3a etc. is spare.
- ·	
	ersion indication (octet(s) 3a etc.)
Bits	
4321	
0000	GSM full rate speech version 1 <u>: GSM_FR (note 2)</u>
0010	GSM full rate speech version 2 <u>: GSM_EFR (note 2)</u>
0100	GSM full rate speech version 3 : FR_AMR (note 2)
0110	GSM full rate speech version 4 : OFR AMR-WB (note 2)
1000	GSM full rate speech version 5 : FR AMR-WB (note 2)
0001	GSM half rate speech version 1 : <u>GSM_HR (note 2)</u>
0101	GSM half rate speech version 3 : <u>HR_AMR (note 2)</u>
0111	GSM half rate speech version 4 : <u>OHR AMR-WB (note 2)</u>
1011	GSM half rate speech version 6 : OHR AMR (note 2)
1111	no speech version supported for GSM radio access (note 1)
	alues have the meaning "speech version tbd" and shall be ignored
when rece	
	This value shall only be used by an MS supporting CTM text telephony, but not
supporting	g GSM radio access.
<u>NOTE 2: 7</u>	As defined in 3GPP TS 26.103 [83].
	s extended with speech version indication(s) (octets 3a etc.), all speech versions
	I shall be indicated and be included in order of preference (the first octet (3a) has the
highest pr	reference and so on).
	tion transfer capability (octet 3) indicates speech and coding (bit 7 in octet 3a etc.) is
	1, or the information transfer capability does not indicate speech, then the extension
octet shal	I be ignored.
Octet(s) 3	a etc. network to MS direction
(-) -	
The octet	(s) 3a etc. shall be ignored by the MS.
	(, , , , , , , , , , , , , , , , , , ,
<u> </u>	

## Table 10.5.104/3GPP TS 24.008: Bearer capability information element

Compression (octet 4), network to MS direction: Bit 7 0 data compression not possible data compression possible 1 Compression (octet 4), MS to network direction: Bit 7 0 data compression not allowed data compression allowed 1 Structure (octet 4) Bits 65 00 service data unit integrity 11 unstructured All other values are reserved. Duplex mode (octet 4) Bit 4 0 half duplex 1 full duplex Configuration (octet 4) Bit 3 0 point-to-point All other values are reserved. NIRR (octet 4) (Negotiation of Intermediate Rate Requested) In GSM, i.e. not applicable for UMTS data services. Bit 2 0 No meaning is associated with this value. Data up to and including 4.8 kb/s, full rate, non-transparent, 6 kb/s radio 1 interface rate is requested. Establishment (octet 4) Bit 1 0 demand All other values are reserved

### Table 10.5.105/3GPP TS 24.008: Bearer capability information element

Access	identity (octet 5)
Bits	
76	
0 0	octet identifier
All other	values are reserved
	aption (octet 5)
Bits 5 4	
0 0	no rate adaption
0 1	V.110, I.460/X.30 rate adaptation
10	ITU-T X.31 flag stuffing
11	Other rate adaption (see octet 5a)
Signallir	ng access protocol (octet 5)
Bits	
321	
001	1.440/450
010	reserved: was allocated in earlier phases of the protocol
011 100	reserved: was allocated in earlier phases of the protocol
100	reserved: was allocated in earlier phases of the protocol. reserved: was allocated in earlier phases of the protocol
110	reserved: was allocated in earlier phases of the protocol
	reserved, was anotated in earlier phases of the protocol
All other	values are reserved.

### Table 10.5.106/3GPP TS 24.008: Bearer capability information element

Other ITC (octet 5a)

If the value "Other ITC" is not signalled in the field "ITC" then the contents of this field shall be ignored.

Bit **7 6** 

00 restricted digital information

All other values are reserved

Other rate adaption (octet 5a)

If the value " Other rate adaption" is not signalled in the field "Rate adaption" then the contents of this field shall be ignored.

In UMTS, PIAFS shall be considered. In GSM, call shall be rejected if PIAFS requested.

Bit

54

00 V.120

H.223 & H.245 01

10 PIAFS

All other values are reserved.

# Table 10.5.107/3GPP TS 24.008: Bearer capability information element

Rate adaption header/no header (octet 5b)	
Bit 7	
<ul> <li>Rate adaption header not included</li> <li>Rate adaption header included</li> </ul>	
Multiple frame establishment support in data link (octet 5b)	
Bit 6	
<ul> <li>Multiple frame establishment not supported, only UI frames allowed</li> <li>Multiple frame establishment supported</li> </ul>	
Mode of operation (octet 5b)	
Bit 5	
<ul> <li>Bit transparent mode of operation</li> <li>Protocol sensitive mode of operation</li> </ul>	
Logical link identifier negotiation (octet 5b)	
Bit 4 0 Default, LLI=256 only 1 Full protocol negotiation, (note: A connection over which protocol negotiation will	
be executed is indicated in bit 2 of octet 5b)	
Assignor/Assignee (octet 5b)	
Bit 3	
<ul> <li>Message originator is "default assignee"</li> <li>Message originator is "assignor only"</li> </ul>	
In band/Out of band negotiation (octet 5b)	
Bit 2	
<ul> <li>Negotiation is done in-band using logical link zero</li> <li>Negotiation is done with USER INFORMATION messages on a temporary signalling connection</li> </ul>	
Bit 1 is spare and set to the value "0"	

## Table 10.5.108/3GPP TS 24.008: Bearer capability information element

Layer 1 identity (octet 6) Bits 76 01 octet identifier All other values are reserved User information layer 1 protocol (octet 6) Bits 5432 0000 default layer 1 protocol All other values reserved. Synchronous/asynchronous (octet 6) Bit 1 0 synchronous 1 asynchronous

## Table 10.5.109/3GPP TS 24.008: Bearer capability information element

Number	of Stop Bits (octet 6a)
Bit	
7	
0	1 bit (This value is also used in the case of synchronous mode)
1	2 bits
Negotiat Bit	tion (octet 6a)
6	
0	in-band negotiation not possible
NOTE:	See Rec. V.110 and X.30
All other	values are reserved
Number	of data bits excluding parity bit if present (octet 6a)
Bit	
5	
0	7 bits
1	8 bits (this value is also used in the case of bit oriented protocols)
User rate	e (octet 6a)
In GSM	only.
Bits	
4321	
0001	0.3 kbit/s Recommendation X.1 and V.110
0010	1.2 kbit/s Recommendation X.1 and V.110
0011	2.4 kbit/s Recommendation X.1 and V.110
0100	4.8 kbit/s Recommendation X.1 and V.110
0101	9.6 kbit/s Recommendation X.1 and V.110
0110	12.0 kbit/s transparent (non compliance with X.1 and V.110)
0111	reserved: was allocated in earlier phases of the protocol.
All other	values are reserved.
For facs is using.	imile group 3 calls the user rate indicates the first and maximum speed the mobile station

## Table 10.5.110/3GPP TS 24.008: Bearer capability information element

	for V.110/X.30 rate adaptation Intermediate rate (octet 6b)		
In GSM	oniy.		
Bits			
76			
00	reserved		
0 1	reserved		
10	8 kbit/s		
11	16 kbit/s		
Notwork	independent clear (NIC) on transmission (Tv) (actat 6h) (See Rep. ) (110 and V 20)		
in GSM	independent clock (NIC) on transmission (Tx) (octet 6b) (See Rec. V.110 and X.30).		
III 00101	only.		
Bit			
5			
0	does not require to send data with network independent clock		
1	requires to send data with network independent clock		
Notwork	independent clock (NIC) on reception (Rx) (octet 6b) (See Rec. V.110 and X.30)		
In GSM			
	ony.		
Bit			
4			
0	cannot accept data with network independent clock (i.e. sender does not support		
	onal procedure)		
1 procedu	can accept data with network independent clock (i.e. sender does support this optional		
procedu			
Parity in	formation (octet 6b)		
Bits			
321			
000	odd		
010	even		
011	none forest to 0		
100	forced to 0		
101	forced to 1		
All other values are reserved.			
1			

### Table 10.5.111/3GPP TS 24.008: Bearer capability information element

Connection element (octet 6c) Bit 76 00 transparent 01 non transparent (RLP) 10 both, transparent preferred 11 both, non transparent preferred The requesting end (e.g. the one sending the SETUP message) should use the 4 values depending on its capabilities to support the different modes. The answering party shall only use the codings 00 or 01, based on its own capabilities and the proposed choice if any. If both MS and network support both transparent and non transparent, priority should be given to the MS preference. Modem type (octet 6c) Bits 54321 0 0 0 0 0 0 none 0 0 0 0 1 V.21 (note 1) 0 0 0 1 0V.22 (note 1) 0 0 0 1 1 V.22 bis (note 1) 0 0 1 0 0 reserved: was allocated in earlier phases of the protocol 0 0 1 0 1 V.26 ter (note 1) 00110V.32 0 0 1 1 1 modem for undefined interface 0 1 0 0 0 autobauding type 1 All other values are reserved. Note 1: In GSM only.

#### Table 10.5.112/3GPP TS 24.008: Bearer capability information element

Other modem type (octet 6d) Bits 76 00 no other modem type specified in this field 10 V.34 All other values are reserved. Fixed network user rate (octet 6d) Bit 54321 0 0 0 0 Fixed network user rate not applicable/No meaning is associated with this value. 0 0 0 0 19.6 kbit/s Recommendation X.1 and V.110 0 0 0 1 014.4 kbit/s Recommendation X.1 and V.110 0 0 0 1 119.2 kbit/s Recommendation X.1 and V.110 0 0 1 0 028.8 kbit/s Recommendation X.1 and V.110 0 0 1 0 1 38.4 kbit/s Recommendation X.1 and V.110 0 0 1 1 048.0 kbit/s Recommendation X.1 and V.110(synch) (note 1) 0 0 1 1 1 56.0 kbit/s Recommendation X.1 and V.110(synch) /bit transparent 0 1 0 0 064.0 kbit/s bit transparent 0 1 0 0 1 33.6 kbit/s bit transparent (note 2) 0 1 0 1 032.0 kbit/s Recommendation I.460 0 1 0 1 131.2 kbit/s Recommendation V.34 (note 2) The value 31.2 kbit/s Recommendation V.34 shall be used only by the network to inform the MS about FNUR modification due to negotiation between the modems in a 3.1 kHz multimedia call. All other values are reserved. Note 1: In GSM only. Note 2: In UMTS only

# Table 10.5.113/3GPP TS 24.008: Bearer capability information element

Acceptable	channel codings (octet 6e), mobile station to network direction:
	H/F14.4 not acceptable H/F14.4 acceptable
Bit <b>6</b> 0 Spa	are
	H/F9.6 not acceptable H/F9.6 acceptable
	H/F4.8 not acceptable H/F4.8 acceptable
	channel codings (octet 6e), network to MS direction: re spare and shall be set to "0".
Maximum nu	umber of traffic channels (octet 6e), MS to network direction:
Bits <b>3 2 1</b> 0 0 0 1 TC 0 0 1 2 TC 0 1 0 3 TC 0 1 1 4 TC 1 0 0 5 TC 1 0 1 6 TC 1 1 0 7 TC 1 1 1 8 TC	СН СН СН СН СН СН
	umber of traffic channels (octet 6e), network to MS direction: re spare and shall be set to "0".

# Table 10.5.114/3GPP TS 24.008: Bearer capability information element

UIMI, User initiated modification indication (octet 6f),
7.05
765
0 0 0 User initiated modification not allowed/required/applicable
0 0 1 User initiated modification up to 1 TCH/F allowed/may be requested 0 1 0 User initiated modification up to 2 TCH/F allowed/may be requested
0 1 1 User initiated modification up to 3 TCH/F allowed/may be requested
1 0 0 User initiated modification up to 4 TCH/F allowed/may be requested
I 0 0 User militated modification up to 4 TCH/F allowed/may be requested
All other values shall be interpreted as "User initiated modification up to 4 TCH/F may be requested".
User initiated modification indication is not applicable for transparent connection.
Wanted air interface user rate (octet 6f), MS to network direction:
Bits
4321
0 0 0 0 Air interface user rate not applicable/No meaning associated with this value
0 0 0 1 9.6 kbit/s
0 0 1 0 14.4 kbit/s
0 0 1 1 19.2 kbit/s
0 1 0 1 28.8 kbit/s
0 1 1 0 38.4 kbit/s
0 1 1 1 43.2 kbit/s
1 0 0 0 57.6 kbit/s
1 0 0 1 interpreted by the network as 38.4 kbit/s in this version of the protocol
1 0 1 0 interpreted by the network as 38.4 kbit/s in this version of the protocol
1 0 1 1 interpreted by the network as 38.4 kbit/s in this version of the protocol
1 1 0 0 interpreted by the network as 38.4 kbit/s in this version of the protocol
All other values are reserved.
Wanted air interface user rate (octet 6f), network to MS direction:
Bits 1 to 4 are spare and shall be set to "0".

### Table 10.5.115/3GPP TS 24.008: Bearer capability information element

Layer 2 identity (octet 7) Bits 76 10 octet identifier All other values are reserved User information layer 2 protocol (octet 7) Bits 54321 0 0 1 1 0 reserved: was allocated in earlier phases of the protocol 0 1 0 0 0 ISO 6429, codeset 0 (DC1/DC3) 0 1 0 0 1 reserved: was allocated but never used in earlier phases of the protocol 0 1 0 1 0 videotex profile 1 0 1 1 0 0 COPnoFICt (Character oriented Protocol with no Flow Control mechanism) 0 1 1 0 1 reserved: was allocated in earlier phases of the protocol All other values are reserved.

#### Table 10.5.115a/3GPP TS 24.008: Bearer capability information element

Acceptable Channel Codings extended (octet 6g) mobile station to network direction: Bit 7 0 TCH/F28.8 not acceptable 1 TCH/F28.8 acceptable Bit 6 0 TCH/F32.0 not acceptable 1 TCH/F32.0 acceptable Bit 5 0 TCH/F43.2 not acceptable 1 TCH/F43.2 acceptable **Channel Coding Asymmetry Indication** Bits 43 00 Channel coding symmetry preferred Downlink biased channel coding asymmetry is preferred 10 Uplink biased channel coding asymmetry is preferred 01 Unused, if received it shall be interpreted as "Channel coding symmetry preferred" 11 EDGE Channel Codings (octet 6g), network to MS direction: Bits 3 to 7 are spare and shall be set to "0". Bits 2 and 1 are spare.