

## OsmoMSC - Feature #4196

### CC Setup, Call Confirmed: decode and use the Supported Codec List IE

09/10/2019 10:30 PM - neels

<b>Status:</b>	New	<b>Start date:</b>	09/10/2019
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>		<b>% Done:</b>	0%
<b>Category:</b>			
<b>Target version:</b>			
<b>Resolution:</b>		<b>Spec Reference:</b>	
<b>Description</b>			
In the CC Setup / CC Call Confirmed messages, there is a Supported Codec List IE besides the Bearer Capabilities. So far we only decode and handle the information from the Bearer Capabilities, but instead or in addition we may want to also look at this Supported Codec List IE.			

### History

#### #1 - 09/10/2019 10:42 PM - neels

An example dissection of a CC Setup:

Note that further above, there is a Bearer Capabilities listing of codecs, while further below there also is the Supported Codec List, with separate information for UMTS and GSM.

3GPP TS 24.008 says that "This information element shall be included for speech calls, if the mobile station supports UMTS radio access." (I interpret this so that UMTS doesn't imply 3G, but means R99 and is also used on 2G).

The Supported Codecs are only present in the MO CC Setup (not in MT, where the CN sends the CC Setup), but is also contained in the CC Call Confirmed message (which in MT the MS sends to the CN).

GSM A-I/F DTAP - Setup

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Protocol Discriminator: Call Control; call related SS messages (3)
... 0011 = Protocol discriminator: Call Control; call related SS messages (0x3)
0... .... = TI flag: allocated by sender
.000 .... = TIO: 0
10.. .... = Sequence number: 2
..00 0101 = DTAP Call Control Message Type: Setup (0x05)
Bearer Capability 1 - (MS supports at least full rate speech version 1 and half rate speech version 1. MS
has a greater preference for full rate speech version 1 than for half rate speech version 1)
Element ID: 0x04
Length: 6
Octet 3
0... .... = Extension: Extended
.11. .... = Radio channel requirement: MS supports at least full rate speech version 1 and half ra
te speech version 1. MS has a greater preference for full rate speech version 1 than for half rate speech vers
ion 1
...0 .... = Coding standard: GSM standardized coding
.... 0... = Transfer mode: circuit
.... .000 = Information transfer capability: Speech (0x0)
Octets 3a - Speech Versions
0... .... = Extension: Extended
.0.. .... = Coding: octet used for extension of information transfer capability
..00 .... = Spare bit(s): 0
.... 0100 = Speech version indication: GSM full rate speech version 3 (FR AMR) (0x4)
0... .... = Extension: Extended
.0.. .... = Coding: octet used for extension of information transfer capability
..00 .... = Spare bit(s): 0
.... 0010 = Speech version indication: GSM full rate speech version 2 (GSM EFR) (0x2)
0... .... = Extension: Extended
.0.. .... = Coding: octet used for extension of information transfer capability
..00 .... = Spare bit(s): 0
.... 0000 = Speech version indication: GSM full rate speech version 1 (GSM FR) (0x0)
0... .... = Extension: Extended
.0.. .... = Coding: octet used for extension of information transfer capability
..00 .... = Spare bit(s): 0
.... 0101 = Speech version indication: GSM half rate speech version 3 (HR AMR) (0x5)
1... .... = Extension: No Extension
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    .0.. .... = Coding: octet used for extension of information transfer capability
    ..00 .... = Spare bit(s): 0
    .... 0001 = Speech version indication: GSM half rate speech version 1(GSM HR) (0x1)
Called Party BCD Number - (2002)
  Element ID: 0x5e
  Length: 3
  1... .... = Extension: No Extension
  .000 .... = Type of number: unknown (0x0)
  .... 0001 = Numbering plan identification: ISDN/Telephony Numbering (ITU-T Rec. E.164 / ITU-T Rec. E.1
63) (0x1)
  Called Party BCD Number: 2002
  Call Control Capabilities
  Element ID: 0x15
  Length: 2
  0000 .... = Maximum number of supported bearers: 1
  .... 0... = MCAT: The mobile station does not support Multimedia CAT
  .... .0.. = ENICM: The mobile station does not support the Enhanced Network-initiated In-Call Modifica
tion procedure
  .... ..0. = Prolonged Clearing Procedure: Not supported
  .... ...1 = DTMF: the mobile station supports DTMF as specified in subclause 5.5.7 of TS 24.008
  0000 .... = Spare bit(s): 0
  .... 0000 = Maximum number of speech bearers: 0
Supported Codec List
  Element ID: 0x40
  Length: 8
  System Identification (SysID): UMTS (0x04)
  Bitmap Length: 2
  Codec Bitmap for SysID 1
    0... .... = TDMA EFR: False
    .1.. .... = UMTS AMR 2: True
    ..1. .... = UMTS AMR: True
    ...0 .... = HR AMR: False
    .... 0... = FR AMR: False
    .... .0.. = GSM EFR: False
    .... ..0. = GSM HR: False
    .... ...0 = GSM FR: False
  00.. .... = Spare bit(s): 0
  ..0. .... = OHR AMR-WB: False
  ...0 .... = OFR AMR-WB: False
  .... 0... = OHR AMR: False
  .... .1.. = UMTS AMR-WB: True
  .... ..0. = FR AMR-WB: False
  .... ...0 = PDC EFR: False
  System Identification (SysID): GSM (0x00)
  Bitmap Length: 2
  Codec Bitmap for SysID 2
    0... .... = TDMA EFR: False
    .0.. .... = UMTS AMR 2: False
    ..0. .... = UMTS AMR: False
    ...1 .... = HR AMR: True
    .... 1... = FR AMR: True
    .... .1.. = GSM EFR: True
    .... ..1. = GSM HR: True
    .... ...1 = GSM FR: True
  00.. .... = Spare bit(s): 0
  ..0. .... = OHR AMR-WB: False
  ...0 .... = OFR AMR-WB: False
  .... 0... = OHR AMR: False
  .... .0.. = UMTS AMR-WB: False
  .... ..0. = FR AMR-WB: False
  .... ...0 = PDC EFR: False

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## #2 - 09/10/2019 10:43 PM - neels

- Subject changed from CC Setup: decode and use the Supported Codec List IE to CC Setup, Call Confirmed: decode and use the Supported Codec List IE

- Description updated

## #3 - 09/25/2019 05:27 PM - neels

Related:

24.008 5.2.1 Mobile originating call establishment:

For speech calls the mobile station shall indicate all codecs that it supports for UTRAN in the Supported Codec List information element. Codecs for GERAN shall be indicated in the Bearer Capability information element, if this information element is included. Additionally, if the mobile station supports codecs for GERAN and UTRAN, it shall indicate the codecs for GERAN also in the Supported Codec List information element.

24.008 5.2.2.3.2 Receipt of CALL CONFIRMED and ALERTING by the network:

For speech calls, if the CALL CONFIRMED message contains a Supported Codec List information element, the network shall use this list to select the codec for UTRAN. If no Supported Codec List information element is received, then for UTRAN the network shall select the default UMTS speech codec according to subclause 5.2.1.11. Codecs for GERAN shall be selected from the codecs indicated in the Supported Codec List information element or in the Bearer Capability information element. If neither a Supported Codec List information element nor a Bearer Capability information element is received, then for GERAN the network shall select GSM full rate speech version 1.