3GPP TSG-T (Terminals) Meeting #13
Beijing, China, 19 - 21 September, 2001

Tdoc TP-010216

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27-31. August 2001

Tdoc N1-011286

Title: Liaison Statement on "Introduction Of UMTS_AMR_2 into R99 UE's"

Source: TSG-CN WG1

To: TSG-T, TSG-SA4

cc: TSG-T2

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1. Overall Description:

CN1 has discussed the introduction of codec type UMTS_AMR_2 into TS 24.008. The discussion paper is attached for your information (CN1-011241). The corrections to TS 24.008 also support the handling of UMTS_AMR_2 in dual system terminals (UMTS & GSM) for R99; it is understood by CN1 that this requirement has been requested by SA4 and agreed by TSG-T. CN1 has seen the LS (TP-010148) from TSG-T to SA4 indicating that it may be more appropriate for SA4 to specify all codecs. However for R99, it may be misleading if these changes are not incorporated in TR 21.904 entitled UE Capability Requirements owned by TSG-T.

In order for the MSC to determine support of UMTS_AMR_2 in R99, CN1 has agreed the following for R99 terminals:

i) R99 UMTS only - UMTS_AMR supported as default.

ii) R99 UMTS & GSM, if UMTS_AMR_2 supported as default then it must indicate one or more GSM speech versions in Octet 3a of Bearer Capabilities IE, TS 24.008

iii) R99 UMTS & GSM, if GSM speech version indicated in Octet 3a of Bearer Capabilities IE, TS 24.008 then it must support UMTS_AMR_2 as default.

2. Actions:

To TSG-T group.

ACTION: CN1 kindly asks TSG-T to consider updating TR 21.904 to include the above requirements. Also in order to maintain these requirements for future releases, CN1 asks TSG-T to consider transferring this TR to a TS.

To TSG-SA WG4 group.

ACTION: CN1 kindly asks SA4 to include UMTS_AMR_2 codec type in their Codec List specification, TS 26.103 v3.0.0.

3. Date of Next CNx Meetings:

CN1_20	15th – 19th October 2001	Brighton, U.K.
CN1_21	26th – 30th November 2001	Cancun, Mexico

4. Attachments:

N1-011241 [Discussion paper on UMTS_AMR_2]

3GPP TSG-CN1 Meeting #19 ***Tdoc N1-011241***
Helsinki, Finland, 27-31 August 2001

Source: L.M. Ericsson

Title: Introduction of UMTS_AMR_2 – default UMTS codec for GSM inteworking

Agenda item: **7**

Document for: APPROVAL

Introduction

SA4 has completed the standardisation for codec type UMTS_AMR_2. This codec has been introduced in order to solve the incompatibilities between the FR_AMR codec for GSM and the UMTS_AMR codec for UMTS. These codecs cannot operate together in TrFO or TFO, although the encoding algorithms are bit exact. The problem being in the rate control handling of these codecs; FR_AMR may only change between adjacent modes and only every other frame (40ms perodicity) whereas UMTS_AMR may change any frame and between any modes. It has been argued and agreed in SA4 that for systems interworking with both GSM and UMTS the compatibilty for TrFO and TFO outweighs the advantage to freely change between any modes or at any frame.

UMTS_AMR_2 codec applies FR_AMR rate control rules on sending but can receive the rate control requests from UMTS_AMR (i.e. any mode, any frame).

It is thus desired that the UMTS_AMR_2 codec replaces the UMTS_AMR codec as default; only small changes to the rate control handling procedures for the Ue are required, no changes to the handling of codecs in the R99 core network is needed. For terminals that are developed for UMTS systems only there may be no desire to support this codec, however terminals that are produced for both UMTS & GSM systems in R99 will still not be able to interoperate in TFO or TrFO if they only support the default UMTS_AMR codec as specified in R99.

In R99, the specifications defining a default UMTS_AMR codec were: TS 26.103, TS24.008 and TR 21.904. The latter technical report (Entitled – Ue Capability Requirements) is the responsibility of TSG-T but has not been progressed into a TS. It is this document that would seem the most appropriate place to document default codecs for the terminals.

In LS SA-010243 CN4 & CN1 are informed about the UMTS_AMR_2 codec as default codec for UMTS from release 4 onwards. TSG-T has sent an LS (T2-010601) to SA4 stating that they accept the introduction of UMTS_AMR_2 but believe that SA4 should be responsible for documenting the default codec type.

The problem of identifying UMTS_AMR_2 in Rel4 for the MSC or the Ue can be easily resolved using the codec list codepoints in TS 26.103 and the Supported Codec List IE in 24.008. However this does not resolve the R99 issue where no supported codecs list IE exists, in other words when an R99 terminal attaches to a Rel4 MSC.

For a R99 MSC there is no need to detect if a terminal is supporting UMTS_AMR or UMTS_AMR_2 as there is no network support for TFO or TrFO. Thus it is probably unneccessary to make any changes to 24.008 R99, provided that the other specifications (26.103 and/or 21.904) for Rel99 Terminal Capabilities are updated.

UMTS_AMR_2 is fully backward compatible with UMTS_AMR, therefore if the UE supports UMTS_AMR_2 and the network is R99 and assumes UMTS_AMR then no interworking problems will occur.

Proposal

A number of proposals have been discussed in adhoc/informal meetings within the 3GPP standards community. The proposal recommended by this paper is that a change request is made to the R99 terminal specifications to define the default UMTS codec as the following:

~~i)~~iv) R99 UMTS only - UMTS_AMR supported as default.

~~ii)~~v) R99 UMTS & GSM, if UMTS_AMR_2 supported as default then must indicate one or more GSM speech versions in Octet 3a.

~~iii)~~vi) R99 UMTS & GSM, if GSM speech version indicated in Octet 3a then must support UMTS_AMR_2 as default.

For Rel4 terminals (and onwards) the default UMTS codec type should be defined and indicated by the terminals according to the following:

i) Rel4 UMTS only – shall support UMTS_AMR_2 as default codec type and shall indicate to the network via Supported Codecs List IE.

ii) Rel4 UMTS & GSM – shall support UMTS_AMR_2 as default codec and shall indicate to the network via Supported Codecs List IE

For Rel4 MSC to detect terminals that support UMTS_AMR_2 the following principles should be applied to Rel4 DTAP protocol (24.008):

i) If Supported Codec List received - use codec type from list.

ii) If no Supported Codec List, check if GSM codepoints for Speech Versions are sent in Octet 3a:

   a) If yes – Assume UMTS_AMR_2 as default

   b) If no - Assume UMTS_AMR

The network shall assume UMTS_AMR if a dual system mobile does not indicate any GSM codec types in Octet 3a etc.The reason for this is that it is assumed that evaluation of Octet 3a etc is the only way the CC protocol can easily determine that the Ue is dual system.

This would require a CR to 24.008 Rel4 and possibly 26.103 (assuming this is the specification agreed by SA4 as to be where default codecs are described). The TR 21.904 should also possibly be updated if it is agreed by TSG-T that this document is still of relevance to R99 Ue Capability Requirements.

In order that the Core Network solution can support both R99 and Rel4 terminals without needing to identify which release of terminal, as described above, some changes have been made to the original assumptions. This has also resulted in some ammendments to the CN4 CR to 23.153 being required. The proposed changes are attached to this contribution.

Conclusion

This contribution recommends that a CR to 24.008 Rel4 is agreed by CN1 describing the above default UMTS codec types for “UM TS only” and “Dual System” terminals. Secondly that a Liaison Statement is sent to SA4 and TSG-T, copied to CN4, indicating that CN1 would like to see a corresponding definition in either the TSG-T technical report or similar specification or if agreed between TSG-T and SA4 then in an SA4 specification (i.e requesting that a CR is made to R99 specifications by one or other WG.

A LS to CN4 should be sent with the modifications to CR N4-010644, changes to TS 23.153.

The proposed CR’s are attached: