

Agenda Item: 7

Source: Mannesmann Mobilfunk

Title: CR to TS 25.301 on Broadcast/Multicast

Document for: Discussion and Decision

The support of SMS Cell Broadcast Teleservice is a Release 99 requirement.

The first step is to find an appropriate protocol architecture on the radio interface. Following requirements or decisions are given:

- Distribution of SMS CB messages to cells allocated to this service
- SMS CB messages are user data and therefore delivered through the user plane
- CTCH (common traffic channel) is chosen as the logical channel carrying SMS CB messages
- CTCH is mapped onto the transport channel FACH in the MAC layer in Release 99
- The associated FACH should be used exclusively by SMS CB in Release 99 to introduce effective discontinuous reception in the UE
- Discontinuous reception of SMS CB messages should be mandatory
- The protocol architecture should be prepared for future extensions (multimedia broadcast/multicast)

Detailed information and analysis about the SMS CB teleservice on the radio interface is given in TR 25.925 chapter 6.

Conclusion:

A new sublayer is required, called Broadcast/Multicast Control sublayer BMC. The specification of the architecture, the services and functions is given in the CR to TS 25.301 succeeding.

3G CHANGE REQUEST

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

TS 25.301 CR ??

Current Version: **3.1.0**

3G specification number ↑

↑ CR number as allocated by 3G support team

For submission to TSG **RAN#5** for approval (only one box should
list TSG meeting no. here ↑ for information be marked with an X)

Form: 3G CR cover sheet, version 1.0 The latest version of this form is available from: ftp://ftp.3gpp.org/Information/3GCRF-xx.rtf

Proposed change affects: USIM ME UTRAN Core Network
(at least one should be marked with an X)

Source: TSG-RAN WG2 **Date:** 16/08/99

Subject: Introduction of Broadcast/Multicast sublayer in the protocol architecture

3G Work item:

Category: F Correction
A Corresponds to a correction in a 2G specification
(only one category shall be marked with an X) B Addition of feature
C Functional modification of feature
D Editorial modification

Reason for change: The integration of GSM SMS Cell Broadcast teleservice into UMTS is a Release 99 requirement. This CR provides the protocol architecture on the radio interface.

Clauses affected: 5.1, 5.4, new clause

Other specs affected: Other 3G core specifications → List of CRs:
Other 2G 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.

Chapter 5.1:

After Figure 2 a new section will be introduced.

Figure 3 shows the protocol architecture for broadcast/multicast application. An Broadcast/Multicast Control sublayer is introduced. It has an interface to the RRC and the MAC sublayer. The services of RLC sublayer are not needed because retransmission does not take place.

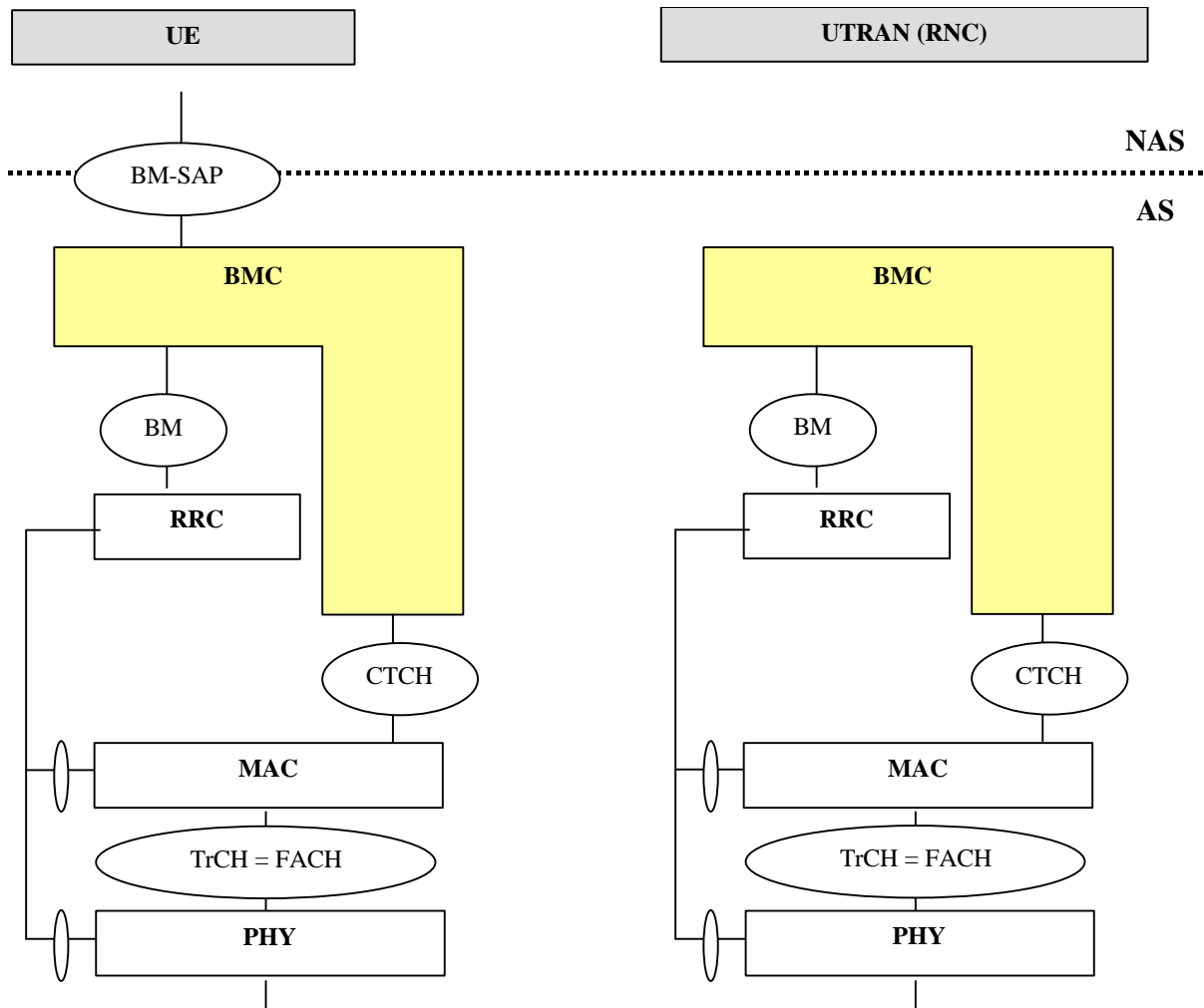


Figure 3: Protocol Architecture for Broadcast/Multicast Services

Modification of chapter 5.3.1.1.2 “Mapping between logical channels and transport channels”:

The following connections between logical channels and transport channels exist:

- SCCH is connected to SCH
- BCCH is connected to BCH
- PCCH is connected to PCH
- CCCH is connected to RACH and FACH
- DTCH can be connected to either RACH and FACH, to RACH and DSCH, to DCH and DSCH, to a DCH, a CPCH (FDD only) or to USCH (TDD only)
- CTCH is connected to FACH. Whether it can be connected to DSCH or BCH is ffs.
- ~~CTCH can be connected to DSCH, FACH or BCH (ffs.)~~

[Note: Above potential mappings are proposed by the editor. This channel type will be included into the Figures below when the mappings have been agreed.]

- DCCH can be connected to either RACH and FACH, to RACH and DSCH, to DCH and DSCH, to a DCH, a CPCH (FDD only) to FAUSCH, CPCH (FDD only), or to USCH (TDD only).

The mappings as seen from the UE and UTRAN sides are shown in SEQARABIC and SEQARABIC respectively. Figure 4 illustrates the mapping from the UE in relay operation. Note that ODMA logical channels and transport channels are employed only in relaylink transmissions (i.e. not used for uplink or downlink transmissions on the UE-UTRAN radio interface).

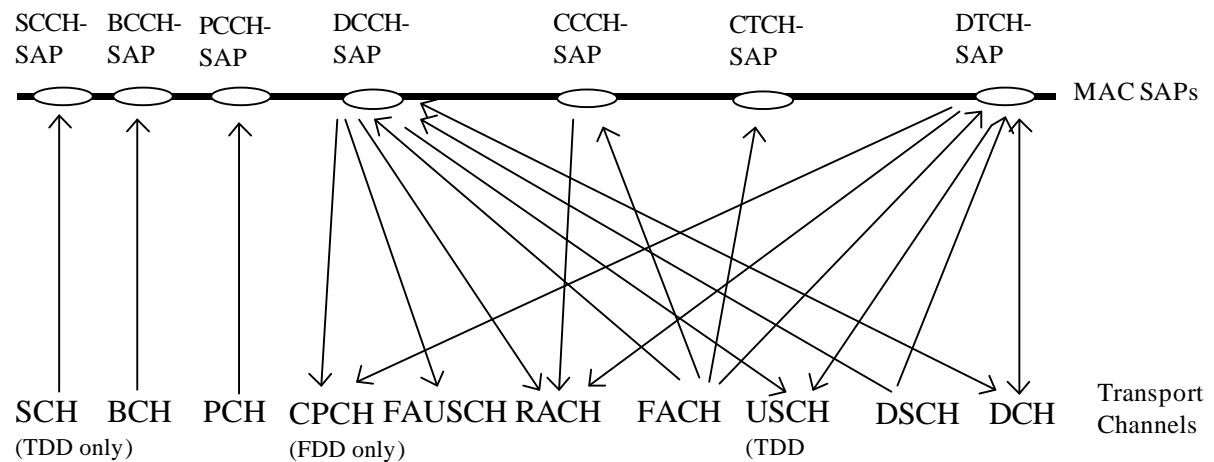


Figure 1: Logical channels mapped onto transport channels, seen from the UE side

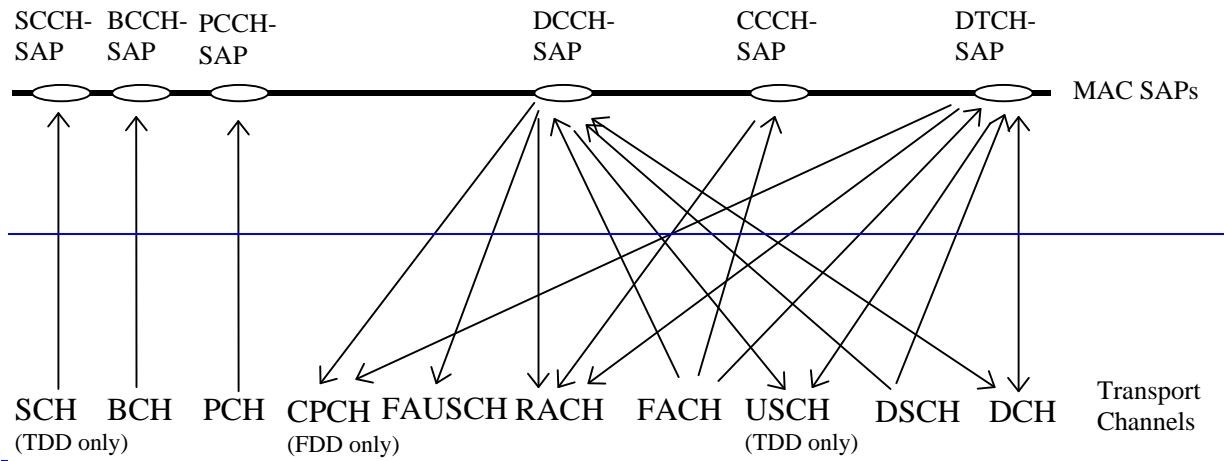


Figure 4: Logical channels mapped onto transport channels, seen from the UE side

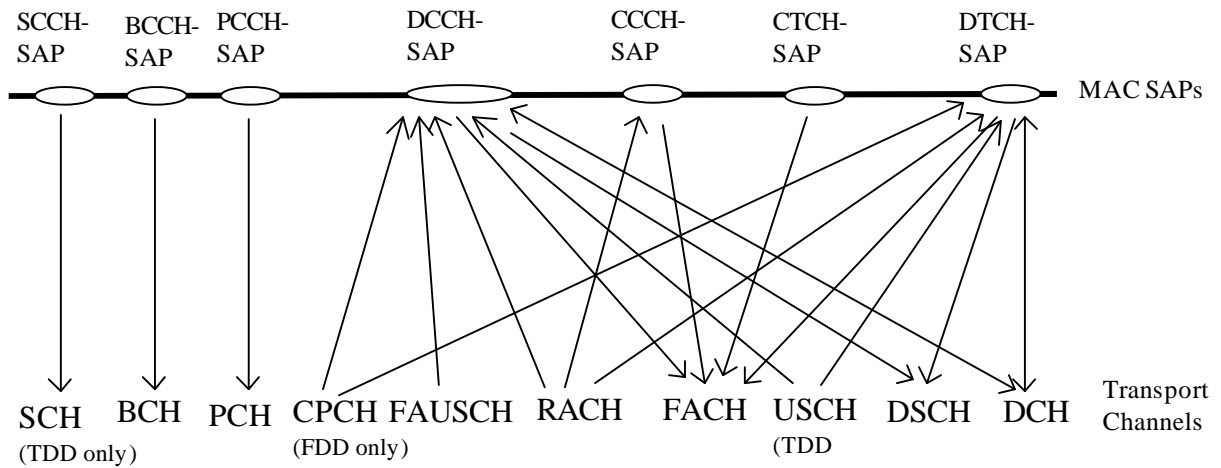


Figure 5: Logical channels mapped onto transport channels, seen from the UTRAN side

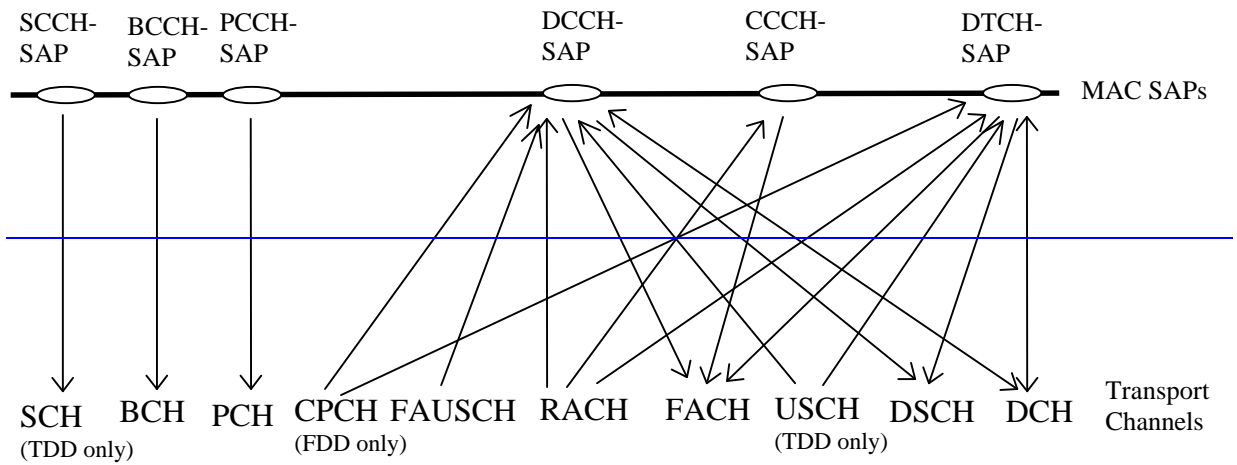


Figure 5: Logical channels mapped onto transport channels, seen from the UTRAN side

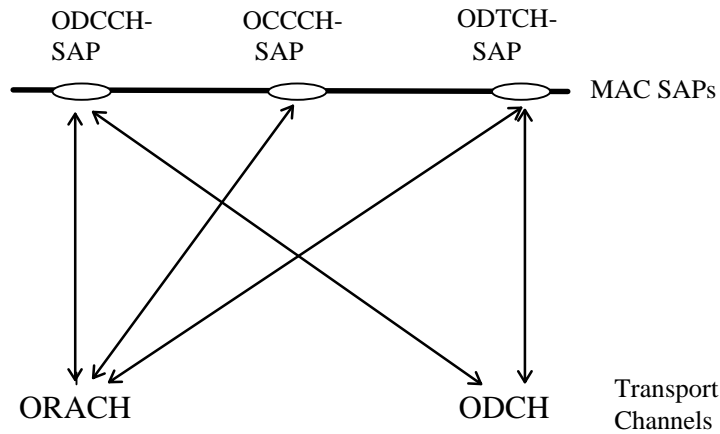


Figure 4: Logical channels mapped onto transport channels, seen from the UE side (relay only)

New function in chapter 5.4.2 “RRC functions”:

- **Configuration of discontinuous SMS CB message reception**
This function configures the PHY sublayer of the receiving side UE when it should listen to the configured « SMS CB channels ».

New chapter 5.n between 5.4 “Layer 3 – RRC services and functions” and 5.5 “Interactions between RRC and lower layers in the C-plane”:

5.n Broadcast/Multicast Control – Services and functions

5.n.1 BMC Services

The BM-SAP provides an broadcast/multicast transmission service on the radio interface for user data in unacknowledged mode.

5.n.2 BMC Functions

- **Distribution of the SMS CB Messages**
Each SMS CB Message arriving from the CBC has associated distribution information which is used by the function as input to schedule and to generate SMS CB sequences per cell.
- **Control of discontinuous SMS CB message reception**
This function controls the receiving side when it should listen to the configured « SMS CB channels ». The aim is to minimize the power consumption of the UEs.
- **Configuration management of SMS CB capacity**
This function activates and deactivates the SMS CB capability and requests SMS CB channels with an appropriate QoS (for example : maximum transmission rate) per cell.
- **Segmentation/assembly of SMS CB messages**
This function segments SMS CB messages into appropriate payload units on the transmitting side UTRAN(RNC) and reassembly the payload units on the receiving side UE. The size of the payload units depends on configured FACH.
- **Transmission of SMS CB messages**
This functions controls the transmission the SMS CB messages just in time as given by the « Discontinuous SMS CB message reception » function.
- **Delivery of received SMS CB messages in the UE side**
This functions delivers the received SMS CB messages to the NAS in the UE. The delivery depends on the grade of corruption which may be an adjustable QoS attribute.