

TSG RAN WG 2#6
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Agenda item: 10
Source: Golden Bridge Technology
Title: CPCH Primitives for TS25.321, Mac Protocol Specification

Document for: Discussion and approval

INTRODUCTION

In order for the UE to utilize the CPCH channels available in a cell, interlayer primitives must be modified to add the CPCH parameters needed for CPCH access. At RANWG2#5 contribution R2-99596 [1] was presented to list the RRC parameters and measurements needed for access and control of CPCH channels. In this contribution, those RRC parameters are added as new parameters in existing MAC layer primitives.

DISCUSSION

CPCH parameters are broadcast in the System Information message in the BCCH to all UEs. In addition, RNC may send CPCH parameters to a UE using DCCH resources. CPCH parameters include CPCH channel timing value, priority values, backoff control parameters, the physical channel description and persistency value for each CPCH channel included in the CPCH set assigned to this UE by RNC. The CPCH parameters are read by RRC in the UE, are parsed and distributed to the MAC and PHY layers using interlayer primitives.

MAC layer requires the following CPCH parameters for each CPCH channel in the CPCH Set:

- CPCH channel number
- CPCH persistency value
- CPCH channel data rate (implicit in the UL channelisation code)
- NFmax (Max packet length in frames)
- Priority values
- Backoff control parameters

PHY layer requires the following CPCH parameters for each CPCH channel in the CPCH Set:

- AP preamble code (common to all CPCH channels in this CPCH set)
- AP-AICH channelisation code (common to all CPCH channels in this CPCH set)
- CD preamble code (common to all CPCH channels in this CPCH set)
- CD-AICH channelisation code (common to all CPCH channels in this CPCH set)
- CPCH channel timing parameter (common to all CPCH channels in this CPCH set)
- Nap_retrans_max parameter (common to all CPCH channels in this CPCH set)
- CPCH channel number

- UL scrambling code
- UL channelisation code
- DL channelisation code
- Preamble signature(s) for channel access

When the UE has data to be transmitted on the CPCH, interlayer primitives must contain parameters which specify the use of the selected CPCH channel. Figure 1 below presents a typical scenario showing the interlayer primitives containing CPCH parameters. The figure does not depict the PHY CPCH access procedure.

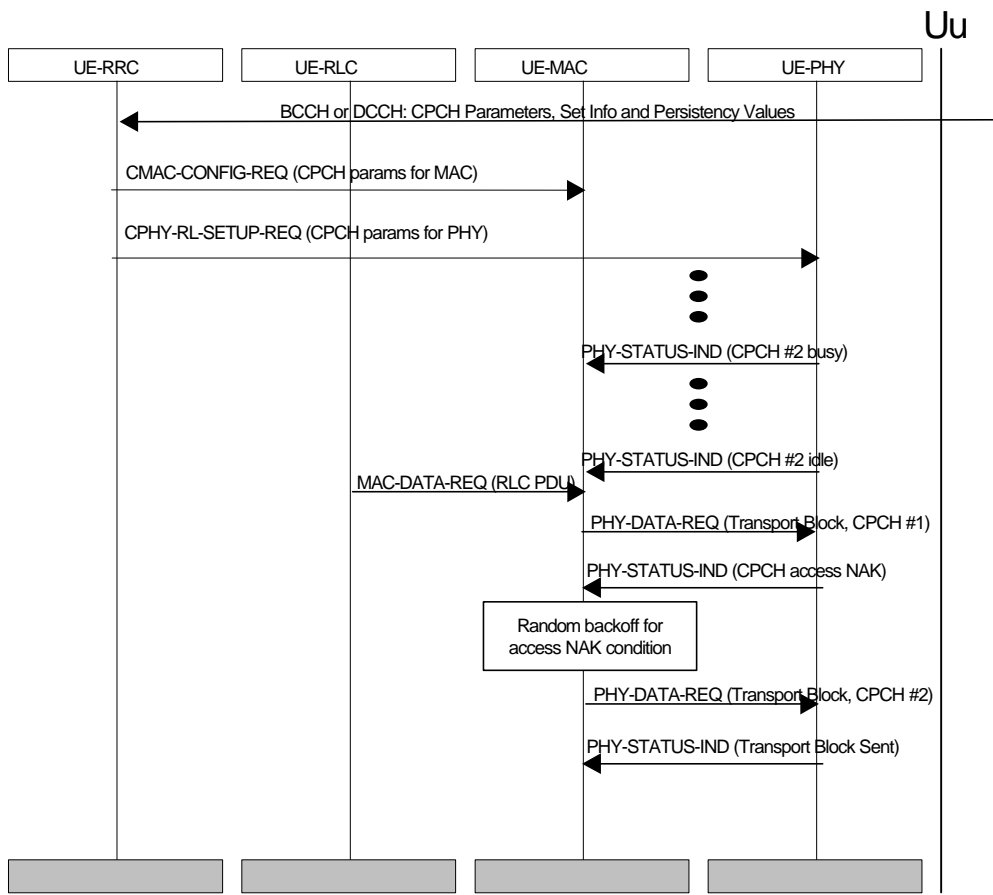


Figure 1: Typical interlayer primitives containing CPCH parameters.

PROPOSAL

The following changes should be incorporated into the latest version of TS25.321, MAC Protocol Specification. The baseline text listed here for these changes is from R2-99568 [3]. R2-99568 is an Ericsson proposal which, among other things, expands the parameter list for the CMAC-CONFIG primitive between MAC and RRC. These changes were accepted for inclusion into TS25.321 at RAN2#5.

8.3 Primitives between MAC and RRC

8.3.1 Primitives

The primitives between MAC and RRC are shown in Table 8.3.1

Generic Name	Type				Parameters
	Request	Indication	Response	Confirm	
CMAC-CONFIG	X				UE information elements RAB information elements TrCH information elements RACH transmission control elements Ciphering elements CPCH control elements
CMAC-MEASUREMENT	X	X			Measurement information elements
CMAC-STATUS		X			Status info.

Table 8.3.1 Primitives between MAC sub-layer and RRC

CMAC-CONFIG-Req

- CMAC-CONFIG-Req is used to request for setup, release and configuration of a logical channel, e.g. RNTI allocation, the switching the connection between logical channels and transport channels, TFCS update or scheduling priority of logical channel.

CMAC-MEASUREMENT-Req/Ind

- CMAC-MEASUREMENT-Req is used by RRC to request MAC to perform measurements, e.g. traffic volume measurement.
- CMAC-MEASUREMENT-Ind is used to notify RRC of the measurement result.

CMAC-STATUS-Ind

- CMAC-STATUS-Ind primitive notifies RRC of status information.

8.3.2 Parameters

See 25.331 for a detailed description of the UE, RAB and TrCH information elements.

- a) UE information elements
 - S-RNTI
 - SRNC identity
 - C-RNTI
 - Activation time
- b) RAB information elements
 - RAB multiplexing info (Transport channel identity, Logical channel identity, MAC logical channel priority)
- c) TrCH information elements
 - Transport Format Combination Set
- d) Measurement information elements
 - (Details are ffs)
- e) Status info
 - Maximum number of preamble ramping cycles reached
- f) RACH transmission control elements
 - Persistence value P
 - Maximum number of preamble ramping cycles M_{max}
 - Others (ffs., e.g. minimum and maximum number of time units between two preamble ramping cycles)
- g) Cipherring elements
 - Cipherring mode
 - Cipherring key
 - Cipherring sequence number
- h) CPCH control elements
 - CPCH channel number
 - CPCH persistency value
 - CPCH channel data rate (implicit in the UL channelisation code)
 - NFmax (Max packet length in frames)

REFERENCES

- [1] TSGR2#5(99)596, "CPCH parameter additions to 25.331, RRC Protocol Specification"
- [2] TSGR2#5(99)516, "MAC Protocol Specification", TS25.321 V3.0.0
- [3] TSGR2#4(99)568, "MAC Primitives"