

- Transfer of upper layer PDUs.
- Error correction through ARQ (only for AM data transfer).
- Concatenation, segmentation and reassembly of RLC SDUs (only for Unacknowledged Mode (UM) and AM data transfer).
- Resegmentation of RLC data PDUs (only for AM data transfer).
- Reordering of RLC data PDUs (only for UM and AM data transfer).
- Duplicate detection (only for UM and AM data transfer).
- Protocol error detection (only for AM data transfer).
- RLC SDU discard (only for UM and AM data transfer).
- RLC re-establishment, except for a NB-IoT UE that only uses CP CIoT EPS optimizations.

Depending on the mode-of-operation, an RLC entity may provide all, a subset of, or none of the services above. The RLC can operate in three different modes:

- Transparent mode (TM), where the RLC is completely transparent and is in essence bypassed. This configuration is used for control-plane broadcast channels such as Broadcast Control Channel (BCCH), Common Control Channel (CCCH) and Paging Control Channel (PCCH) only where the information should reach multiple users.
- Unacknowledged mode (UM), where the RLC provides all the functionality above except error correction, is used when error-free delivery is not required, for example for Multicast Control Channel (MCCH) and Multicast Traffic Channel (MTCH) using Multimedia Broadcast over a Single Frequency Network (MBSFN) and for Voice-over-IP (VoIP).
- Acknowledged mode (AM), where the RLC provides all the services above, is the main mode-of-operation for TCP/IP packet data transmission on the Downlink Shared Channel (DL-SCH). Segmentation/reassembly, in-sequence delivery and retransmissions of erroneous data are all supported.

The RLC offers services to the PDCP in the form of *radio bearers* and uses services from the MAC layer in the form of *logical channels*. There is one RLC entity per radio bearer configured for each UE.

#### 1.1.1.2.3 Medium Access Control (MAC)

The MAC layer is responsible for:

- Mapping between logical channels and transport channels.
- Multiplexing/demultiplexing of MAC SDUs belonging to one or different logical channels into/from transport blocks delivered to/from the physical layer on transport channels.
- Scheduling information reporting.
- Error correction through N-process stop-and-wait hybrid-ARQ (HARQ) with synchronous (for the uplink) and asynchronous (for the downlink) retransmissions.
- Priority handling between logical channels of one UE.
- Priority handling between UEs by means of dynamic scheduling.
- Multimedia Broadcast/Multicast Service (MBMS) identification.
- Transport format selection.
- Padding.

The ProSe specific services and functions of the MAC sublayer include:

- Radio resource selection;