

Agenda Item: S2.22
Source: Ericsson
Title: **RLC protocol states**
Document for: Decision

RLC protocol states

1 Introduction

The scope of this document is to discuss the protocol state models of the different RLC entities Ericsson, Tdoc RAN WG2 147/99, "Model of RLC". A proposal of states and transitions between states is presented. The proposed protocol state model differs from the current model in 3GPP TSG RAN WG2, Tdoc RAN WG2 /99, "Description of the RLC protocol", v 0.0.1.. The main differences are that there is one state model for each mode and that some control PDUs (BGN, BGN ACK, END and END ACK) have been removed. We would like to keep the PDUs as FFS, but we do not see a need of them for the moment. The proposal aims to be applicable for both FDD and TDD.

2 The states of RLC

2.1 State model for transparent mode entities

Figure 1 illustrates the state model for transparent mode RLC entities (both transmitting and receiving). A transparent mode entity can be in one of following states.

2.1.1 Null State

In the null state the RLC entity does not exist and therefore it is not possible to transfer any data through it.

Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is created and transparent data transfer ready state is entered.

2.1.2 Transparent Data Transfer Ready State

In the transparent data transfer ready, transparent mode data can be exchanged between the entities. Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is terminated and the null state is entered.

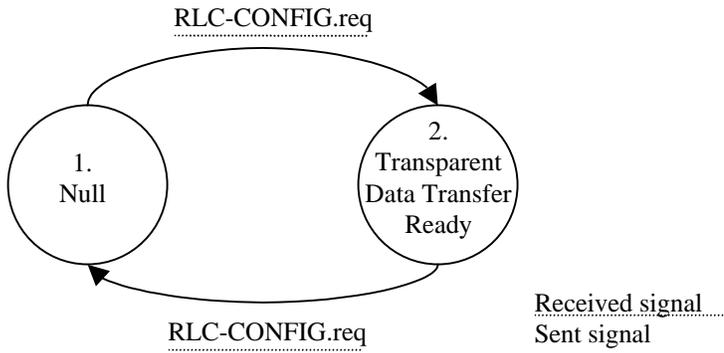


Figure 1. The state model for the transparent mode entities.

2.2 State model for unacknowledged mode entities

Figure 2 illustrates the state model for unacknowledged mode RLC entities. An unacknowledged mode entity can be in one of following states.

2.2.1 Null State

In the null state the RLC entity does not exist and therefore it is not possible to transfer any data through it.

Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is created and unacknowledged data transfer ready state is entered.

2.2.2 Unacknowledged Data Transfer Ready State

In the unacknowledged data transfer ready, unacknowledged mode data can be exchanged between the entities. Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is terminated and the null state is entered.

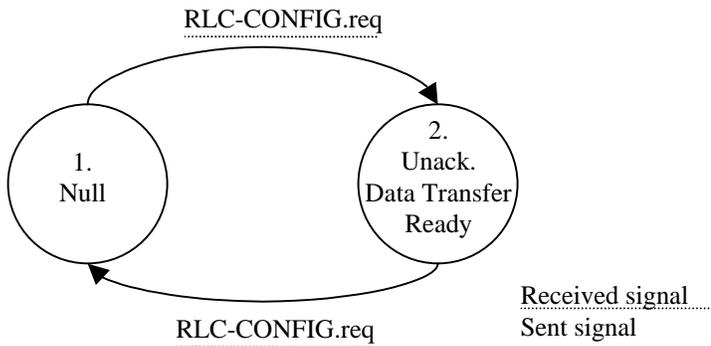


Figure 2. The state model for the unacknowledged mode entities.

2.3 State model for acknowledged mode entities

Figure 3 illustrates the state model for the acknowledged mode RLC entity. An acknowledged mode entity can be in one of following states.

2.3.1 Null State

In the null state the RLC entity does not exist and therefore it is not possible to transfer any data through it.

Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is created and acknowledged data transfer ready state is entered.

2.3.2 Acknowledged Data Transfer Ready State

In the acknowledged data transfer ready, acknowledged mode data can be exchanged between the entities. Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is terminated and the null state is entered.

Upon reception of a RESET PDU, the RLC entity resets the protocol and responds with a RESET ACK PDU.

Upon errors in the protocol the RLC entity sends a RESET PDU to its peer entity and enters the synchronisation pending state.

2.3.3 Synchronisation Pending State

In the synchronisation pending state the entity waits for a response from its peer entity and no data can be exchanged between the entities. Upon reception of an RLC-CONFIG.req from higher layer the RLC entity is terminated and the null state is entered.

Upon reception of a RESET ACK PDU, the RLC entity enters acknowledged data transfer ready state.

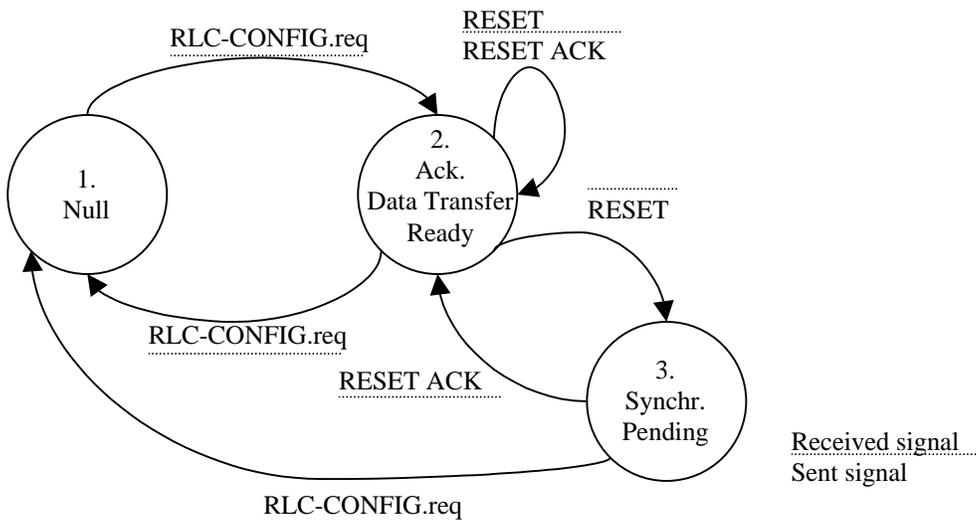


Figure 3. The state model for the acknowledged mode entity.

3 PROPOSAL

A description of states and transactions between states for RLC has been presented in section The states of RLC in this document. It is proposed that this section replaces the current text in section 9.3 in S2.22 3GPP TSG RAN WG2, Tdoc RAN WG2 /99, “Description of the RLC protocol”, v 0.0.1..

4 References

- [1] Ericsson, Tdoc RAN WG2 147/99, “Model of RLC”.
- [2] 3GPP TSG RAN WG2, Tdoc RAN WG2 /99, “Description of the RLC protocol”, v 0.0.1.