

**Agenda Item:** 9.1

**Source:** Ericsson

**Title:** Frame coding for PDU type 0 for Support Mode for predefined SDU size

**Document for:** Discussion

## 1 Introduction

The purpose of this contribution is to propose a coding of the frames for Iu UP for PDUs of type 0 that are used for Support mode for predefined SDU size.

## 2 Frame coding

### 2.1 Iu UP Frame Format and Content definition

The following shows the Iu frame structure of the Iu UP protocol at the SAP towards the transport layers:

Bits								Number of Octets	
7	6	5	4	3	2	1	0		
PDU Type				Frame Number				1	Frame Control Part
PCP	Spare	RFCI						1	
Procedure Control Bitmap								1-n	Frame Proce- dure Control Part  (Conditional)
Procedure Control Field (e.g. Initialization Control field)								1-n	
Frame Payload Check Sum				Frame Header Check Sum				1	Frame Check Sum Part
Payload Fields								0-n	Frame Payload part

**Figure 1: Iu UP PDU Type 0 Format**

### 2.1.1 Frame Number

The Iu UP frame numbering is handled by a Frame Number. The purpose of the Frame Number is to provide the receiving entity with a mechanism to keep track of lost Iu UP frames.

For a given user data connection, there is no relations between the frame numbers of frames sent in the downlink direction and the frame numbers of frames sent in the uplink direction.

The frame number is in bit 0 to bit 3 in the first octet of the frame the value varying from 0 to 15.

### 2.1.2 PDU Type

The PDU type indicates the structure of the Iu UP frame. The field takes the value of the PDU Type it identifies: i.e. 0 for PDU Type 0. The PDU type is in bit 4 to bit 7 in the first octet of the frame.

### 2.1.3 RAB sub-Flow Combination Indicator (RFCI)

The RFCI is stored in bit 0 to bit 5 of the second octet of the frame control part. The RFCI can get values ranging from 0 to 62. The value 63 is reserved for indicating that RFCI is not applicable for the current PDU.

### 2.1.4 PCP (Procedure Control Part Presence indicator)

The bit 7 of octet 2 indicates the presence of the Frame Procedure Control Part. If there is no Frame-Procedure Control Bitmap present, the field has the value 0.

### 2.1.5 Procedure Control bitmap

When the Frame Procedure Control Part is present as indicated by the PCP bit, the Procedure Control Bitmap is mandatory, as well as at least one Control field.

The Procedure Control bitmap is a bitmap field indicating which procedure control fields follow in the Iu Frame Procedure Control Part. When a bit is set to 1 then the corresponding Procedure Control field will follow. The procedure control fields will sequentially appear in the Frame Control Procedure part of the Iu UP protocol frame. When there are several bits active in Procedure Map, then the Control fields follow the order given by the bits, starting from the least significant bit.

Bit	Definition
0	Initialization procedure
1	TBD (Rate Control)
2	TBD (Time Alignment)
3	TBD (Abnormal Event)
4	Spare
5	Spare
6	Spare
7	Extension Bit

A bit value of 0 indicates that the corresponding Frame Procedure control is not active in the sending entity and that the associated Procedure Control Field is not present in the Frame Procedure Control part.

A bit value of 1 indicates that the corresponding Frame Procedure control is active in the sending entity and that the associated Procedure Control Field is present in the Frame Procedure Control part.

The Procedure Control Bitmap may be extended if more than 7 bits are needed in the future. If the Extension Bit is set to 1 then also the following octet will function as a Procedure Control Bitmap.

## **2.1.6 Procedure Control Fields**

### **2.1.6.1 General**

The Procedure Control Fields has information of the procedure as indicated by the Procedure Control Bitmap. The bit 7 of the Control Fields function as an extension bit, so that the Control Information for one procedure may consist of more than 7 bits.

### **2.1.6.2 Initialization Control Field**

The Initialization procedure is described in section XX.

The coding of the Iu Initialization is TBD.

### **2.1.7 Iu UP Frame Header Check Sum**

This field contains the check sum of all fields in Frame Header, except the Frame Check Sum part.

### **2.1.8 Iu UP Frame Payload Check Sum**

This field contains the check sum of all fields in the Frame Payload.

### **2.1.9 Iu UP Payload part**

The payload part contains the user data information coming from the upper layers as payload information.

## **3 Proposal**

It is proposed to include the text in chapters 2 and 3 above into [1].

## **4 References**

[1] TS 25.415 (V0.2.1) Iu Interface CN-UTRAN User Plane Protocol