Title:　　　　**Agreed CRs (Release '99 and Rel-4 category A) to TS 25.323**

Source:　　　**TSG-RAN WG2**

Agenda item:　**7.2.3**

Doc-1st-	Status-	Spec	CR	Rev	Phase	Subject	Cat	Version	Versio
R2-020411	agreed	25.323	042	1	R99	Clarification on PDCP sequence numbering	F	3.7.0	3.8.0
R2-020588	agreed	25.323	043		Rel-4	Clarification on PDCP sequence numbering	A	4.3.0	4.4.0

CR-Form-v5

CHANGE REQUEST

| ⌘ | **25.323** CR | **042** | ⌘**rev** | **r1** | ⌘ | Current version: | **3.7.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘   (U)SIM ☐   ME/UE **X**   Radio Access Network **X**   Core Network ☐

Title: ⌘	Clarification on PDCP sequence numbering	
Source: ⌘	TSG-RAN WG2	
Work item code: ⌘	TEI	***Date:*** ⌘ 2002-2-18
Category: ⌘ **F**		***Release:*** ⌘ R99

Use one of the following categories:	*Use one of the following releases:*
F (correction)	*2 (GSM Phase 2)*
A (corresponds to a correction in an earlier release)	*R96 (Release 1996)*
B (addition of feature),	*R97 (Release 1997)*
C (functional modification of feature)	*R98 (Release 1998)*
D (editorial modification)	*R99 (Release 1999)*
Detailed explanations of the above categories can	*REL-4 (Release 4)*
be found in 3GPP TR 21.900.	*REL-5 (Release 5)*

Reason for change: ⌘	1. Figure 2 in Section 5.3.1 is misleading. The primitive RLC-AM-DATA.cnf is delivered only if the primitive RLC-AM-DATA.req is used with parameter CNF. 2. The PDCP sequence numbering in Section 5.4.1.1 is inconsistent with Sections 5.4.1.2 and 7.1.
Summary of change: ⌘	1. A note is added in Figure 2 to clarify that the primitive RLC-AM-DATA.cnf is delivered only if the primitive RLC-AM-DATA.req is used with parameter CNF. 2. Sections 5.4.1.1, 5.4.1.2, 5.4.1.3 and 7.1 are clarified to make Receive/Send PDCP SN to mean the "sequence number" of the corresponding received/sent PDCP SDU. 3. Some minor editorial corrections are also made. **The CR has isolated impact:** The clarified functionality does not affect other functionalities. The CR does not change the meaning of the functionality. It would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.
Consequences if not approved: ⌘	Confusing specification.
Clauses affected: ⌘	5.3.1, 5.4.1.1, 5.4.1.2, 5.4.1.3, 7.1
Other specs affected: ⌘	☐ Other core specifications ⌘ 25.323 v4.3.0, CR 043 ☐ Test specifications ☐ O&M Specifications

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3 Data Transfer

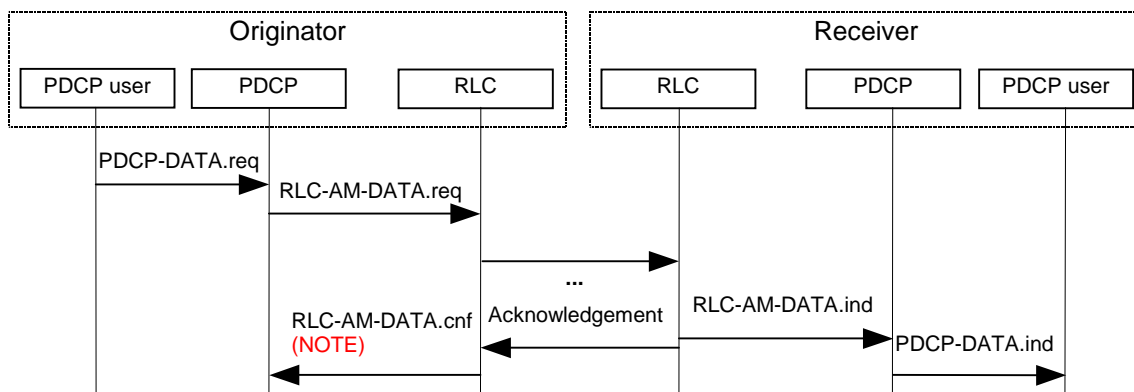If header compression is configured the PDCP entity in the Sender shall:

- perform header compression upon reception of a PDCP SDU from upper layers;

- if the radio bearer is configured for lossless SRNS Relocation:

    - maintain PDCP sequence numbering as specified in subclause 5.4.1.1;

- submit the PDCP PDU to lower layer in the sequence received from the upper layer.

When the PDCP entity at the Receiver receives the PDCP PDU from lower layers, it shall:

- perform header decompression (if header compression is configured) of the PDCP PDU to obtain the PDCP SDU; and

- deliver the PDCP SDU to the upper layer in the order received from the lower layer;

- if the received PDCP PDU is of type PDCP SeqNum PDU:

    - follow the procedure in subclause 5.4.1.2.

5.3.1 Data transfer over acknowledged mode RLC

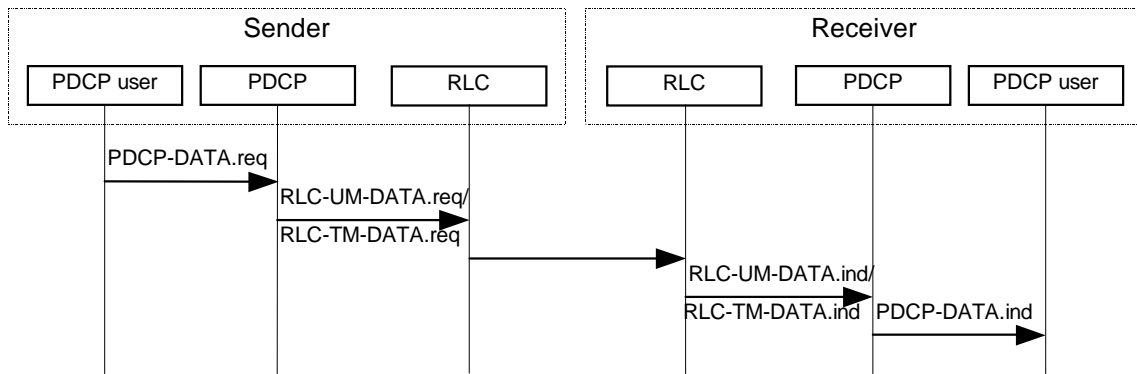Figure 2 shows the PDCP data transfer over acknowledged mode RLC.

Figure 2: PDCP data transfer over acknowledged mode RLC

NOTE: If the primitive RLC-AM-DATA.req is used with parameter CNF, the primitive RLC-AM-DATA.cnf is delivered. Otherwise, this primitive is not delivered.

5.3.2 Data transfer over unacknowledged and transparent mode RLC

Figure 3 shows the PDCP data transfer over unacknowledged or transparent mode RLC.

Figure 3: PDCP data transfer over unacknowledged or transparent mode RLC

5.4 SRNS Relocation

In case of SRNS Relocation upper layer indicates to PDCP to perform the re-initialisation of all compression entities of a RB. This entails the following:

- Configured compression parameters remain valid during re-initialisation.

- All compression state information is initialised, e.g. header compression contexts. Therefore, the first 'compressed' packet type after SRNS Relocation is a full header.

- The PDCP sequence numbers are not changed due to the PDCP header compression protocol re-initialisation.

5.4.1 Lossless SRNS Relocation

Lossless SRNS Relocation is only applicable when RLC is configured for in-sequence delivery and acknowledged mode. The support of lossless SRNS Relocation is configured by upper layer.

For the support of lossless SRNS Relocation PDCP maintains sequence numbers for PDCP SDUs, as described in subclause 5.4.1.1. These sequence numbers are synchronised between PDCP Sender and Receiver, as described in subclause 5.4.1.2. When a lossless SRNS Relocation is performed sequence numbers are exchanged between UE and UTRAN. They are used to confirm PDCP SDUs transmitted but not yet acknowledged by the Receiver, as described in subclause 5.4.1.3. After relocation the data transfer begins with the first unconfirmed PDCP SDU.

5.4.1.1 PDCP Sequence Numbering

PDCP sequence numbering shall be applied when lossless SRNS Relocation is supported. PDCP Sequence Numbers serve to acknowledge previously transmitted PDCP SDUs prior to relocation. The value of the PDCP sequence number ranges from 0 to 65535. The PDCP SN window size indicates the maximum number of PDCP SDUsS, not confirmed to have been successfully transmitted to the peer entity by lower layer, that can be numbered at any given time. The PDCP SN window size is configured by upper layers. PDCP sequence numbers are set to "0" when the PDCP entity is set-up for the first time.

In the following the "submission/reception of a PDCP SDU to/from lower layer" is used as a synonym for the submission/reception of a PDCP Data PDU or a PDCP SeqNum PDU to/from lower layer that carries in its Data field a compressed or uncompressed PDCP SDU. In case PDCP sequence numbers are applied, for each radio bearer:

- in the UE:

  - the UL_Send PDCP SN sequence number shall be set to "0" for the first PDCP SDU submitted to lower layer;

  - the UL_Send PDCP SN sequence number shall be incremented by "1" when afor the next PDCP SDU is submitted to lower layer;

  - the DL_Receive PDCP SN sequence number shall be set to "0" for the first PDCP SDU received from lower layer;

- the DL_Receive PDCP SN ~~sequence number~~ shall be incremented by "1" ~~when a~~for the next PDCP SDU ~~is~~ received from lower layer.

- in the UTRAN:

    - the DL_Send PDCP SN ~~sequence number~~ should be set to "0" for the first PDCP SDU submitted to lower layer;

    - the DL_Send PDCP SN ~~sequence number~~ should be incremented by "1" for the next ~~when a~~ PDCP SDU ~~is~~ submitted to lower layer;

    - the UL_Receive PDCP SN ~~sequence number~~ should be set to "0" for the first PDCP SDU received from lower layer;

    - the UL_Receive PDCP SN ~~sequence number~~ should be incremented by "1" for the next ~~when a~~ PDCP SDU ~~is~~ received from lower layer.

PDCP sequence numbers shall not be decremented in a PDCP entity.

5.4.1.2 PDCP Sequence Number synchronization

For radio bearers that are configured to support lossless SRNS Relocation, the PDCP entity shall:

- if upper layer indicates to a PDCP entity that it should synchronise the PDCP SN following a RLC reset or RB reconfiguration; or

- if the UE/UTRAN PDCP entity receives an invalid "next expected UL/DL_ ~~-~~ Receive PDCP SN~~sequence number~~" from upper layer after Relocation:

    - trigger the PDCP SN synchronisation procedure by submitting one PDCP SeqNum PDU to lower layer;

    - consider that the synchronisation procedure is complete on confirmation by lower layer of the successful transmission of the PDCP SeqNum PDU.

In the UE/UTRAN, the "next expected UL/DL_Receive PDCP SN~~sequence number~~" is considered invalid if its value is less than the UL/DL_ Send PDCP SN of the first transmitted but not yet acknowledged PDCP SDU or greater than that of the first unsent PDCP SDU.

On receiving a PDCP SeqNum PDU:

- the UE PDCP entity shall:

    - set the value of the DL_Receive PDCP SN ~~sequence number~~ to the value indicated in the PDCP SeqNum PDU;

- the UTRAN PDCP entity should:

    - set the value of the UL_Receive PDCP SN ~~sequence number~~ to the value indicated in the PDCP SeqNum PDU.

5.4.1.3 Sequence Number and Data Forwarding

In case of a lossless SRNS Relocation procedure, as described in [1]:

- the UTRAN should send to the UE the next expected UL_Receive PDCP SN~~sequence number~~; and

- the UE shall send to the UTRAN the next expected DL_Receive PDCP SN~~sequence number~~.

This information exchange synchronises the Sequence Numbers at the UE and UTRAN PDCP entities.

When requested by the upper layer, for each radio bearer configured to support lossless SRNS Relocation, the PDCP sublayer in the source RNC should forward the following to the target RNC:

- the UL_Receive PDCP SN of the next PDCP SDU expected to be received from the UE;

- the DL_Send PDCP SN of the first transmitted but not yet acknowledged PDCP SDU;

- the transmitted but not yet acknowledged PDCP SDUs together with their related DL_Send PDCP SNs;

- the not yet transmitted PDCP SDUs. /*Hans: the indentation is changed.*/

7 Elements for layer-to-layer communication

The interaction between the PDCP layer and other layers are described in terms of primitives where the primitives represent the logical exchange of information and control between the PDCP layer and other layers. The primitives shall not specify or constrain implementations.

7.1 Primitives between PDCP and upper layers

The primitives between PDCP and upper layers are shown in Table 3.

Table 3: Primitives between PDCP and upper layers

Generic Name	Parameter			
	Req.	Ind.	Resp.	Conf.
PDCP-DATA	Data	Data	Not Defined	Not Defined
CPDCP-CONFIG	PDCP-Info, RLC-SAP SN_Sync, R/I	Not Defined	Not Defined	Not Defined
CPDCP-RELEASE	RLC-SAP	Not Defined	Not Defined	Not Defined
CPDCP-SN	PDCP SN	Not Defined	Not Defined	Not Defined
CPDCP-RELOC	Next_Receive_SN	Not Defined	Not Defined	Next_Receive_SN, Next_Send_SN

Each Primitive is defined as follows:

  a) PDCP-DATA-Req./Ind.

    -   PDCP-DATA-Req is used by upper user-plane protocol layers to request a transmission of upper layer PDU. PDCP-DATA-Ind is used to deliver PDCP SDU that has been received to upper user plane protocol layers.

  b) CPDCP-CONFIG-Req.

    -   CPDCP-CONFIG--Req is used to configure and – in case of already existing PDCP entity – to reconfigure a PDCP entity and to assign it to the radio bearer associated with that entity.

  c) CPDCP-RELEASE-Req.

    -   CPDCP-RELEASE-Req is used by upper layers to release a PDCP entity.

  d) CPDCP-SN-Req.

    -   This primitive is used at the UTRAN. CPDCP-SN-Req is used to transfer the PDCP SN to PDCP.

  e) CPDCP-RELOC-Req/Conf.

    -   CPDCP-RELOC-Req initiates the SRNS Relocation procedure in PDCP for those radio bearers that are configured to support lossless SRNS Relocation. The Receive_SN is only included at the UE side.

    -   CPDCP-RELOC-Conf is used to transfer the Receive_SN and/or Send_SN to upper layers for lossless SRNS Relocation. The Send_SN is only included at the source RNC.

The following parameters are used in the primitives:

  1) PDCP-Info:

    -   Contains the parameters for each of the header compression protocols configured to be used by one PDCP entity.

  2) RLC-SAP:

- The RLC-SAP (TM/UM/AM) used by PDCP entity when communicating with RLC sublayer.

3) SN_Sync:

   - Indicates that PDCP should start PDCP SN synchronisation procedure.

4) Next_Send_SN:

   - The Send PDCP SN of the next PDCP SDU to be sent. There is one in the uplink (UL_Send– PDCP SN) and one in the downlink (DL_Send– PDCP SN). Refer to subclause 5.4.1.

5) Next_Receive_SN:

   - The Receive PDCP SN of the next PDCP SDU expected to be received. There is one in the uplink (UL_Receive– PDCP SN) and one in the downlink (DL_Receive– PDCP SN). Refer to subclause 5.4.1.

6) PDCP SN:

   - This includes a PDCP sequence number.

7) R/I:

   - Indicates that PDCP should Re-initialise/Initialise the header compression protocols.

CR-Form-v5

CHANGE REQUEST

⌘   **25.323** CR **043**   ⌘**rev**   **-**   ⌘   Current version: **4.3.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘   (U)SIM ☐   ME/UE **X**   Radio Access Network **X**   Core Network ☐

Title: ⌘	Clarification on PDCP sequence numbering	
Source: ⌘	TSG-RAN WG2	
Work item code: ⌘	TEI	***Date:*** ⌘ 2002-2-23

Category: ⌘ **A**	***Release:*** ⌘ REL-4

Use one of the following categories:
  F (correction)
  A (corresponds to a correction in an earlier release)
  B (addition of feature),
  C (functional modification of feature)
  D (editorial modification)
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
  2   (GSM Phase 2)
  R96 (Release 1996)
  R97 (Release 1997)
  R98 (Release 1998)
  R99 (Release 1999)
  REL-4 (Release 4)
  REL-5 (Release 5)

Reason for change: ⌘	1. Figure 2 in Section 5.3.1 is misleading. The primitive RLC-AM-DATA.cnf is delivered only if the primitive RLC-AM-DATA.req is used with parameter CNF. 2. The PDCP sequence numbering in Section 5.4.1.1 is inconsistent with Sections 5.4.1.2 and 7.1.
Summary of change: ⌘	1. A note is added in Figure 2 to clarify that the primitive RLC-AM-DATA.cnf is delivered only if the primitive RLC-AM-DATA.req is used with parameter CNF. 2. Sections 5.4.1.1, 5.4.1.2, 5.4.1.3 and 7.1 are clarified to make Receive/Send PDCP SN to mean the "sequence number" of the corresponding received/sent PDCP SDU. 3. Some minor editorial corrections are also made. **The CR has isolated impact:** The clarified functionality does not affect other functionalities. The CR does not change the meaning of the functionality. It would not affect implementations behaving like indicated in the CR, would affect implementations supporting the corrected functionality otherwise.
Consequences if not approved: ⌘	Confusing specification.
Clauses affected: ⌘	5.3.1, 5.4.1.1, 5.4.1.2, 5.4.1.3, 7.1
Other specs affected: ⌘	☐ Other core specifications ⌘ 25.323 v3.7.0, CR 042r1 ☐ Test specifications ☐ O&M Specifications

Other comments:	⌘	

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3 Data Transfer

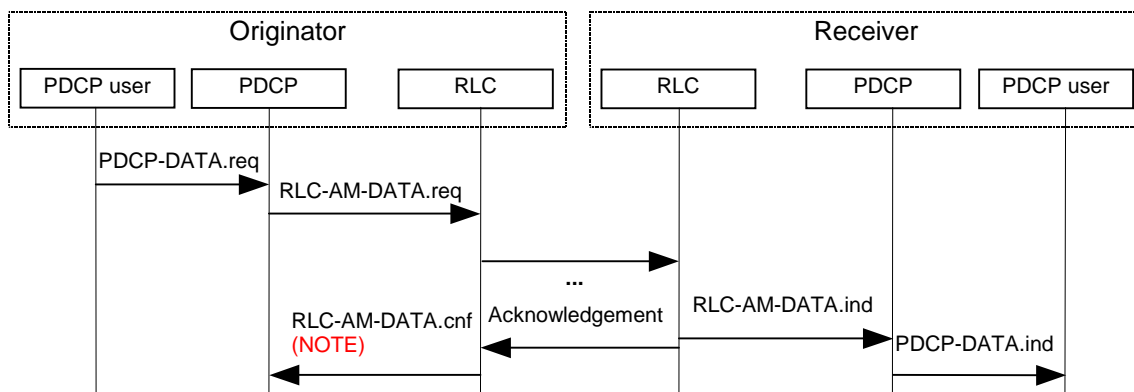If header compression is configured the PDCP entity in the Sender shall:

- perform header compression upon reception of a PDCP SDU from upper layers;

- if the radio bearer is configured for lossless SRNS Relocation:

    - maintain PDCP sequence numbering as specified in subclause 5.4.1.1;

- submit the PDCP PDU to lower layer in the sequence received from the upper layer.

When the PDCP entity at the Receiver receives the PDCP PDU from lower layers, it shall:

- perform header decompression (if header compression is configured) of the PDCP PDU to obtain the PDCP SDU; and

- deliver the PDCP SDU to the upper layer in the order received from the lower layer;

- if the received PDCP PDU is of type PDCP SeqNum PDU:

    - follow the procedure in subclause 5.4.1.2.

5.3.1 Data transfer over acknowledged mode RLC

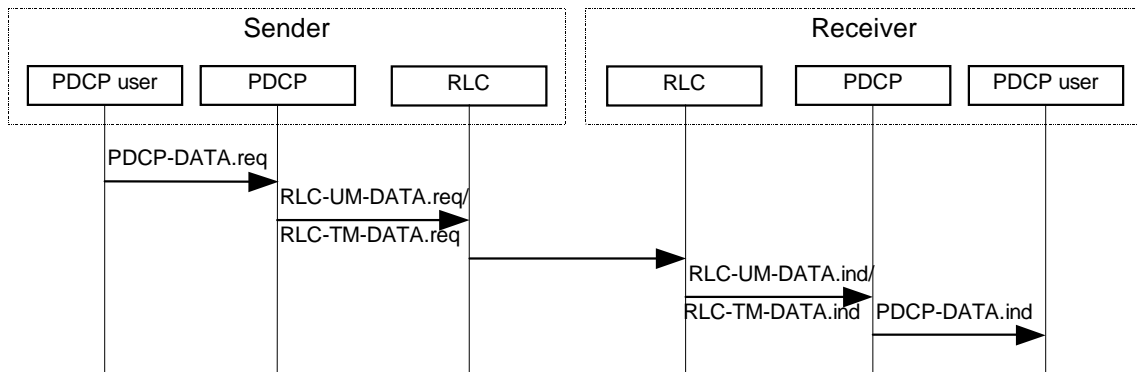Figure 2 shows the PDCP data transfer over acknowledged mode RLC.

Figure 2: PDCP data transfer over acknowledged mode RLC

NOTE: If the primitive RLC-AM-DATA.req is used with parameter CNF, the primitive RLC-AM-DATA.cnf is delivered. Otherwise, this primitive is not delivered.

5.3.2 Data transfer over unacknowledged and transparent mode RLC

Figure 3 shows the PDCP data transfer over unacknowledged or transparent mode RLC.

Figure 3: PDCP data transfer over unacknowledged or transparent mode RLC

5.4 SRNS Relocation

In case of SRNS Relocation upper layer indicates to PDCP to perform the re-initialisation of all compression entities of a RB. This entails the following:

- Configured compression parameters remain valid during re-initialisation.

- All compression state information is initialised, e.g. header compression contexts. Therefore, the first 'compressed' packet type after SRNS Relocation is a full header.

- The PDCP sequence numbers are not changed due to the PDCP header compression protocol re-initialisation.

5.4.1 Lossless SRNS Relocation

Lossless SRNS Relocation is only applicable when RLC is configured for in-sequence delivery and acknowledged mode. The support of lossless SRNS Relocation is configured by upper layer.

For the support of lossless SRNS Relocation PDCP maintains sequence numbers for PDCP SDUs, as described in subclause 5.4.1.1. These sequence numbers are synchronised between PDCP Sender and Receiver, as described in subclause 5.4.1.2. When a lossless SRNS Relocation is performed sequence numbers are exchanged between UE and UTRAN. They are used to confirm PDCP SDUs transmitted but not yet acknowledged by the Receiver, as described in subclause 5.4.1.3. After relocation the data transfer begins with the first unconfirmed PDCP SDU.

5.4.1.1 PDCP Sequence Numbering

PDCP sequence numbering shall be applied when lossless SRNS Relocation is supported. PDCP Sequence Numbers serve to acknowledge previously transmitted PDCP SDUs prior to relocation. The value of the PDCP sequence number ranges from 0 to 65535. The PDCP SN window size indicates the maximum number of PDCP SDUsS, not confirmed to have been successfully transmitted to the peer entity by lower layer, that can be numbered at any given time. The PDCP SN window size is configured by upper layers. PDCP sequence numbers are set to "0" when the PDCP entity is set-up for the first time.

In the following the "submission/reception of a PDCP SDU to/from lower layer" is used as a synonym for the submission/reception of a PDCP Data PDU or a PDCP SeqNum PDU to/from lower layer that carries in its Data field a compressed or uncompressed PDCP SDU. In case PDCP sequence numbers are applied, for each radio bearer:

- in the UE:

  - the UL_Send PDCP SN sequence number shall be set to "0" for the first PDCP SDU submitted to lower layer;

  - the UL_Send PDCP SN sequence number shall be incremented by "1" when afor the next PDCP SDU is submitted to lower layer;

  - the DL_Receive PDCP SN sequence number shall be set to "0" for the first PDCP SDU received from lower layer;

- the DL_Receive PDCP SN ~~sequence number~~ shall be incremented by "1" ~~when a~~for the next PDCP SDU ~~is~~ received from lower layer.

- in the UTRAN:

  - the DL_Send PDCP SN ~~sequence number~~ should be set to "0" for the first PDCP SDU submitted to lower layer;

  - the DL_Send PDCP SN ~~sequence number~~ should be incremented by "1" for the next ~~when a~~ PDCP SDU ~~is~~ submitted to lower layer;

  - the UL_Receive PDCP SN ~~sequence number~~ should be set to "0" for the first PDCP SDU received from lower layer;

  - the UL_Receive PDCP SN ~~sequence number~~ should be incremented by "1" for the next ~~when a~~ PDCP SDU ~~is~~ received from lower layer.

PDCP sequence numbers shall not be decremented in a PDCP entity.

5.4.1.2   PDCP Sequence Number synchronization

For radio bearers that are configured to support lossless SRNS Relocation, the PDCP entity shall:

- if upper layer indicates to a PDCP entity that it should synchronise the PDCP SN following a RLC reset or RB reconfiguration; or

- if the UE/UTRAN PDCP entity receives an invalid "next expected UL/DL_ Receive PDCP SN~~sequence number~~" from upper layer after Relocation:

  - trigger the PDCP SN synchronisation procedure by submitting one PDCP SeqNum PDU to lower layer;

  - consider that the synchronisation procedure is complete on confirmation by lower layer of the successful transmission of the PDCP SeqNum PDU.

In the UE/UTRAN, the "next expected UL/DL_Receive PDCP SN~~sequence number~~" is considered invalid if its value is less than the UL/DL_Send PDCP SN of the first transmitted but not yet acknowledged PDCP SDU or greater than that of the first unsent PDCP SDU.

On receiving a PDCP SeqNum PDU:

- the UE PDCP entity shall:

  - set the value of the DL_Receive PDCP SN ~~sequence number~~ to the value indicated in the PDCP SeqNum PDU;

- the UTRAN PDCP entity should:

  - set the value of the UL_Receive PDCP SN ~~sequence number~~ to the value indicated in the PDCP SeqNum PDU.

5.4.1.3   Sequence Number and Data Forwarding

In case of a lossless SRNS Relocation procedure, as described in [1]:

- the UTRAN should send to the UE the next expected UL_Receive PDCP SN~~sequence number~~; and

- the UE shall send to the UTRAN the next expected DL_Receive PDCP SN~~sequence number~~.

This information exchange synchronises the Sequence Numbers at the UE and UTRAN PDCP entities.

When requested by the upper layer, for each radio bearer configured to support lossless SRNS Relocation, the PDCP sublayer in the source RNC should forward the following to the target RNC:

- the UL_Receive PDCP SN of the next PDCP SDU expected to be received from the UE;

- the DL_Send PDCP SN of the first transmitted but not yet acknowledged PDCP SDU;

- the transmitted but not yet acknowledged PDCP SDUs together with their related DL_Send PDCP SNs;

- the not yet transmitted PDCP SDUs.

7   Elements for layer-to-layer communication

The interaction between the PDCP layer and other layers are described in terms of primitives where the primitives represent the logical exchange of information and control between the PDCP layer and other layers. The primitives shall not specify or constrain implementations.

7.1   Primitives between PDCP and upper layers

The primitives between PDCP and upper layers are shown in Table 5.

Table 5: Primitives between PDCP and upper layers

Generic Name	Parameter			
	Req.	Ind.	Resp.	Conf.
PDCP-DATA	Data	Data	Not Defined	Not Defined
CPDCP-CONFIG	PDCP-Info, RLC-SAP SN_Sync, R/I	Not Defined	Not Defined	Not Defined
CPDCP-RELEASE	RLC-SAP	Not Defined	Not Defined	Not Defined
CPDCP-SN	PDCP SN	Not Defined	Not Defined	Not Defined
CPDCP-RELOC	Next_Receive_SN	Not Defined	Not Defined	Next_Receive_SN, Next_Send_SN

Each Primitive is defined as follows:

   a) PDCP-DATA-Req./Ind.

-      PDCP-DATA-Req is used by upper user-plane protocol layers to request a transmission of upper layer PDU. PDCP-DATA-Ind is used to deliver PDCP SDU that has been received to upper user plane protocol layers.

   b) CPDCP-CONFIG-Req.

-      CPDCP-CONFIG-Req is used to configure and – in case of already existing PDCP entity – to reconfigure a PDCP entity and to assign it to the radio bearer associated with that entity.

   c) CPDCP-RELEASE-Req.

-      CPDCP-RELEASE-Req is used by upper layers to release a PDCP entity.

   d) CPDCP-SN-Req.

-      This primitive is used at the UTRAN. CPDCP-SN-Req is used to transfer the PDCP SN to PDCP.

   e) CPDCP-RELOC-Req/Conf.

-      CPDCP-RELOC-Req initiates the SRNS Relocation procedure in PDCP for those radio bearers that are configured to support lossless SRNS Relocation. The Receive_SN is only included at the UE side.

-      CPDCP-RELOC-Conf is used to transfer the Receive_SN and/or Send_SN to upper layers for lossless SRNS Relocation. The Send_SN is only included at the source RNC.

The following parameters are used in the primitives:

   1) PDCP-Info:

-      Contains the parameters for each of the header compression protocols configured to be used by one PDCP entity.

   2) RLC-SAP:

- The RLC-SAP (TM/UM/AM) used by PDCP entity when communicating with RLC sublayer.

3) SN_Sync:

- Indicates that PDCP should start PDCP SN synchronisation procedure.

4) Next_Send_SN:

- The Send PDCP SN of the next PDCP SDU to be sent. There is one in the uplink (UL_Send– PDCP SN) and one in the downlink (DL_Send– PDCP SN). Refer to subclause 5.4.1.

5) Next_Receive_SN:

- The Receive PDCP SN of the next PDCP SDU expected to be received. There is one in the uplink (UL_Receive– PDCP SN) and one in the downlink (DL_Receive– PDCP SN). Refer to subclause 5.4.1.

6) PDCP SN:

- This includes a PDCP sequence number.

7) R/I:

- Indicates that PDCP should Re-initialise/Initialise the header compression protocols.