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This document proposes a first version of the new PDCP specification TS 25.323.

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Technical Specification

3rd Generation Partnership Project (3GPP);
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PDCP Protocol Specification
(3G TS 25.323 version 0.0.1)

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Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).
The contents of this TS are subject to continuing work within 3GPP TSG-RAN and may change following formal TSG RAN approval.

1. Scope

The present document provides the description of the Packet Data Convergence Protocol (PDCP).

The user of the services provided by PDCP is a packet data protocol (PDP) at the UE or the relay at the Radio Network Controler (RNC).

PDCP uses the services provided by the Radio Link Control (RLC) sublayer.

The main functions of PDCP are:

- Compression of redundant Network PDU control information (header compression).
- Mapping of Network PDUs from one network protocol to an appropriate RLC entity.

2. References

[1]   3GPP TS 25.322: "RLC Protocol Specification"

3. Definitions and Abbreviations

AS	Access Stratum
C-SAP	Control Service Access Point
kbps	kilo-bits per second
L1	Layer 1 (physical layer)
L2	Layer 2 (data link layer)
L3	Layer 3 (network layer)
MAC	Medium Access Control
NAS	Non Access Stratum
NSAPI	Network layer Service Access Point
PDCP	Packet Data Convergence Protocol
RLC	Radio Link Control
RRC	Radio Resource Control
UE	User Equipment

4. General

4.1.Model of PDCP

Figure 1 shows the model of the PDCP within the UTRAN protocol architecture.
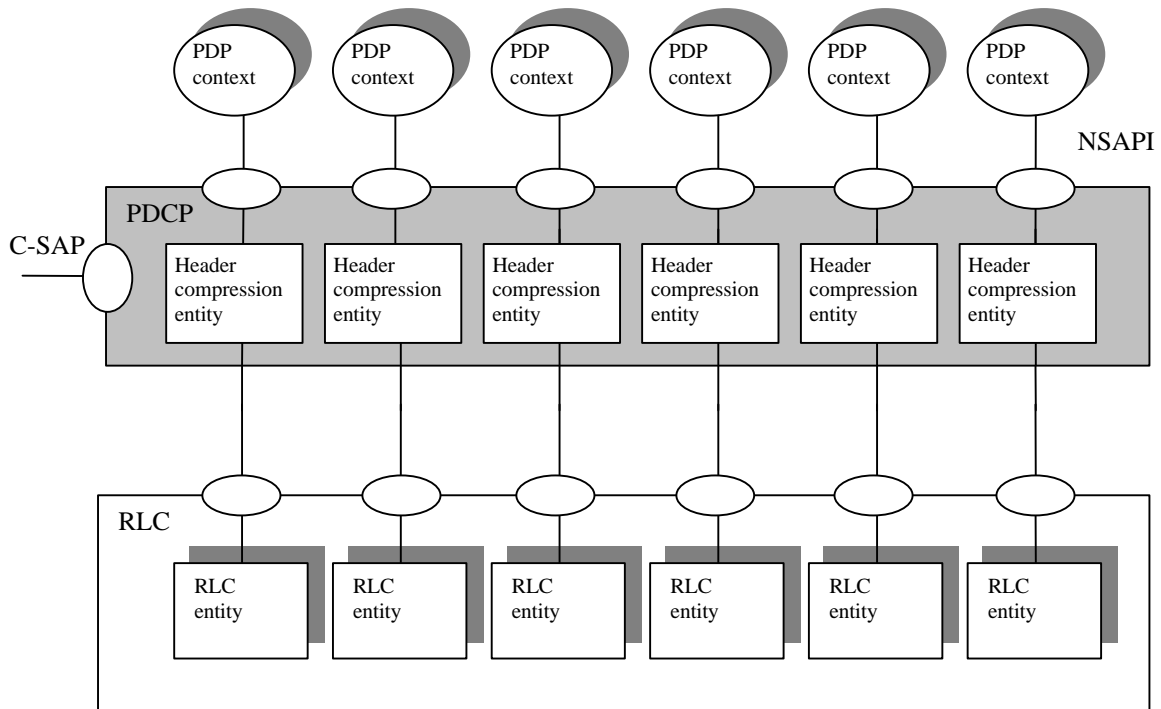

Figure 1 PDCP architecture

The user of the services provided by PDCP on the UE side is a PDP which may have several PDP contexts. Each PDP contexts is treated as a separate PDCP user and identified by a network layer service access point identifier (NSAPI).

The PDCP model is characterised by the following rules:
- Every PDP context uses one header compression entity within the PDCP.
- Every header compression entity shall be used by one PDP context.
- Every header compression entity is connected to one RLC entity.
- Every RLC entity used by the PDCP shall be connected to one header compression entity.

One compression entity uses one algorithm type with certain parameters. Several compression entities may use the same algorithm type.

The algorithm type and its parameters are negotiated by RRC and indicated to PDCP through the PDCP Control Service Access Point (PDCP-C-SAP).

5. Functions

5.1. Protocol Control Information Compression

Protocol control information compression is an optional feature.

The protocol control information compression method is specific for each network layer protocol type. The compression algorithm and its parameters are negotiated by RRC for each PDCP entity and indicated to PDCP through the PDCP-C-SAP.

Presently only one compression algorithm for protocol control information compression is specified in this document, however more algorithms may be incorporated in the future.

5.1.1. TCP/IP (IPv4) header compression

TCP/IP (IPv4) header compression is specified in RFC 1144.

[Note: A detailed desciption (based on GSM 04.65, SNDCP) is to be added here.]

6. Services provided to Upper Layers

The service provided by PDCP to the NAS is:
- Transmission and reception of Network PDUs in acknowledged, unacknowledged and transparent RLC mode.

6.1. Service Primitives between PDCP and NAS

- PDCP_Data_request
  The PDCP Data request is used for transmission of SDUs from NAS to PDCP.

- PDCP_Data_indication
  The PDCP Data indication is used to deliver the SDUs, received by the PDCP to the NAS.

7. Services expected from RLC

See [1] TS 25.322 RLC Protocol Specification for details.

8. Elements for layer-to-layer communication

8.1. Service Primitives from RRC to PDCP

The primitives from RRC to PDCP are shown in Table 1.

Generic Name	Parameters
CPDCP_Establish	NSAPI, Compression algorithm, algorithm parameters, RLC entity
CPDCP_Release	NSAPI
CPDCP_Modify (ffs.)	NSAPI, Compression algorithm, algorithm parameters

Table 1 Primitives from RRC to PDCP

The primitives are used as follows:
- CPDCP_Establish
  This primitive is used to create a compression entity and to assign the NSAPI and RLC entity connected to that compression entity.
- CPDCP_Release
  This primitive releases a compression entity.
- CPDCP_Modify
  This primitive is used to modify the compression type and/or its parameters.
  [Note: Whether a PDCP compression entity can be modified is ffs.]

9. History

Document history		
Date	**Version**	**Comment**
September 1999	0.0.1	
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