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Technical Specification

Digital cellular telecommunications system (Phase 2+); Packet Data on Signalling channels Service (PDS) - Stage 1 (GSM 02.63 version 6.0.0 Release 1997)

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Foreword

This Technical Specification (TS) has been produced by the Special Mobile Group (SMG).

The present document specifies stage one of the Packet Data on Signalling channels service (PDS) which allows packet data transmission in GSM networks on dedicated channels.

The contents of the present document is subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of the present document, it will be re-released with an identifying change of release date and an increase in version number as follows:

Version 6.x.y

where:

6 indicates Release 1997 of GSM Phase 2+

x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

y the third digit is incremented when editorial only changes have been incorporated in the specification.

1 Scope

The present document specifies stage one of the Packet Data on Signalling channels service (PDS) which allows packet data transmission in GSM networks on dedicated channels.

The PDS service is offered in two variants, PDSS1 and PDSS2; each variant may be supported by a mobile station independently. PDSS1 is subject to subscription in a GSM network, whereas PDSS2 may only be subject to subscription of an application (this however is out of the scope of the service description).

The service is described from the service subscriber's and user's point of view, in particular:

- the procedure for normal operation with successful outcome;
- the action to be taken in exceptional circumstances;
- the interaction with other GSM services and features.

The present document does not deal with the Man-Machine Interface (MMI) requirements.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.
- For this Release 1997 document, references to GSM documents are for Release 1997 versions (version 6.x.y).

[1] GSM 01.04: "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms"

3 Definitions and abbreviations

3.1 Abbreviations

Abbreviations used in the present document are also defined in GSM 01.04 [1].

Additionally, in the present document the following abbreviations apply:

PDP	Packet Data Protocol is used as a generic term to refer to standardized packet data protocols like X.25 or IP.
PDS	Packet Data on Signalling channels service.
PDSS1	Packet Data on Signalling channels Service 1.
PDSS2	Packet Data on Signalling channels Service 2.
PDSS2-SN	PDSS2-Service Node

4 Description

The Packet Data on Signalling channels service (PDS) is a bearer service enabling circuit oriented point to point transfer in GSM networks of very small data packets on radio interface signalling channels for applications using short dialogues with a data throughput rate capability in the range of 600 to 9200 bits/s and with a duration in the range of a few seconds. PDS may be applied to transfer data between a mobile user of a PDP and the corresponding packet data network; it may also be used for data transmission between a mobile user and a host directly accessing an MSC or a PDSS2-support node; further applications, e.g. use of PDS for the radio transmission part of SMS point-to-point are for further study. The interworking between GSM network and packet data network, and the way to directly access the MSC or PDSS2-support node is out of the scope of the service specification. Two variants of the service are defined, PDSS1 and PDSS2:

PDSS1 Service offered with service access points in the mobile station and MSC,

- which may be offered in parallel to other connection management sublayer services,
- where MSC controlled handover is possible during the transmission,
- where the mobility management related functions (subscription checks, authentication, security functions) are applicable,
- where both mobile originated and mobile terminated establishment of a PDSS1 connection is possible
- where the same subscription and charging mechanisms as for circuit switched services are applicable to the service.

PDSS2 Service offered with service access points in the mobile station and a new network entity, the PDSS2-Support Node (PDSS2-SN) having an interface to the BSS, the A_p interface,

- where mobile terminated connection management establishment may not be possible during a PDSS2 connection;
- where, with this exception, the service may be offered in parallel to other connection management sublayer services;
- where a handover causes abortion of the PDSS2 connection;
- where the mobility management related functions, subscription checks, and security functions are not required (but similar functions can be implemented in the application);
- where the subscription and charging mechanisms defined in GSM for circuit switched services are not required to the service (however, the application may implement such mechanisms);
- where only mobile originated establishment of a PDSS2 connection is possible;
- where an anonymous access to a group application server is possible.

4.1 Service characteristics of PDSS1

The PDSS1 service access points are at the MSC/VLR and the MS.

The service offers the set-up and release of both mobile originating and mobile terminating connections. The service offers data transmission and indications with the quality of service achievable with GSM signalling transmissions i.e. Um layers 1, 2 and 3 see GSM 05.05, 04.06, 04.07, 04.08..

4.2 Service characteristics of PDSS2

The S2 service access points are at the PDSS2-SN and the MS.

The service offers the set-up and release of mobile originating connections. A handover causes abortion of the PDSS2 connection. The service provides resumption after a channel change or new channel establishment. The service offers data transmission and indications with the quality of service achievable with GSM signalling transmissions i.e. Um layers 1, 2 and 3 see GSM 05.05, 04.06, 04.07, 04.08.

4.3 Subscriber roaming

PDS shall provide the ability for subscribers to access the service while roaming in VPLMN networks. This implies the pre-existence of an international signalling mechanism and a service agreement between the different network operators involved.

It is not required to support the ability for subscribers to maintain PDS service when moving from one PLMN to another.

5 Normal operation with successful outcome

5.1 Provision

Subscription to PDSS1 may be provided to a service subscriber after prior arrangements with the service provider. A subscription management of PDSS2 in the application is possible, but out of the scope of the service description.

5.2 Withdrawal

Subscription to PDSS1 may be withdrawn at the subscriber's request or for administrative reasons.

5.3 Normal operation

5.3.1 PDSS1, mobile originated

When a request to establish a PDSS1 connection is received at the service access point in the MS, the MS establishes a connection if it does not already exist. The network applies the relevant subscription checks, authentication and security functions. Then the PDSS1 connection is established according to the following information supplied by the MS:

- the destination PDP, or
- that unstructured data is to be transferred to an application, identified by a called party BCD number, directly accessing the MSC.

Then data is exchanged between the two applications; each side may initiate release of the PDSS1 connection.

5.3.2 PDSS1, mobile terminated

When a request to establish a PDSS1 connection is received at the service access point in the MSC (this request specifies the IMSI of the MS), the MSC applies the relevant subscription checks and, if successful, establishes a connection if it does not already exist. The network may apply authentication and security functions. Then the PDSS1 connection is established according to the following information supplied by the MSC:

- the originating PDP, or
- that unstructured data is to be transferred to an application directly accessing the MS (which may be further identified by a called party BCD number).

Then data is exchanged between the two applications; each side may initiate release of the PDSS1 connection.

5.3.3 PDSS2, mobile originated

When a request to establish a PDSS2 connection is received at the service access point in the MS, the MS establishes a connection if it does not already exist. It is not required that the network applies any subscription checks, authentication or security functions. Then the PDSS2 connection is established according to the following information supplied by the MS:

- the destination PDP, or
- that unstructured data is to be transferred to an application, identified by a called party BCD number, directly accessing the PDSS2-Support Node .

Then data is exchanged between the two applications; each side may initiate release of the PDSS2 connection.

5.4 Charging requirements

It shall be possible to extract the time between establishment and release of a PDSS1 connection from the event records.

6 Exceptional procedures or unsuccessful outcome

The PDSS1/PDSS2 connection establishment may be refused if

- the function is not supported in the MS or network;
- the PDSS1 service is not authorized;
- the PDP is not supported;
- the unstructured data application is not supported;
- the application refuses the connection.

The PDSS1/PDSS2 connection may be aborted or cleared abnormally,

- if the connection is aborted or cleared abnormally
- for PDSS2 only: if a handover is performed.

7 Interaction with other services

PDSS1 can be run in parallel to any connection management service (to calls, supplementary service procedures, and SMS), there is no interaction defined.

NOTE: In particular, a main difference between PDSS1 and user-user signalling is that user-user information is exchanged between the two sides of a call, whereas the remote user of PDSS1 is completely independent from the called user of a call running in parallel.

8 Interworking considerations

Interworking with packet data networks is out of the scope of the service description.

History

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