PAS 0001-15-1 V1.0.2 (1996-12)

TETRAPOL Specifications
Part 15: Gateway to EDT;
SubPart 1: Gateway to EDT protocol

Reference

Keywords

Tetrapol

Contents

Intellectual Property Rights

Foreword

This document is the Publicly Available Specification (PAS) of the TETRAPOL land mobile radio system, which shall provide digital narrow band voice, messaging, and data services. Its main objective is to provide specifications dedicated to the more demanding PMR segment: the public safety. These specifications are also applicable to most PMR networks.

This PAS is a multipart document which consists of:

Part 1   General Network Design

Part 2   Radio Air interface

Part 3   Air Interface Protocol

Part 4   Gateway to X.400 MTA

Part 5   Dispatch Centre interface

Part 6   Line Connected Terminal interface

Part 7   Codec

Part 8   Radio conformance tests

Part 9   Air interface protocol conformance tests

Part 10   Inter System Interface

Part 11   Gateway to PABX, ISDN, PDN

Part 12   Network Management Centre interface

Part 13   User Data Terminal to System Terminal interface

Part 14   System Simulator

Part 15   Gateway to External Data Terminal

Part 16   Security

Part 17   Guide to TETRAPOL features

Part 18   Base station to Radioswitch interface

Part 19   Stand Alone Dispatch Position interface

1. Scope

The purpose of this part is to define the protocol between the Radio Switch RSW and the External Data Terminal at the R10 reference point (see PAS 0001-1 [1]).

There are two sub-parts:

Sub-part 1 describes the protocol stacks: layers 1 to 3 (X.25), the transport and session protocol complying with ISO recommendation.

The second sub-part describes the above layers and also specifies the protocol parameters.

2. Normative references

This PAS incorporates by dated and undated reference, provisions from other applications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revision of any of these publications apply to this PAS only when incorporated in it by amendment or revision. For undated references the latest edition of publication referred to applies.

[1]   PAS 0001-1: "TETRAPOL Specifications; General Network Design".

[2]   PAS 0001-11: "TETRAPOL Specifications; Gateway to external networks".

[3]   PAS 00013-1: "TETRAPOL Specifications; UDT and ST interface; Submit / Delivery".

[4]   ISO 8073 | ITU-T X.224: "Open systems interconnection - Transport - Protocol specification".

[5]   ISO 8327 |ITU-T X.225: "Open systems interconnection - Session - Protocol specification".

3. Abbreviations

For the purposes of this PAS, the following abbreviations apply:

BS	Base Station
BN	Base Network
DCE	Data Circuit Equipment
DCP	Data Connection reference Point
DFN	Delivery Failure Notification
DT	Data Terminal (UDT or EDT)
DTE	Data Terminal Equipment
EDT	External Data Terminal
EDT-DCP	EDT Data Connection reference Point
FS	Fast Select
HRSW	Home Radio Switch
ID	IDentifier
KMC	Key Management Center
LC	Logical Channel
MTA	Message Transfer Agent
O/R	Originator/Recipient
OSI	Open System Interconnection
PAS	Publicly Available Specification
P1	Message Transfer Protocol
P2	Interpersonal Messaging Protocol
PI	Protocol Identifier
PMR	Private Mobile Radiocommunications
PRMD	Private Management Domain
RSW	Radio Switch

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RTS	Reliable Transfer Server
RX.25	X.25 network to which the RSW connects
SAP	Service Access Point
SDP	Submit/Delivery Protocol
SPDU	Session Protocol Data Unit
SSAP	Session Service Access Point
SSDU	Session Service Data Unit
ST	System Terminal
TPDU	Transport Protocol Data Unit
TSAP	Transport Service Access Point
TSDU	Transport Service Data Unit
UA	User Agent
UDT	User Data Terminal
UTC	Universal Time Coordinated
VC	Virtual Circuit
VRSW	Visited Radio Switch

4.   Presentation of the interface

4.1.   Using the interface

The EDT is associated with a system RSW which is called its Home RSW.

The EDT carries out submission and delivery operations with its Home RSW.

These submission and delivery operations shall permit the use of inter-personal messaging (see figure 1), external application messaging (see figure 2), regional network local messaging (see figure 3). The delivery operation shall be used by the copy service, only from the HRSW to the EDT.
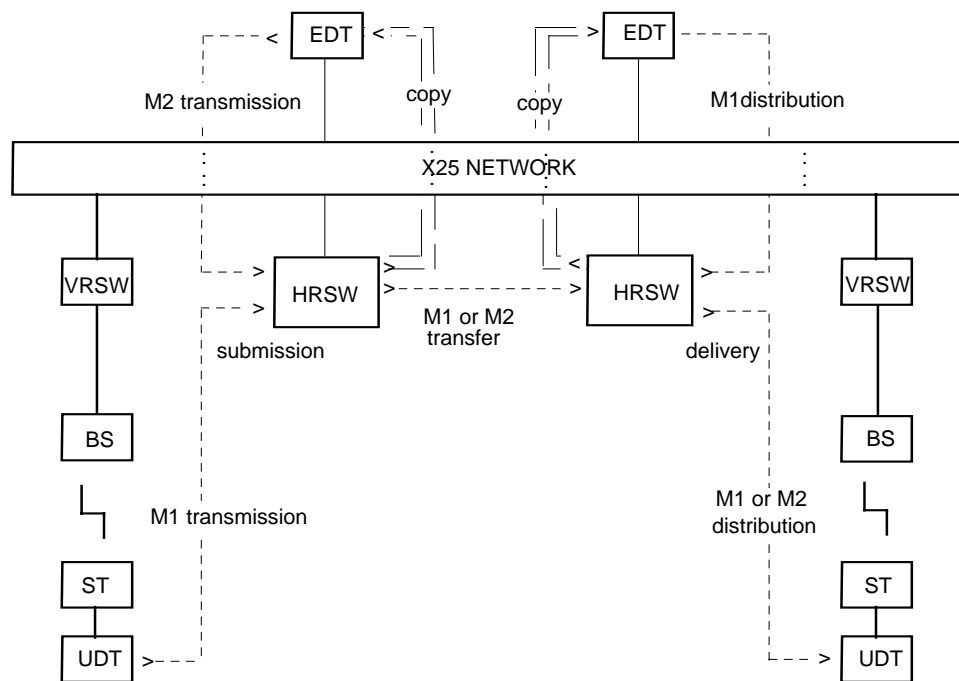
M1:   message sent by an EDT

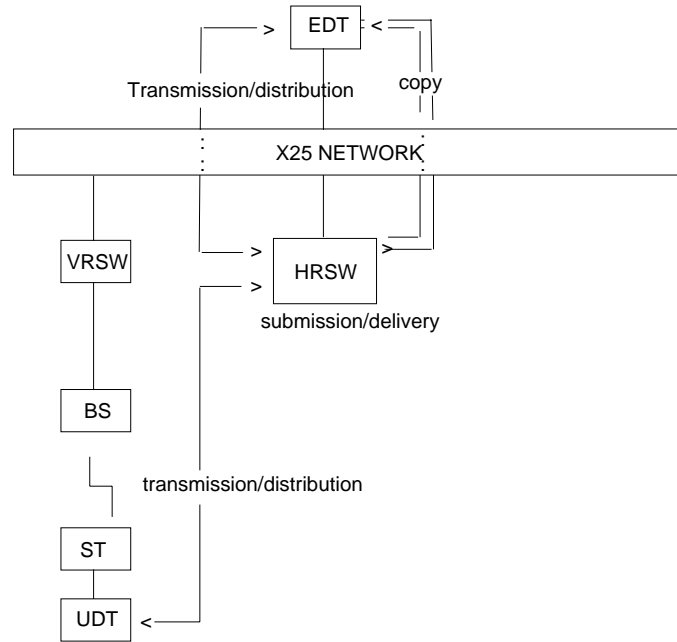M2:   message sent by an UDT

Figure 1: Inter-Personal Messaging Service
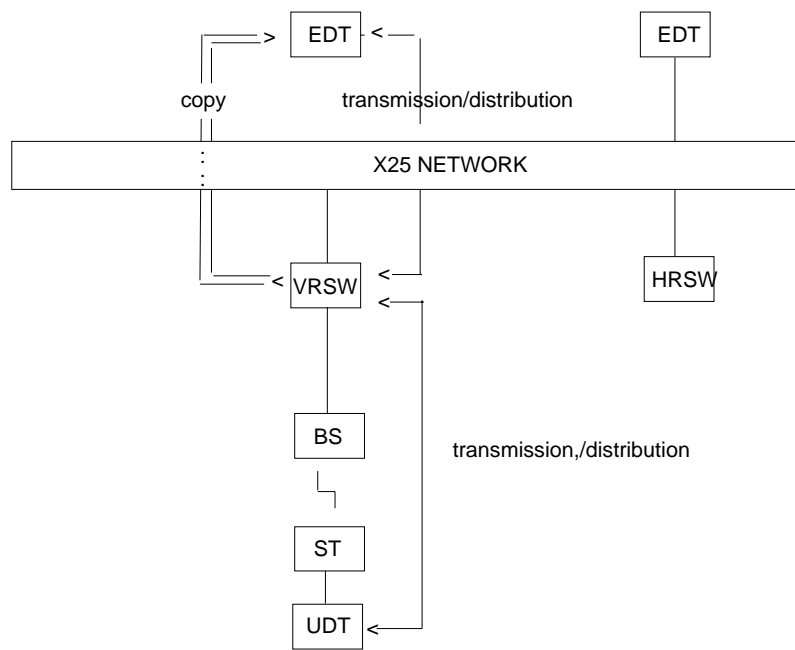
Figure 2: External Application Messaging

Figure 3: Regional Network Local Messaging

4.2. Interface layer structure

The interface between a system RSW and an EDT is structured in several layers.

The layers are:

- layers 1 to 3;

- layers 4 and 5;

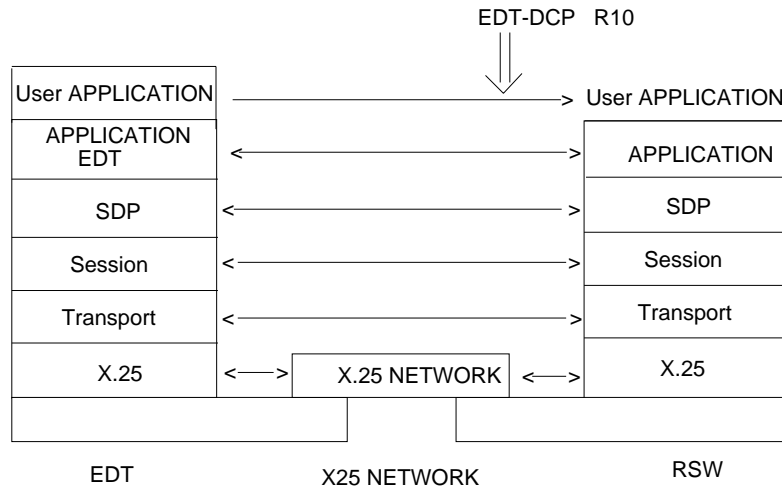- submit/delivery protocol layer, SDP;

- application layer.

Figure 4: Protocol stack

5. Interface of levels 1 to 3

Levels 1 to 3 shall be physical, link and standard X.25 packet levels.

The interface of levels 1 to 3 concerns the X.25 Network.

The interface is described in PAS 0001-11 [2].

5.1. Data link level parameters

Timer value T1 = 1600 ms

Number of bits in an I frame = 2104

Distinctive features of the RX.25:

To be defined by the User.

5.2. Network level parameters

DCE timers:

T10 =

T11 =

T12 =

T13   =

to be defined by the User.

Maximum number of virtual circuit: To be defined by the User.

The User must define the RX.25 addressing plan and fixed the sub-address for the MSW and the OMC.

5.3. Configuration choices

This clause precises the configuration choices available in the system:

Configuration X.25-1: use of Closed User Group to be defined by the User.

In case of use, the User must confirm the number of CUG, the list of CUG.

6. Interface of levels 4 and 5

The interface of levels 4 and 5 shall conform to OSI levels 4 and 5 protocols.

The protocol is described in subpart 2 of this part.

6.1. EDT Transport Parameter

The User must defined the TSAP used in Connection TPDU:

TSAP:

These parameters are negotiated in the Connection Confirm TPDU (to be defined by the User):

Negotiated Transport class:

Negotiated TPDU size:

Credit:

If class 2 is chosen, the User must indicate the number of connection multiplexed on the same virtual circuit.

6.2. EDT Session parameter

The following parameters are precised in the Connect and Accept SPDU (to be defined by the User):

SSAP Identifier for:

- copy function;

- inter-personal messaging;

- external application messaging;

- regional network local messaging.

7. Submit/Delivery Protocol

The submit/delivery protocol enables the submission of messages by the EDT to the HRSW and the delivery of messages by the HRSW to the EDT.

The submit/delivery protocol enables submissions and deliveries of messages for Inter-personal Messaging, External Application Messaging and Regional Network Local Messaging applications of the system. It can also be used to transmit copies of messages and notifications to the EDT.

The SDP protocol is described in PAS 00013-1 [3].

8. Configuration choices

This clause precises the parameter value defined in the system:

Configuration SDP-1: use of delivery notification.

9. Application Interface

9.1. System limitations

The following system limitations are implied:

Message length:

The maximum size of messages (header and body) processed by the system UA is defined in PAS 00013-1 [3].

Number of recipients:

The EDT can supply from 1 to 8 recipients addresses in its message.

Recipient address types:

The addresses given by the EDT to its HRSW are explicit or implicit addresses or addresses defined in the System addressing plan. The list addresses used by the EDT must be defined on the EDT's RSW.

If one of these criteria is not respected, the system generates a delivery failure notification, which it sends to the EDT message originator. The list of failure causes is set out in PAS 00013-1 [3].

9.2. Functions

Segmentation/Reassembly:

If the EDT wishes to send messages larger than the maximum value defined in (3), the EDT APPLICATION has to segment the messages. The EDT recipient must then reassemble the messages received.

If an EDT sends a message larger than the maximum size to the EDT, the EDT segments the messages: the EDT APPLICATION must reassemble the messages.

During reassembly the recipient must take into account the fact that message sequentially is not guaranteed by the system. As the messages are transmitted separately, the system does not guarantee total reception of the messages to the main recipient (case of "distribution secure" in inter-personal messaging).

Message coding:

The system offers EDT different types of message coding: IA5 coding and private coding. The System does not carry out transcoding.

Message processing time:

The EDT can consider that in a majority of cases, the processing of a message in the submit/delivery protocol is carried out in a maximum of 15 minutes. In the unlikely event of a double breakdown, the EDT might receive an delivery failure notification after the 15 minutes wait time-out (for a description of these cases see PAS 0001-1 [1]).

History

Document history		
Date	**Status**	**Comment**
26 October 1995	First version	Version 0.0.1
17 November 1995	Update following review	Version 0.1.0
07 December 1995	Editorial Corrections	Version 0.1.1
04 April 1996	Update following review	Version 0.2.0
30 April 1996	TETRAPOL forum approval	Version 1.0.0
31 July 1996	Formatting to Arial characters	Version 1.0.1
16 December 1996	Converted in word 6	Version 1.0.2