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Publicly Available Specification

TETRAPOL Specifications
Part 13: UDT and ST interface ;
SubPart 2:Submit / Delivery Protocol
(*previously released as PAS 0001-13-1)*

Reference

Keywords

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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

TETRAPOL PAS 0001-13 is divided in two parts and describes the protocol between the User Data Terminal UDT and the System Terminal ST, it contains:

- The asynchronous layer 1 protocol described in PAS 0001-13-3 [6];
- The layer 2 and 3 protocol corresponding to STUTEL (ETP/T_PROTOCOL) described in PAS 0001-13-3 [6];
- The layer 4 and 5 protocol corresponding to the Submit/Delivery Protocol SDP (and MSG application service - UA) described in this PAS 0001-13-2.

The User application is user dependant and outside the scope of the TETRAPOL specification.

This PAS 0001-13-2 describes the SDP protocol which is common to the UDT - ST interface and to the External Data Unit EDT - RSW protocol. EDT specificities are described in this part.

The EDT - RSW protocol is described in PAS 0001-15 [5]. It is built on an X.25 protocol stack.

2. Normative References

This PAS incorporates by dated and undated reference, provisions from other publications. 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 revisions 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 the publication referred to applies.

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

[2] ITU-T Recommendation X.224 | ISO 8073: "Open Systems Interconnection; Transport; Protocol specification (1984)."

[3] ITU-T Recommendation X.225 | ISO 8327: "Information processing systems; Open Systems Interconnection; Connection oriented session protocol specification (1984)."

[4] ITU-T Recommendation X.400 to X.430 (1984): "Information Technology; Message Handling Systems (1984)."

[5] PAS 0001-15: "Tetrapol Specifications; Data Gateway to EDT".

[6] PAS 0001-13-3: "Tetrapol Specifications; UDT and ST Protocol; STUTEL Profile for the UDT".

[7] PAS 0001-11: "Tetrapol Specifications; Gateway to external networks".

[8] PAS 0001-4: "Tetrapol Specifications; Data Gateway to X.400 MTA".

3. Definitions and abbreviations

3.1. Definitions

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

External MHS: Message Handling System composed of MTAX400.

External subscribers: Subscribers of an external MHS.

MTA X400: MTA of an external MHS, MTA not managed by the System.

Designates subscriber of an external MHS specific to the user.

3.2. Abbreviations

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

AMD	Acknowledgement of Message Distribution
AU	Access Unit
BCS	Binary Coded Sequence
BER	ST Transmission/Reception module
BNLM	BN Local Messaging
BNOP	Base Network Operator
BN	Base Network
BS	Base Station
DCN	Delivery Confirmation Notification
DCP	Data Connection reference Point
DL	Digital link
DR	Distribution Report
DT	Data Terminal
DTAU	Data Terminal Access Unit
EDT	External Data Terminal
EDT-DCP	EDT Data Connection reference Point
ETP	Extended Transport Protocol
ETSI	European Telecommunications Standards Institute
EXAM	EXternal Application Messaging
FHD	File Header Delimiter
HRSW	Home Radio Switch
IA5	International Alphabet n° 5
IPM	Inter-Personal Messaging
LCT	Line Connected Terminal
MD	Message Delivery
MHS	Message Handling System
MT	Message Transmission
MTA	Message Transfer Agent
OMC	Operation and Maintenance Computer
OSI	Open System Interconnection
PAS	Publicly Available Specification
PDU	Protocol Data Unit
PE	Protocol Element
PMR	Private Mobile Radiocommunications
PRMD	Private Management Domain
RFSI	Base Network Fleet Subfleet Identity
RSW	Radio switch
RT	Radio Terminal
RTA	Radio Transmission Acknowledgement
RTP	Reduced Transport Protocol
RTS	Reliable Transfer Server
SCN	Submit Confirmation Notification
SCO	RSW Switching Service
SDP	Submit/Delivery Protocol
SDPE	Submit/Delivery Protocol Element
SFN	Submit Failure Notification
SSW	Secondary Switch
ST	System Terminal
ST-DCP	ST Data Connection reference Point
STUE	UE in the ST
STUTEL	Commercial name of ETS 300 075
TAP	Telesoftware Application Protocol
TAS	Telesoftware Application Service
TPDU	Transport Protocol Data Unit
TPDU_CR	Transport Protocol Data Unit - Connection Request
TPDU_DT	Transport Protocol Data Unit - Data

TTXAU	Teletex Access Unit
UA	User Agent
UDT	User Data Terminal
UDTUE	UE in the UDT
UE	STUTEL protocol User Entity
VRSW	Visited Radio Switch

4. Presentation of the ST-DCP and EDT-DCP interfaces

The data reference connection point R3 of the ST (ST-DCP) shall be the connection interface of a User Data Terminal (UDT) to the System. It shall be located in the System Terminal (ST).

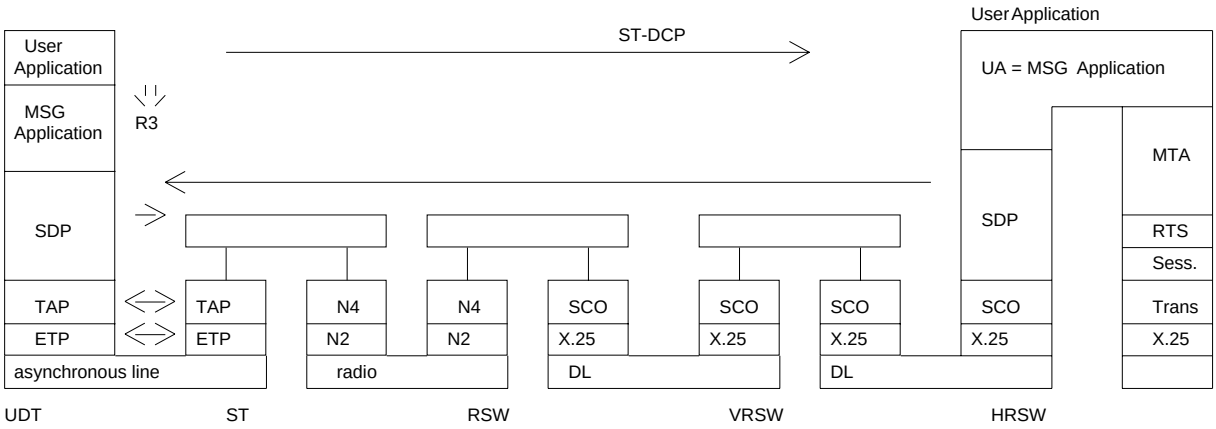

Figure 1: Messaging communications using the services of the HRSW

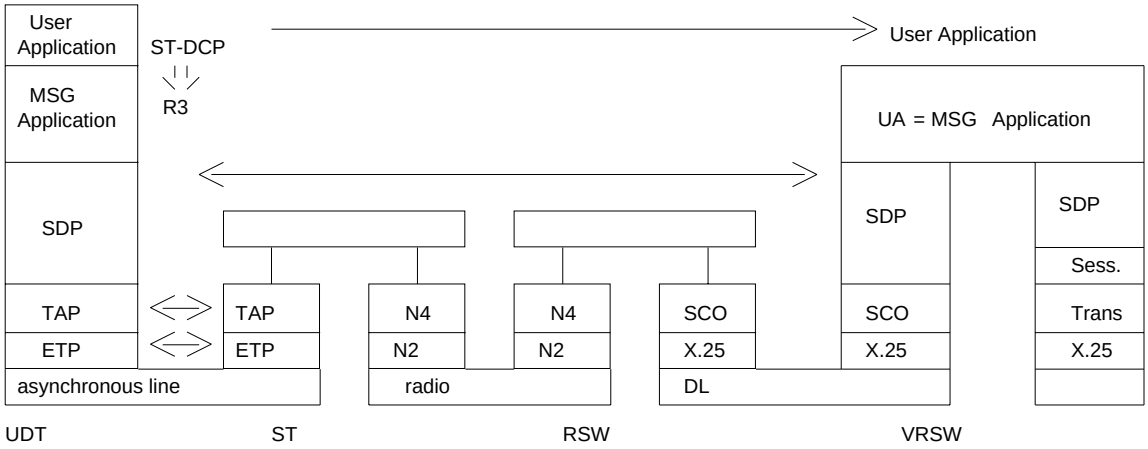

Figure 2: Messaging communications using the services of the VRSW

The ST shall handle both the ST-UDT exchange protocol (STUTEL) and the radio protocol. Between these two protocols, the ST plays the role of "gateway". The messages coming from one of these shall be first sent to an application of the ST, which then sends them to the other.

The Data Connection reference Point (EDT-DCP) shall be the interconnection interface R10 (see PAS 0001-1 [1]) from an External Data Terminal (EDT) to a Radio switch. This is located in the RSW.

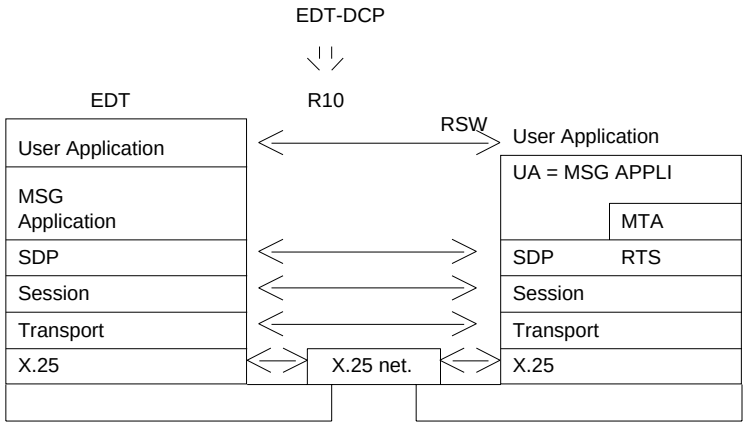

Figure 3: EDT Protocol stack

5. Support Protocols of the SDP

The above figures show that the Submit/Delivery Protocol is supported by various protocols of layers 4 and 5:

- At the ST-DCP interface, the SDP shall be installed above the T_PROTOCOL layer of the STUTEL protocol, between the UDT and the ST.

Together, the ST, the RSW and the VRSW constitute a gateway through which the elements of the SDP pass in a transparent manner. Thus above all these layers and gateways, the SDP controls the messaging exchanges between a UDT and its HRSW.

- At the EDT-DCP interface, the SDP is installed directly above the OSI session layer, between the EDT and the RSW (several session connections are open, depending on the various messaging services in use).

The same SDP is specified for the UDT and the EDT. These terminals are known by a generic term - the Data Terminal (DT) - which can refer to either the UDT or the EDT.

6. Specification context of the SDP

The X.400 recommendations of the CCITT [4] specify:

- a P1 message transfer protocol between MTAs;
- a P2 person-to-person message protocol between UAs.

The CCITT has also specified accesses to an external terminal:

- P3 (X.411) for access to an UA remote from the MHS services;
- P5 (X.430) for access from a Teletex terminal to an UA co-located with an MTA.

Implementation of P3 (see ITU-T X.400 [4]) proved not to be possible, and the MHS was without a protocol for accessing a distant terminal.

In this context, the System Submit/Delivery Protocol (SDP) has been developed in order to allow the accessing of distant terminal to the MHS.

The SDP provides an access interface from the UDT and EDT terminals to the System messaging services. It is based on the concepts introduced in P5, taking up the concept of the Access Unit (AU) which controls the interface to the terminals by elementary actions.

The situation of the SDP in relation to ITU-T X430 [4] is described in the Clause entitled "The situation of the SDP compared with the X.430 standard".

7. Data terminal access unit

In each RSW, a Data Terminal Access Unit (DTAU) controls the exchanges with the UDT and EDT terminals.

The DTAU is the messaging application of the System. It includes the services of Inter-personal Messaging, External Application Messaging, Base Network Local Messaging and Copy Service.

For the requirements of the inter-personal messaging, the DTAU is associated with the MTA of the RSW, with which it is co-located. The DTAU is then a DT in toward to the MHS.

For the requirements of the external application messaging and the local base network messaging, the DTAU itself (outside of the MTA) performs the function of direct routing between the originator and the recipient of a message.

For the requirements of the Copy Service, the DTAU itself (outside of the MTA) performs the function of direct routing between the originator and the recipient of a message.

The DTAU performs no message storage or mailbox function.

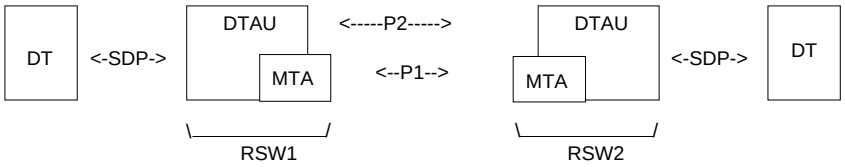

Figure 4: DTAU

The SDP handles the exchanges between the DTAU and the DTs.

Submission and delivery represent a limited number of basic operations, called actions, which are undertaken in the course of a transaction by one of the communicating entities - the DT and the DTAU.

An action has an overall purpose, such as the transfer of a message, the delivery of a notification, etc.

Actions correspond to the exchange of protocol elements of the SDP (SDPEs) as defined in the OSI model for the application layer 7. The SDPE corresponds to a PDU exchanged between two SDP Service Elements. These are the messages exchanged, at the application level, between the DT and the DTAU.

The Submit/Delivery Protocol is common to the inter-personal messaging, external application messaging, base network local messaging and the copy services. However some SDP protocol elements (SDPEs) are not used for the external application messaging, for the base network local messaging or for copy.

8. The submit / delivery protocol (SDP)

8.1. Presentation

A SDP procedure shall contain several transactions in sequence:

- a submission transaction from the DT to the RSW;
- a delivery transaction from the RSW to a recipient DT.

The use and the sequence of the Submit Delivery Protocol Elements SDPEs are linked to either a submission or a delivery transaction.

This Clause describes the actions of the SDP in each of these transactions, and the link which exists in inter-personal messaging between these actions and the primitives exchanged between DTAU and MTA.

The symbols used in the figures have the following meanings:

===action====> action of the SDP: corresponds to a SDPE;

<===action==== exchanged between a DT and the DTAU of its HRSW;

---------(i)----------> operation internal to the DTAU;

<---------(i)---------- (i) refers a description of the operation;

>>>>>>>>>>>>> an event (primitive) between the MTA and the DTAU;

<<<<<<<<<<<<< (the direction of the arrows indicates the originator).

8.2. SDPE of the submission transaction

Four SDPEs can be exchanged in the submission transaction.

8.2.1. Message transmission request (MT)

This is an action executed by a DT to transfer a message to a system messaging service.

To the ST-DCP, the originator of an MT is a UDT.

To the EDT-DCP, the originator of an MT is an EDT.

The MT SDPE sent by a DT to a DTAU is formed:

- from a header composed of the information necessary for processing of the action by the Data Terminal Access Unit DTAU;
- a body composed of the message content.

The format and encoding of the MT SPDE are described later in this sub-part.

8.2.2. Submit confirmation notification (SCN)

This is an action initialised by a System messaging service in response to a DT which has started an MT action.

The SDPE contains the result of the MT processing.

A positive Submit Confirmation Notification Element informs the Data Terminal that the network has processed the MT.

A negative Submit Confirmation Notification informs the DT that the network gives up the processing of the MT. The reason for the failure is then sent to the DT. The negative SCN is also known as the "Submit Failure Notification" or SFN.

The inter-personal messaging service guarantees an SCN or SFN action in response to any MT action.

The external application and base network local messaging services generate no SCN. They may initialise an SFN action, but this is not guaranteed.

The format and encoding of the MT SPDE are described in the section entitled "General format of SDP protocol elements".

8.2.3. Delivery confirmation notification (DCN)

In inter-personal messaging, this is an action sent by the DTAU to the DT to advise it of the delivery or non-delivery of a message to one or more recipient terminals. The message must have already been the subject of a positive SCN if a DCN is issued.

If the transmission has succeeded, the DCN is called a Delivery Confirmation Notification (DCN). A positive result (DCN) informs the DT that the message has been delivered to the recipients, a list of whom is supplied.

If the transmission has failed, the negative result is called a Delivery Failure Notification (DFN). The DFN informs the DT that its message has not been delivered to the recipient, a list of whom is supplied.

The external application and base network local messaging services do not generate DFN, nor DCN.

The format and encoding of the MT SPDE are described in the section entitled "General format of SDP protocol elements".

8.2.4. Acknowledgement of message distribution (AMD)

This action is transmitted by the EDT in order to acknowledge reception of a DCN/DFN (inter-personal messaging).

The UDT does not acknowledge reception of a DCN/DFN. The radio messaging protocol supplies a notification distribution acknowledgement which can be used in place of an acknowledgement of distribution.

The format and encoding of the MT SPDE are described in the section entitled "General format of SDP protocol elements".

8.3. The submission transaction

8.3.1. Presentation

A submission transaction is always originated by a DT.

It is composed of all of the exchanges between this DT (the originator) and the DTAU, concerning the same message:

- A DT begins an MT action in order to invoke a messaging service (inter-personal, external application or base network local) at the DTAU;
- This action can lead to one or more resulting actions (SCN, DCN, etc.), depending on the messaging service used;
- An EDT executes an AMD action to confirm reception of the DCN action (inter-personal messaging) with the DTAU.

The MT action and the associated resulting actions constitute a submission transaction.

8.3.2. Submission transaction in inter-personal messaging

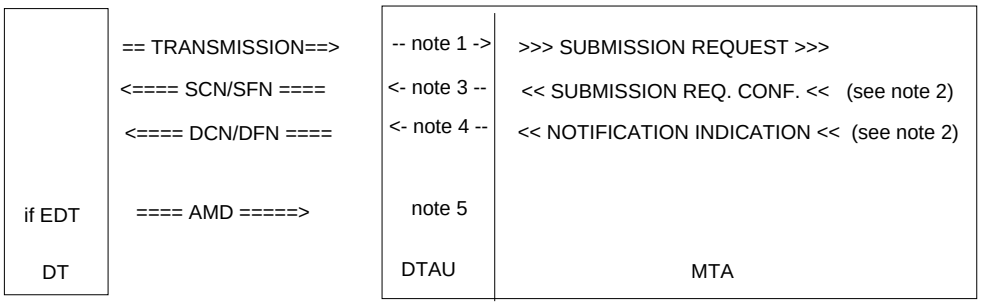

Figure 5: Inter-Personal messaging transaction

NOTE 1: On reception of an MT action executed by a DT, the DTAU issues a Submission Request to the MTA.
NOTE 2: In return, the MTA sends a Submission Request Confirmation to the DTAU. It may also send one or more notification indications.
NOTE 3: A Submission Request Confirmation then causes the transmission by the DTAU of a Submit Confirmation Notification action to the DT. The SCN contains the result of the message submission - success or failure.
NOTE 4: A Notification Indication can also be sent by the MTA.
This causes the transmission by the DTAU of a Delivery Confirmation Notification action to the DT. The DCN contains the result of the message delivery - success or failure.
A positive result is communicated to the originator DT in the case where the operator has requested a Delivery Confirmation Notification (DCN).
A negative result is always communicated to the originator DT.
Several DCNs and/or DFNs can be sent for the same MT action. Each DCN includes the addresses of the recipients which have received the messages. Each DFN contains the addresses of the recipients not reached.
NOTE 5: If the recipient of the DCN/DFN is an EDT, it must acknowledge its reception by an Acknowledgement of Message Distribution action (AMD).

The DTAU makes an attempt to deliver the DCN/DFN. In the absence of any acknowledgement of reception sent by the originator EDT, the Delivery Confirmation Notification/Delivery Failure Notification is then sent to the back-up terminal.

8.3.3. Submission transaction in external application messaging and base network local messaging

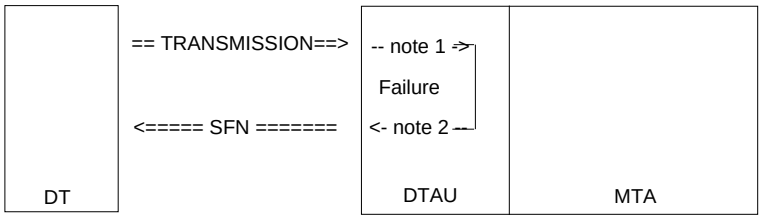

Figure 6: Transaction

NOTE 1: On reception of the MT action run by a DT, the DTAU activates the external application messaging / base network local messaging service according to the type of the receipt message.
NOTE 2: There is no positive Submit Confirmation Notification action or Delivery Confirmation Notification action (positive or negative) generated.
The base network local messaging service is used for the status transmission. The originator and the recipient(s) are System Terminal (a data terminal never sends a status). In this case, a submit failure does not generate a Submit Failure Notification action (the originator ST is not advise of failure).

8.4. SDPE of the delivery phase of a message

Three SDPEs are exchanged in the delivery phase concerning a message to a DT.

8.4.1. Message delivery (MD)

This is an action undertaken by the DTAU to deliver a message to a DT.

This message is the result of a previously executed transmission action.

To the ST-DCP, the recipient of an MD is a UDT.

To the EDT-DCP the recipient of an MD is an EDT.

The format and the encoding of the MD SDPE are described in the section entitled "General format of SDP protocol elements".

8.4.2. Acknowledgement of message distribution (AMD)

This is an action executed by an EDT to acknowledge to the DTAU the reception of an MD and an DR (only in inter-personal messaging service).

The UDT does not acknowledge reception of an MD and an DR, because the radio messaging protocol already has a message delivery signal which acts as an acknowledgement of reception.

The format and the encoding of the MD SDPE are described in the section entitled "General format of SDP protocol elements".

8.4.3. Distribution report (DR)

This is an action executed by the DTAU to the back-up terminal in inter-personal messaging service. This report is sent with a message delivery during the back-up phase. This report details the primary recipients which have not received the message (not in primary phase, nor in alternate phase).

The format and the encoding of the MD SDPE are described in the section entitled "General format of SDP protocol elements".

8.5. The delivery transaction

8.5.1. Presentation

A delivery transaction is always originated by the DTAU.

It consists of all of the exchanges between a DTAU and a distant DT concerning a single message.

A DTAU sends an MD message to a DT in order to deliver to it a message from the inter-personal, external application or base network local messaging and copy service.

The MD action and any possible associated confirmation action constitute a delivery action.

The inter-personal messaging service:

An inter-personal message intended for an EDT leads to an acknowledgement of Message Distribution (AMD) from the terminal involved.

A message intended for a UDT leads to no confirmation by the SDP, since the distribution acknowledgement sent by the System Terminal and managed by the radio protocol acts as an acknowledgement of distribution.

The acknowledgement sent by the ST or the AMD sent by the EDT are used by the User Agent UA to confirm the delivery to the MTA (causing erasure of the message from disk).

If the message cannot be delivered to the primary recipient, the System then triggers the "distribution secure" mechanisms for this message. The message is then either sent to the alternate recipient or to the back-up terminal.

Case of the back-up terminal:

Only one sample of the MD is transferred to the back-up terminal even if the back-up terminal must receive several samples of this message: it is the case when several recipients are not reached during the primary or alternate phase. This message is transmitted with a Distribution Report which contains the non reached primary addresses. The back-up terminal acknowledge separately the MD and the DR.

In case of back-up phase, the UA sends a delivery confirmation to the MTA when the MD and the DR have been acknowledged by the back-up terminal.

The acknowledgement sent by the ST does not guarantee that the message has been received by the UDT. A response sent by the recipient UDT is the only sure indication of delivery to the UDT.

The external application and local base network messaging service:

The acknowledgement of the message sent by the ST remains local to the SSW. The EDT sends no AMD. A response from the recipient DT will guarantee that the message has been received.

COPY SERVICE: EDT does not send Acknowledgement of Message Distribution.

8.5.2. Delivery transaction in inter-personal messaging

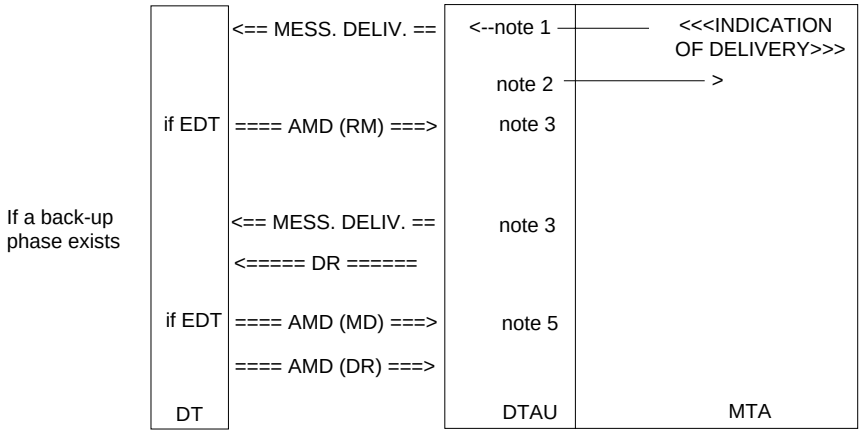

Figure 7: Delivery transaction

NOTE 1: Following reception of a Delivery Indication relating to a message, the DTAU executes the MD action (Message Delivery).

NOTE 2: The DTAU informs the MTA of the success or failure of message processing. This allows the MTA to return a delivery failure report if appropriate.

NOTE 3: If the recipient of an MD is an EDT, it must acknowledge reception with an Acknowledgement of Message Distribution action (AMD). In the absence of EDT confirmation, the message is sent to the back-up terminal.

NOTE 4: If a back-up phase takes place, the DTAU executes an Message Delivery action and an Distribution Report to the back-up terminal.

NOTE 5: If the back-up terminal is an EDT, it must acknowledge the reception of the message and the distribution report with acknowledgement of message distribution action.

8.5.3. Delivery transaction in external application messaging and base network local messaging

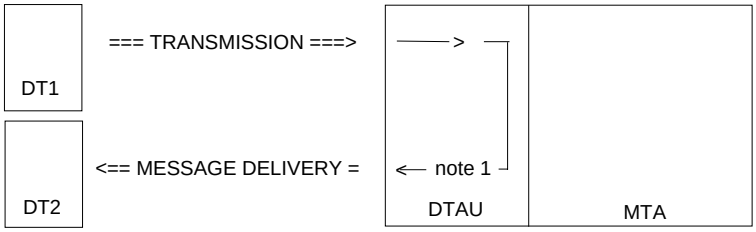

Figure 8: Delivery transaction

NOTE 1: Following the submission transaction relating to an external application message/base network local message, the DTAU sends the message delivery (MD) action. If the message cannot be delivered to the primary recipient, it is considered to be lost, and no "distribution secured" mechanism is executed by the System. The base network local message can contain a status. In this case, the message is delivered only to the ST.

8.5.4. Delivery transaction for the copy service

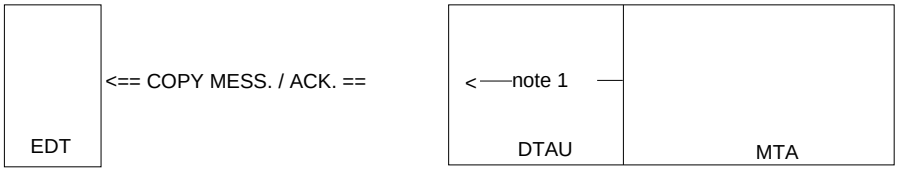

Figure 9: Copy Service

NOTE 1: Following every action done in the HRSW (inter-personal and external application messaging) or in the VRSW (base network local messaging), the DTAU sends a copy to the EDT. There is no copy for a message in base network local messaging if the body message is a status. If it is not possible to transmit the copy to the EDT, it is considered to be lost, and no "distribution secured" mechanism is executed by the System

8.6. Summary table of SDP actions

Table 1: SDP actions

	INTER-PERSONAL MESSAGING		**EXTERNAL APPLICATION MESSAGING**		**BASE NETWORK LOCAL MESSAGING**		**COPY**
	UDT	EDT	UDT	EDT	UDT	EDT	EDT
Message Transmission (MT)	yes	yes	yes	yes	yes	yes	no
Submit Confirmation Notification (SCN)	yes	yes	SFN	SFN	SFN	SFN	no
Delivery Confirmation Notification (DCN)	yes	yes	no	no	no	no	no
Message Delivery (MD)	yes	yes	yes	yes	yes	yes	yes
Acknowledgement of Message Distribution (AMD)	no	yes	no	no	no	no	no
Distribution Report (DR)	yes Note 1	yes Note 1	no	no	no	no	no

NOTE 1: only for the back-up terminal

9. Situation of SDP in relation to the X.430 Recommendation

The context of the SDP has highlighted the absence of a standard in ITU-T Recommendation X.400 to X.430 (1984) [4] of the CCITT, for access by a distant terminal to the messaging system.

The P5 (X.430) protocol approaches the requirements of the DT. It specifies the access by a Teletex terminal to the messaging services.

Nevertheless, P5 does not satisfy the needs of the DT exactly. There are three important differences between them, due to the specificity of the Teletex service:

- Session layer:

The EDT uses the X.225 session and the UDT the STUTEL protocol, while the P5 is based on Recommendation T.62 which describes the telematics session. In order to have these two sessions compatible, the CCITT produced Recommendation T.62bis, which allows the equation: T.62 = X.225 + T.62bis.

- Coding of the protocol elements:

P5 uses a code "that the man can read", the messages are encoded in a printable form (extended IA5). The SDP is common to the UDT and to the EDT: a printable code has the disadvantage of generating messages too long for a transmission over the air interface channels.

- Function of the TTXAU:

The Teletex Access Unit (TTXAU) specified in P5 represents the terminal in relation to the MTA. In this regard, it performs no message routing function between terminals. This restriction is not compatible with the external application and the base network local messaging service.

For these reasons, the SDP is not compatible with P5, though it is largely based upon it. The characteristics of the SDP are as follows:

- use of:

  the X.225 session for the EDT;

  STUTEL for the UDT.

- use of the following P5 concepts:

  access unit for data terminals, called the DTAU;

  actions between the DTAU and the terminals.

- Extension of the function of the DTAU, to allow it to route messages between two terminals when the originator requests a external application messaging service or a base network local messaging service.

- Direct delivery of messages. The Document Storage (DS) service covered as an option in P5 is not used in the SDP, because it involves delivery to mailboxes and withdrawal on demand.

In respect of the services offered, the SDP appears like a sub-set of P5. The formalism of protocol presentation has been observed. Apart from differences in terminology, the selected services have the same meaning and perform the same function.

The following table shows the correspondence between the actions of the SDP and the equivalent actions of P5. The elements of the ATLAS 430 procedure are also given for information.

Table 2: SDP and P5 actions

Action of the SDP	P5 action element	Element of ATLAS 430 procedure
Message transmission (MT)	Message transmission	Letter transmission
Submit confirmation notification (SCN)	Action planned but not yet specified	Submit confirmation notification
Submit failure notification (SFN)	Delivery state notification exception reporting	Command refused
Delivery confirmation notification (DCN)	Delivery state notification	Distribution notification
Delivery Failure Notification (DFN)	Delivery state notification	Distribution notification
Message distribution (MD)	Message delivery	Letter
Acknowledgement of Message Distribution (AMD)	Receipt Acknowledgement	Not used
Distribution Report (DR)	Not used	Not used

Actions of the P5 protocol not applicable to the SDP:

- test;
- receipt state notification;
- interrogation of document store;
- document store report;
- recording in document store;
- output request;

- message output.

10. General format of SDP protocol elements

The elements of the SDP protocol (SDPE) exchanged between the DT and the HRSW are:

- Acknowledgement of Message Distribution (AMD);
- Delivery Confirmation Notification (DCN);
- Distribution Report (DR);
- Message Delivery (MD);
- Message Transmission (MT);

- Submit Confirmation Notification (SCN).

These protocol elements are composed of a header and an independent body section.

The SDP header contains all of the information required by the System entities for processing and routing an SDPE in uplink and downlink.

The SDP header is composed of three parts:

- Header 1, which among other things contains information required for negotiation of message transmission over the air interface;
- Header 2, this part contains the originator and recipient subscriber numbers, the service requested, the type of encoding, etc;

- Length, indicating the length of the message.

The SDP body is handled only by the DTs.

The entities of the System can neither read it nor modify it. It contains useful information, encoded in accordance with a particular presentation (private) recognised by the DTs and identified by the type of encoding.

The total length of an SDPE (header and body) is 2042 octets maximum. In the remainder of this document, the total length of the message (header and body) is referred to as LGEPDR.

11. Specification of fields

The header lengths (LG_ENT1 and LG_ENT2) indicate the number of octets following the length field (but not including the length).

For the binary values encoded in two octets (LG_ENT, IDLOCAL, ORD, LCM, etc.), the high order bits are in the first octet transmitted, with the low order bits in the second.

This presentation is seen on the transmission channel. It does not presume an identical representation with in each item of equipment processing the messages (UDT, SSW, RSW, EDT).

11.1. Radio Transmission header (header 1)

11.1.1. CHIFF

Type of encryption

This field is made up of two bits, b2 and b1, determined by the originator DT.

The possible values are:

00 (0) = no message encryption requested by the DT;

11 (3) = message encryption requested by the DT.

11.1.2. PRIO

Application priority of the message.

This is supplied by the originator DT and used by the system.

Correspondence between the known priorities of the DT and those of the X.400 is as follows:

- 0011 = Routine (System) = non-urgent (X.400)
- 0111 = Urgent = normal
- 1011 = Flash = urgent
- 0000 = not meaningful

11.1.3. TYPAPDON

Type of data transmission application.

This enables the ST to identify the processing to be performed in order to route the message.

It also allows the RSW to know the type of data circuit which needs to be set up.

This field is encoded in a quartet as follows:

- 0 = value reserved in downlink message delivered to the garbage messaging collector.
- 1 = HRSW messaging service
- 2 = messaging service outside of the HRSW
- 3 = messaging service outside of the HRSW from ST to ST
- 4 to 15= Reserved for future applications

11.1.4. ID_LOCAL

Temporary message identifier (TMSG-ID), supplied by the DT, during transmission of an MT to the ST.

It is used to establish a correlation between a message and the Submit Confirmation Notification concerning the message.

11.2. Messaging header (header 2)

The meaning of the header 2 fields common to several SDPEs is given below. The fields specific to a SDPE are described taking into account the relevant format of the SDPE.

11.2.1. TYPMES

Type of SDPE

- 0 = Reserved value
- 1 = Message Transmission (MT)
- 2 = Message Delivery (MD)
- 3 = Submit Confirmation Notification (SCN)
- 4 = Delivery Confirmation Notification (DCN)
- 5 = Acknowledgement of Message Distribution (AMD)
- 6 = Distribution Report (DR)

11.2.2. TYPE_CODAGE

Determines the format of SDP body presentation:

- 1 = ASCII code - printable characters
- 2 = Private DT code (message type and structure not checked by the UA
- 3 = Private switch code

11.2.3. IDMESSAGE

Message identifier (MSG-ID), supplied by the System, when submitting the message (see section entitled "Format of Message Identifier").

11.2.4. TYPIDENT

Message identifier type:

= 0 => IDMESSAGE of fixed format (6 octets)

= 1 => IDMESSAGE is a character string of variable length (64 characters max)

11.2.5. TYP_SERV

Type of service:

For each TYPAPDON, identifies the service requested.

This field is filled in by the DT.

The services available on messaging are:

TYPAPDON = 1

1 = Inter-Personal Messaging (IPM)

8 = EXternal Application Messaging (EXAM)

15 = Copy service

TYPAPDON = 2

1 = Base Network Local Messaging (BNLM)

TYPAPDON = 3

1 = status

11.2.6. GDH_DEPOT

Date and time of the message submission, supplied by the system.

Encoded in accordance with X400 in the form of local time and the difference between local time and universal time (UTC).

Field encoded in 9 octets:

- 8 octets each contain two numbers (in BCD);
- 1 octet indicates the direction of the difference (+ or -).

YEAR
MONTH
DAY
LOCAL TIME
MINUTES
SECONDS
DELTA (+ or - character)
HOURS DIFFERENCE
MINUTES DIFFERENCE

Figure 10: GDH _ DEPOT format

11.2.7. LI

End-of-list indicator

= 0 => Last NADESTi (list of co-recipients)

= 1 => NADESTi followed by another list element.

11.2.8. CNA

Subscriber number coding

Determines the format of the NAEXP and NADESTi fields:

= 1 => System address of the RFSI type

= 2 => X400 type O/R name

11.2.9. NAEXP

Subscriber number of originator terminal, introduced by the system in the downlink

See note 1 on the next page

11.2.10. NADESTi

Subscriber number of the recipient terminal, as supplied by the originator

See note 2 on the next page

11.2.11. DESTEFF

Provides the actual recipient of the message with an indication of the delivery type (downlink)

The field is composed of 4 bits, b4, b3, b2 and b1.

No bit set ==> delivery to garbage messaging collector (GMC).

b4 = 1 => delivery to primary recipient

b3 = 1 => delivery to alternate recipient

b2 = 1 => delivery to back-up recipient

b1 = 1 => delivery to host terminal (forwarding service)

DESTEFF takes the following values

0000 (0) = garbage messaging collector

0010 (2) = back-up recipient

0011 (3) = host back-up recipient

0100 (4) = alternate recipient

0101 (5) = host alternate recipient

1000 (8) = primary recipient

1001 (9) = host primary recipient

1111 (15)= all phases recipient

NOTE 1: If the recipient HRSW succeeds in converting the X400 O/R name of the originator (downlink message) into an RFSI address, then CNA = 1. Otherwise CNA = 2 (originator outside of the PMRD).

NOTE 2: Uplink message:
CNA = 1 or 2 (depends on recipient).

Downlink message:

CNA = 1 in the normal case

CNA = 2 if the recipient HRSW does not succeed in converting the X400 O/R name of the recipient into an RFSI address (recipient address invalid), it sends the messaging to the garbage messaging collector and resets TYPAPDON to 0.

Comment:

LG_ENT2 includes all following fields up to LCM (not included).

11.3. Length of message body

LCM Length of message body, expressed as a number of octets.

12. Format of elements of the SDP protocol

12.1. Presentation

This section describes the format of each Protocol Element of the SDP, giving the fields which have specific values.

12.2. Message transmission (MT) by a DT

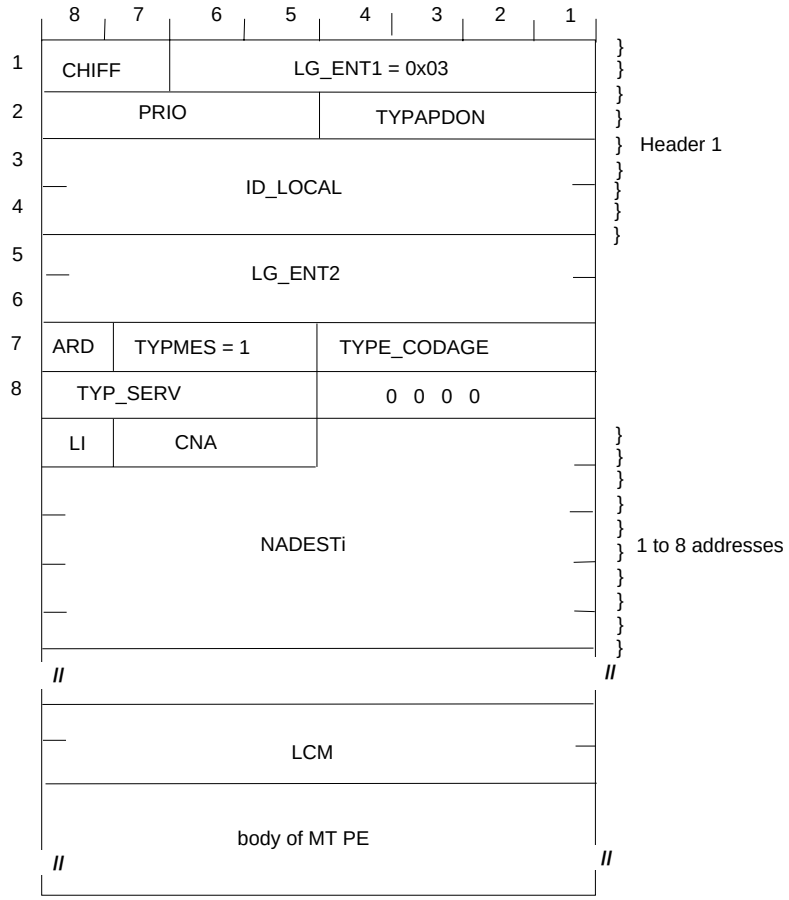

Figure 11: Format of the message sent by an UDT

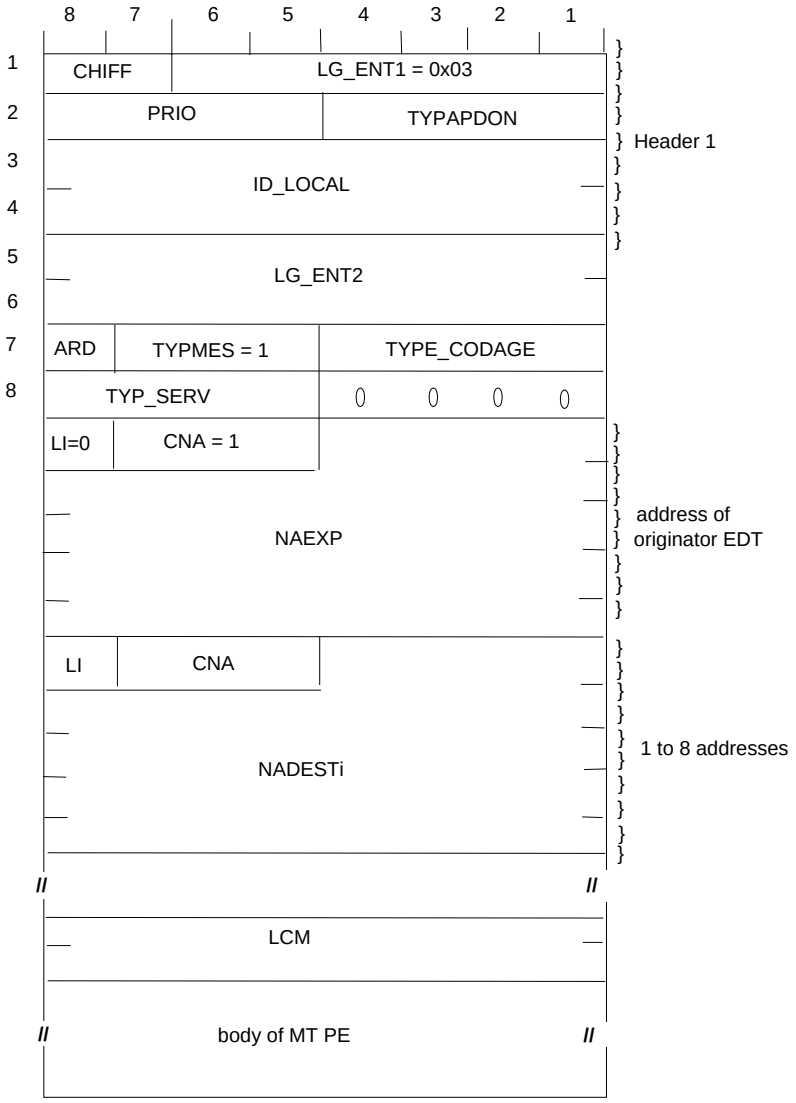

Figure 12: Format of the message sent by an EDT

12.2.1. NAEXP

Field indicates the originator of the MT action (only for an EDT). The System checks that the supplied originator address lies within the special range of addresses assigned to the EDT. This address will be used for notification transmission to the originator EDT.

This field is not allowed on the VRSW-UDT link. This field is filled in by the VRSW before transmission of the MT message to the HRSW.

The addresses of the recipients appearing in header 2 of the MT SDPE sent by the DT are those supplied by the user.

The length of the MT header (header 1, header 2 and LCM) is:

- between 15 and 50 octets for a message sent by a UDT;
- between 20 and 55 octets for a message sent by an EDT, to recipients of the System only.

12.2.2. ARD

Delivery Confirmation Notification Requested.

On transmission, this field is filled in by the DT if TYPAPDON = 1 and TYPSERV = 1.

= 0 => No Delivery Confirmation Notification Requested

= 1 => Delivery Confirmation Notification Requested

The maximum length of messages is LGEPDR;

The number of destinations given by the UDT must be between 1 and 8;

Destination address types are implicit, implicit, list, external subscribers addresses.

The first three categories of addresses are the addresses defined in the System addressing plan.

12.2.3. PRIO

The PRIO field is in header 1 of the MT SDPE sent by the DT.

The ST uses PRIO to establish its "request for uplink message transfer" (TPDU_CR) on the radio channel (the ST uses an internal correspondence table to establish the connection request. This table contains DT priority and air interface priority).

In the RSW, priority is then handled by the radio protocol handler and supplied to the messaging application.

12.3. Submit confirmation notification (SCN)

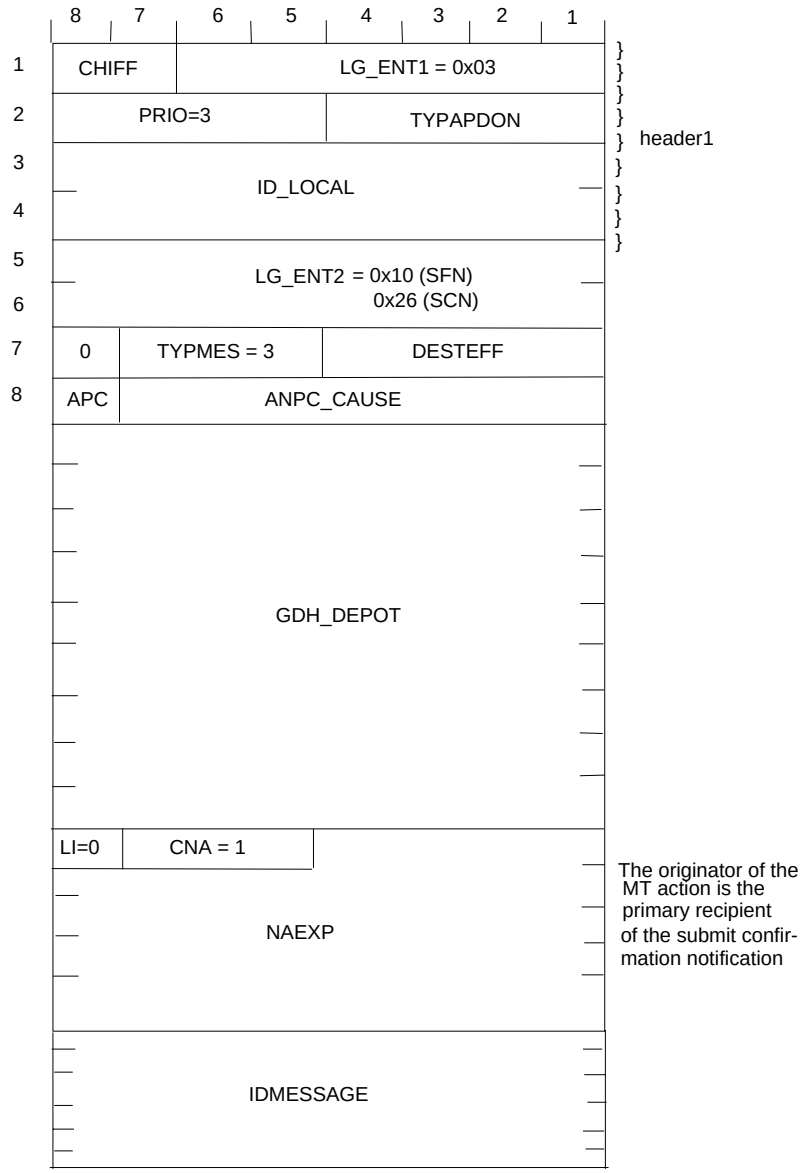

Figure 13: SCN format

12.3.1. APC

Result of the submission request

= 0 => success - submit confirmation notification

= 1 => failure - submit failure notification

12.3.2. TYPAPDON

Shows whether the SCN/SFN was sent by the messaging service of the HRSW or by a messaging service outside of the HRSW.

12.3.3. ANPC_CAUSE

The cause of failure of the submission request is meaningful only if APC = 1

(see list of causes of failure in document Part 13-3)

12.3.4. IDMESSAGE

The IDMESSAGE field does not exist if:

SCN = 1 (submit failure notification)

The priority of an SCN is always routine.

An SCN is delivered only to the primary terminal (DESTEFF is always 8).

The SCN does not have a body.

PRIO same comment as for the MD Protocol Element.

12.4. Delivery confirmation notification (DCN)

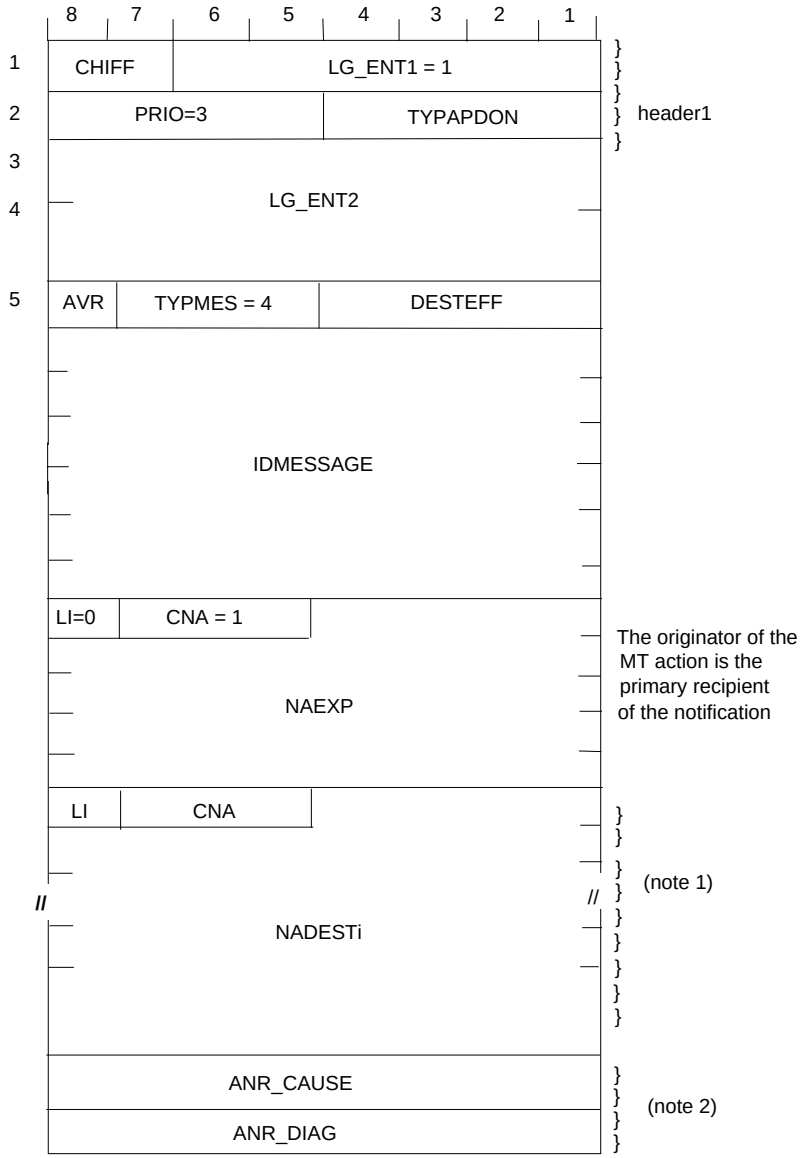

Figure 14: Format of the notification delivered to the UDT

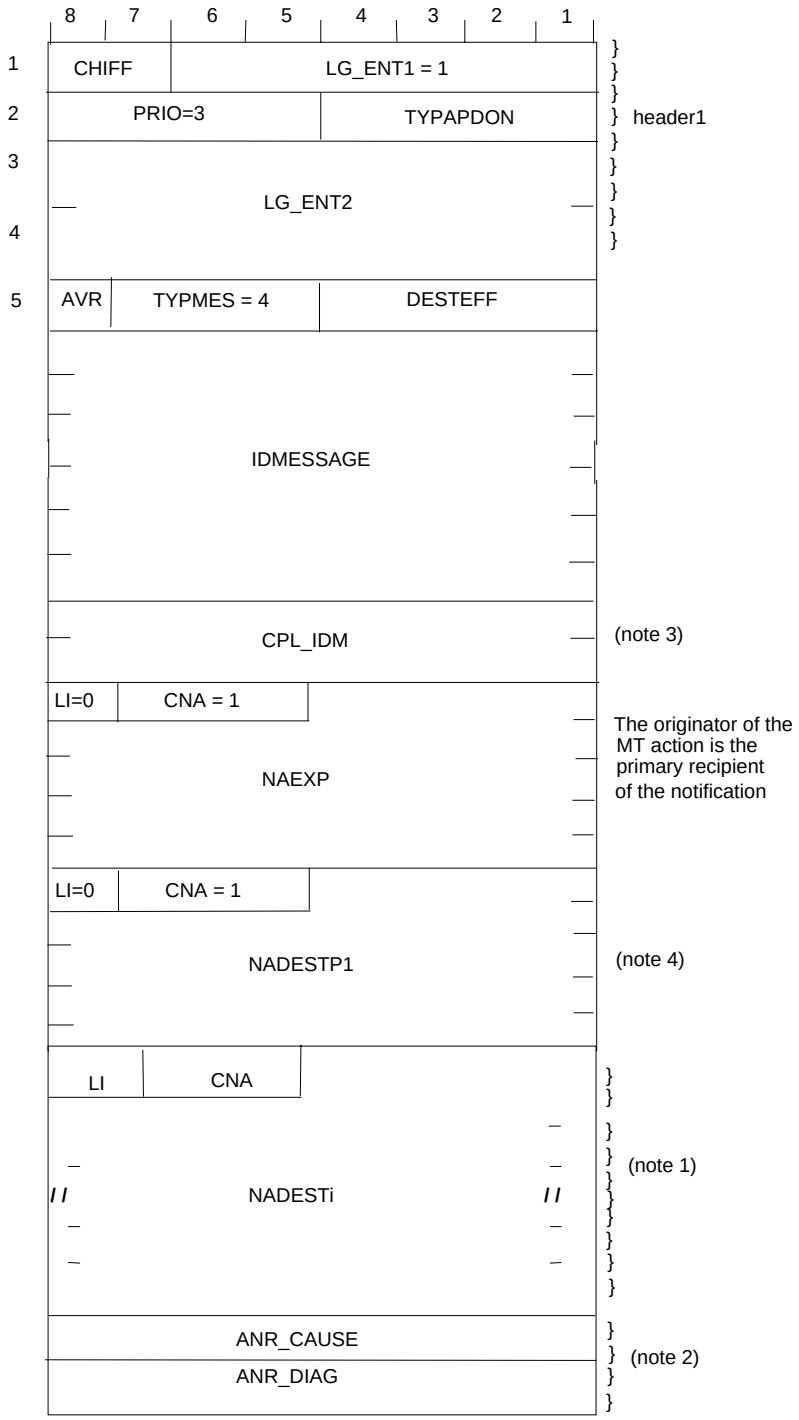

Figure 15: Format of the notification delivered to the EDT

This SDPE is used to carry a delivery confirmation or delivery failure notification. Several DCN/DFNs can be sent to the DT for one MT action.

NOTE 1: For a delivery confirmation notification, there are as many NADESTi addresses as there are recipients reached. The ANR_CAUSE and ANR_DIAG fields do not exist.
NOTE 2: For a delivery failure notification, there are as many NADESTi addresses and ANR_CAUSE/ANR_DIAG fields as there are recipients not reached (the fields ANR_CAUSE and ANR_DIAG follow the field NADESTI of the non reached recipient).
NOTE 3: This field is used only on the RSW-EDT interface.
NOTE 4: The NADESTP1 field is used only on the RSW-EDT interface. It contains the address of the actual recipient of the notification. For a primary distribution, NADESTP1 contains the same RFSI address as the NAEXP field. For a back-up distribution, NADESTP1 contains the address of the back-up terminal.

12.4.1. AVR

Result of the DELIVERY

0 => success: delivery confirmation notification

1 => failure: delivery failure notification

12.4.2. ANR_CAUSE and ANR_DIAG

Reason and diagnosis of failure to deliver to the recipient.

These fields are meaningful only if AVR is set to 1.

There is a cause and diagnosis field for each address.

The priority of a DCN/DFN is always routine.

A DCN/DFN is never delivered to an alternate terminal or an host terminal.

If the "distribution secure" mechanism is executed, the notification is transmitted to the back-up terminal with the initial TYPAPDON.

The DCN/DFN has no body.

Priority: same comment as for the MD Protocol Element.

12.4.3. CPL_IDM

This number is supplied by the RSW to the EDT only. It is incremented by the RSW at each Protocol Element (DCN/DFN, MD and DR) sent by the RSW over the RSW-EDT interface.

This field is used by the EDT to make up the AMD Protocol Element.

This field does not exist on the RSW-UDT interface.

12.5. Message delivery (MD)

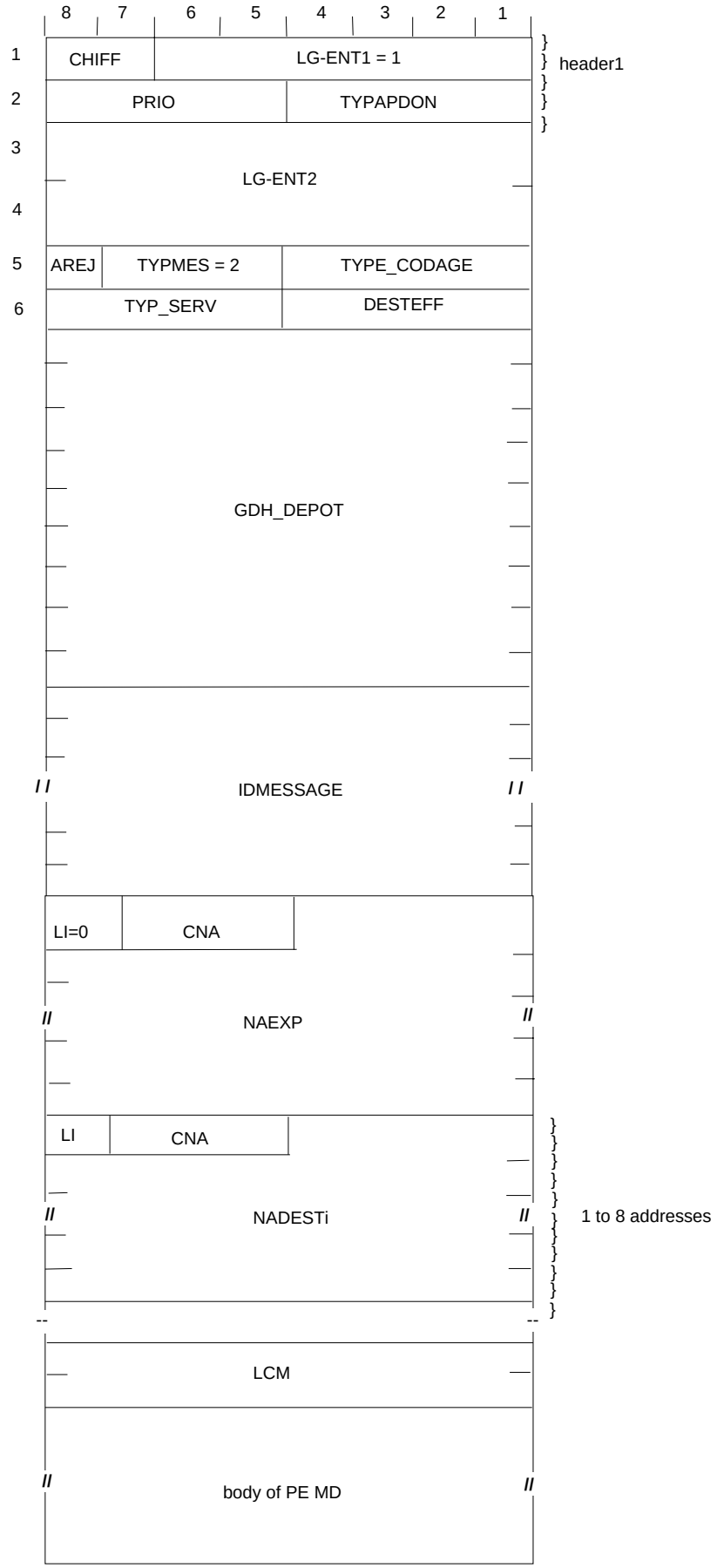

Figure 16: Format of the message delivered to the UDT

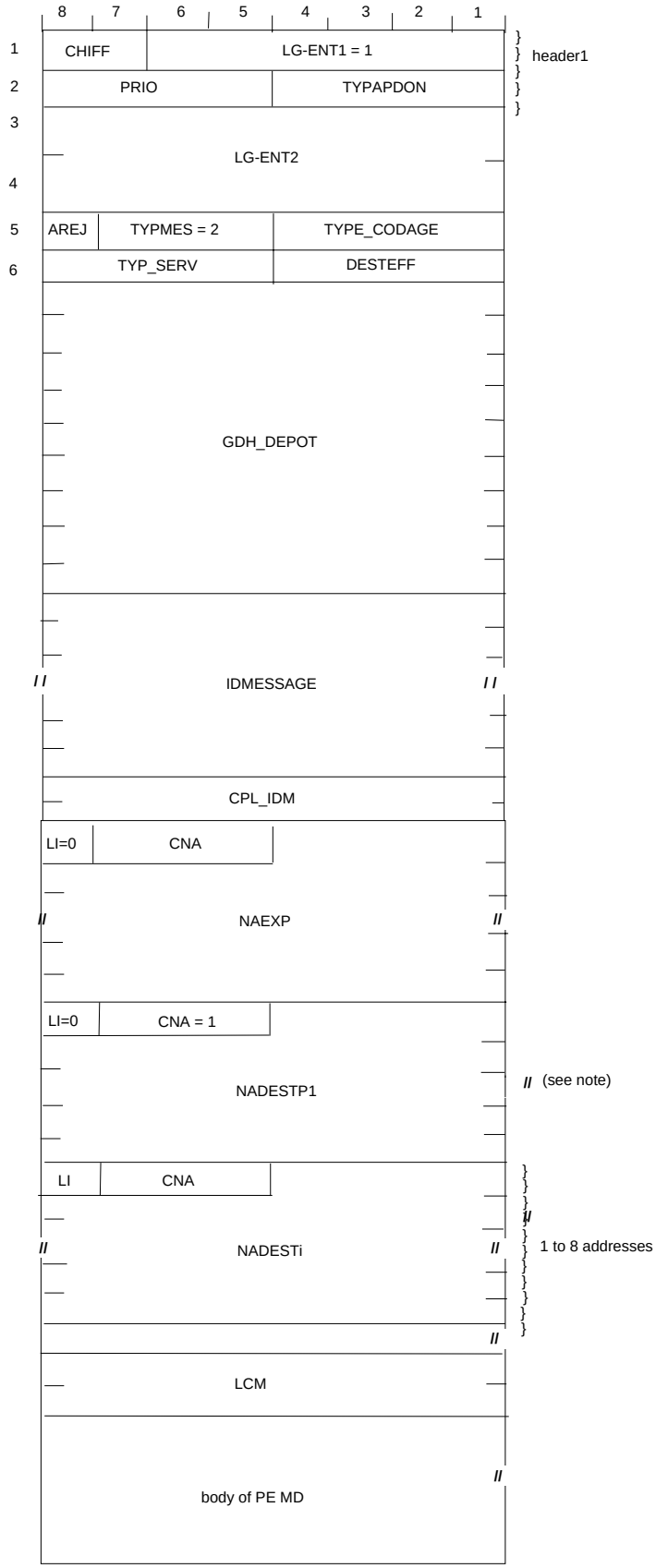

Figure 17: Format of message delivered to the EDT

NOTE: NADESTP1 contains the address of the actual recipient of the message (used only on the RSW-EDT interface).

TYPAPDON = 0 is used when the RSW is unable to process a message (message out of sequence, inconsistent header field, etc).

The message is then the subject of a reject distribution to the garbage messaging collector, which then has to interpret it. Any field in the header of the MD SDP which cannot be filled in by the RSW is then forced to the value of $FF (all bits to 1).

AREJ = 0: delivery of a normal message
AREJ = 1: delivery of a rejection report of an MT action (message rejection notification)

The addresses of the recipients appearing in header 2 of the MT SDPE sent by the DT are those supplied by the originator in the MT SDPE.

The total length of the MD header (header 1, header 2 and LCM) is:

- between 33 and 68 octets for a message received by a UDT;
- between 40 and 75 octets for a message received by an EDT, containing system addresses only.

CPL_IDM: same remark as for DCN Protocol Element.

Comment:

The ST does not mode field the PRIO field of the message MD transmit to the UDT.

SPECIAL CASE OF MESSAGE REJECTION NOTIFICATION (AREJ=1)

A visitor ST can be isolated from its BN (VRSW in inter-BN disconnected fault back mode or HRSW not accessible). In this case, the messages sent by its UDT are rejected to the garbage messaging collector of the VRSW. The MD message delivered indicates that it is the rejection of an MT action (AREJ=1).

This notification supplies the address of the sending UDT and the information contained in the rejected message. This notification is sent only in inter-personal messaging.

In this case, certain fields of the MD SDPE take special values:

TYPAPDON = 0

TYP_SERV = 1

DESTEFF = 0

AREJ = 1

GDH_DEPOT = 0

IDMESSAGE: TYPIDENT= 0

TTD = 2

ORD = copy of ID_LOCAL field of the rejected MT SDPE.

DAY, MONTH, PMS = 0

NAEXP, NADESTi, LCM and body are copied from fields of the same name as the rejected MT

SDPE.

(NADESTP1 is not used on the RSW-UDT interface).

An MT action run by an EDT never gives rise to a rejection notification.

SPECIAL CASE OF COPY:

This Protocol Element is used by the RSW to transmit copies of the messages and notifications to the EDT.

In this case, certain fields of the MD SDPE take special values:

CHIFF = 0

TYPAPDON = 1

TYP-SERV = 15

DESTEFF = 8

AREJ = 0

PRIO = 0: the copies have no priority

GDH_DEPOT contains the time of copy generation to the RSW.

IDMESSAGE: this is a copy of the field of the same name for the Protocol Elements DCNs/DFNs, MD and DR.

For the MT Protocol Element, it is the value of the IDMESSAGE contained in the SCN which is transmitted in the copy to the copy terminal.

For the SFN Protocol Element, the IDMESSAGE field is composed of:

TTD = 0

ORD = IDLOCAL

DAY = 00

MONTH = 00

PMS = 0

CPL_IDM: This is a copy of the field of the same name, when it exists, in the Protocol Element sent as a copy.

Otherwise the field has a non-meaningful value ($FF).

NAEXP is a non-meaningful field (all octets to $FF)

NADEST: (LI = 0, CNA = 1) There is only one recipient for the copy, and this is a pre-specified address of the EDT.

NADEST P1: contains the same address as NADEST

LCM: gives the length of the data sent as a copy.

The body contains the Protocol Element transmitted as a copy to the EDT (MT, MD, SFN, DCN/DFN, DR).

The length of the header of the MD PE used for the copy is 40 octets if the copy is of a message or a notification generated in the system.

The length of the body can reach length LGEPDR. This implies that the MD Protocol Element used by the copy service can have a size greater than LGEPDR.

12.6. Acknowledgement of message distribution (AMD) (EDT specific)

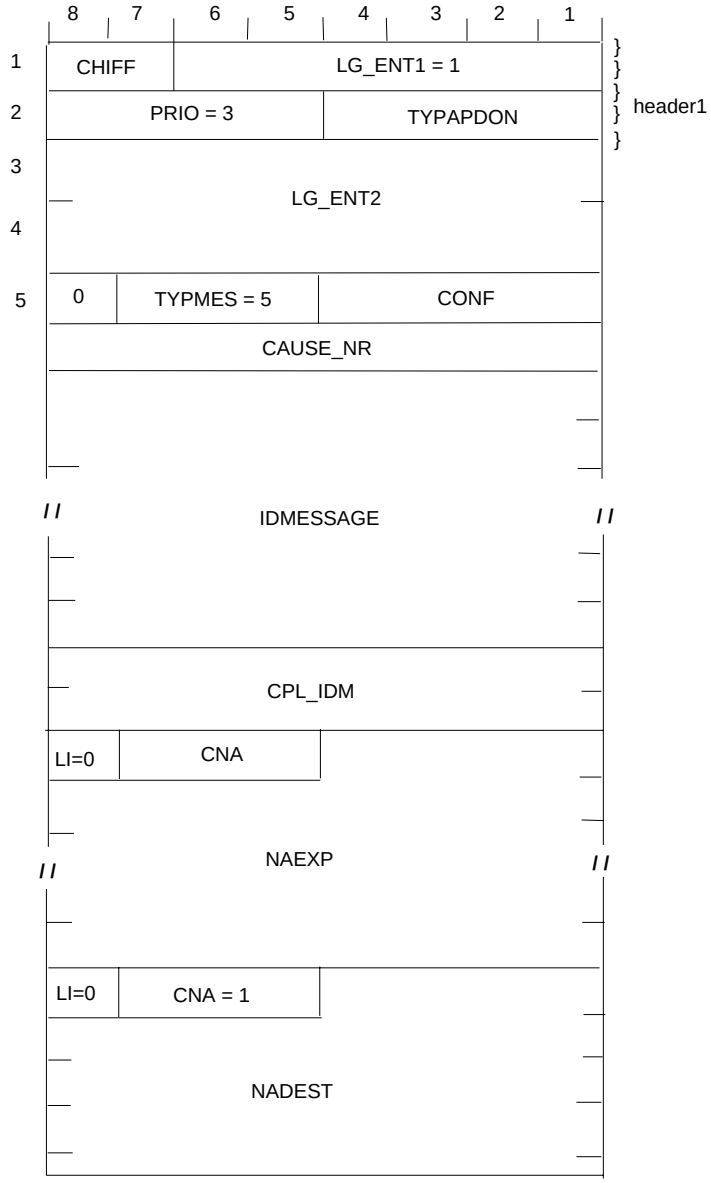

Figure 18: AMD format

This SDPE is used to acknowledge receipt or not of a message or a notification sent by the RSW to the EDT.

12.6.1. CONF

Type of SDPE where distribution is confirmed

= 0MD SDPE
= 1positive DCN SDPE (Delivery Confirmation Notification)
= 2negative DCN SDPE (Delivery Failure Notification)
= 3DR SDPE (Distribution Report)

12.6.2. CAUSE_NR

Result of the acknowledgement of distribution

= 0positive acknowledgement of distribution
= 1negative acknowledgement of distribution

12.6.3. NAEXP

Field contains the address of the Originator sending the message.

12.6.4. NADEST

Field contains the RFSI address of the EDT sending the acknowledgement of message distribution (AMD). This EDT was the recipient of the MD, DCN or DR SDPE, the reception of which it confirms.

12.6.5. PRIO

Fields are a copy of the fields of the same name of the MD, DCN or DR SDPE, the delivery of which is confirmed.

12.6.6. TYPAPDON

Fields are a copy of the fields of the same name of the MD, DCN or DR SDPE, the delivery of which is confirmed.

12.6.7. IDMESSAGE

Fields are a copy of the fields of the same name of the MD, DCN or DR SDPE, the delivery of which is confirmed.

The EDT fills in this field with a non-meaningful value (00).

Priority: The priority is always ROUTINE.

12.6.8. CPL_IDM

Contains the value supplied by the RSW in the MD, DCN/DFN or DR Protocol Element.

12.7. Distribution Report (DR)

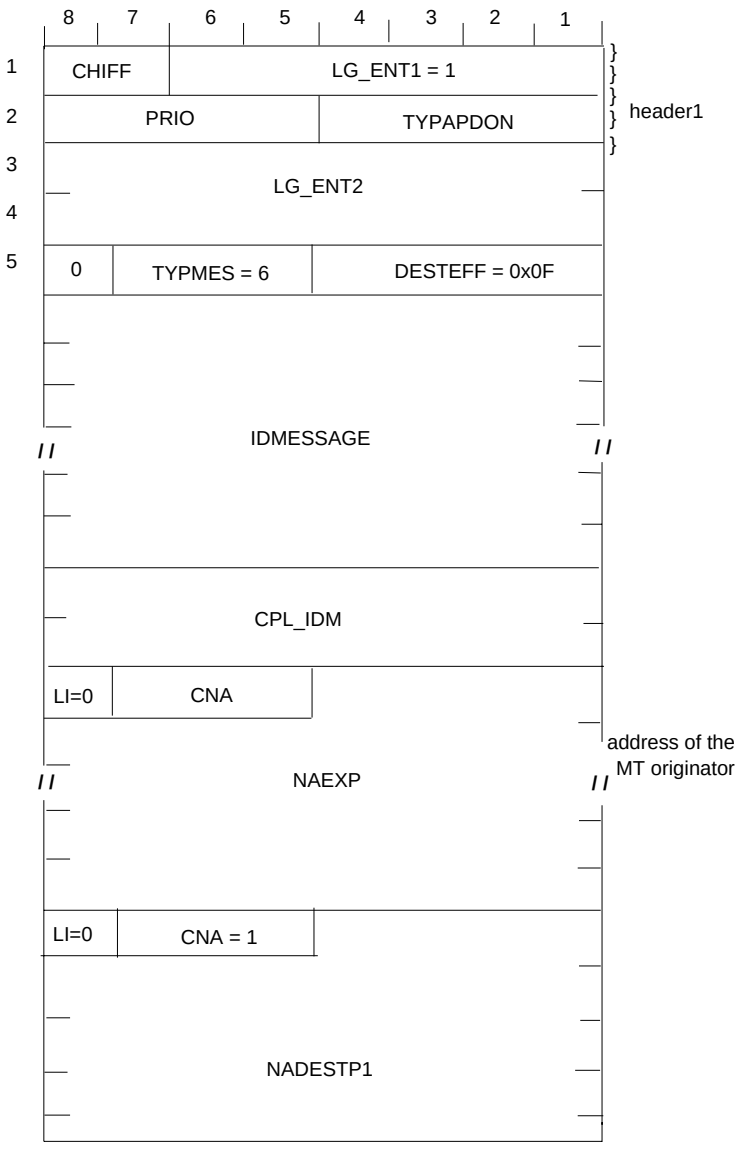

Figure 18: DR format

(continued)

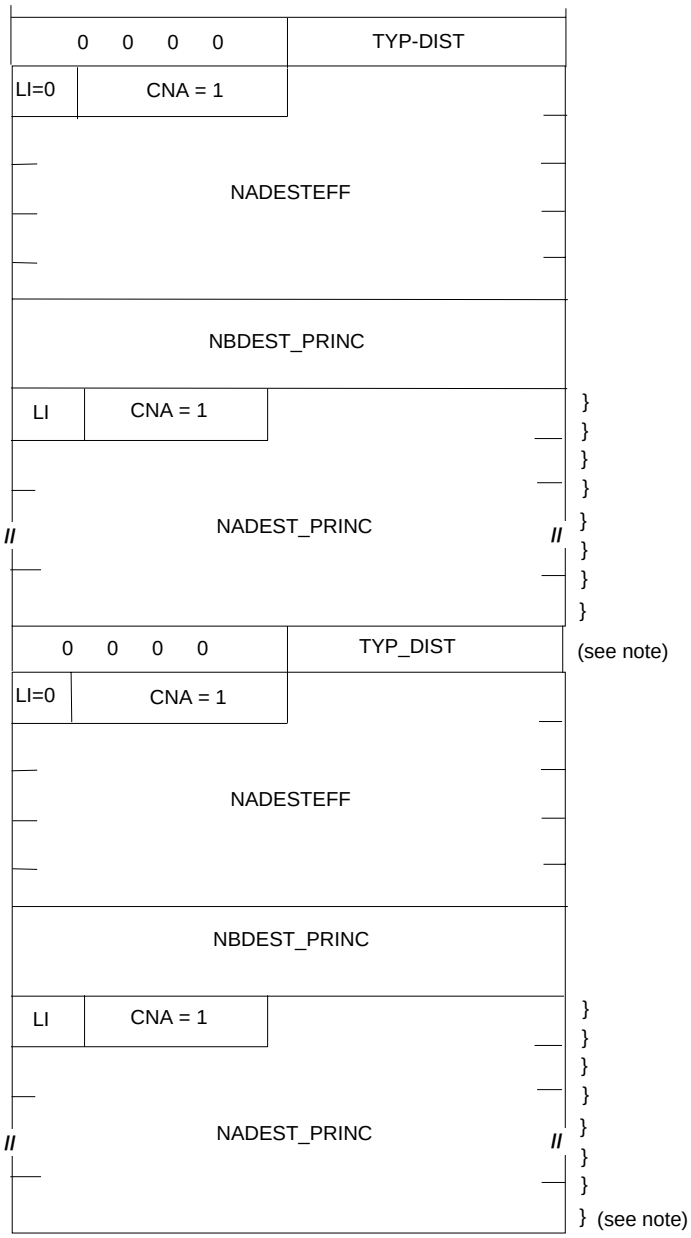

Figure 18: DR format (delivery report continued)

NOTE: Optional fields.

12.7.1. DESTEFF

Distribution "all phases" for the DR Protocol Element.

12.7.2. NAEXP

Originator of the message MT.

12.7.3. IDMESSAGE

IDMESSAGE of the MD Protocol Element.

12.7.4. CPL_IDM

Only on the RSW- EDT interface.

12.7.5. NADESTP1

Address of the DR actual recipient (back-up terminal) (use only on the RSW-EDT interface).

12.7.6. TYP_DIST

Distribution type for the recipient NADEST-PRINC

0010 = back-up distribution
0011 = host back-up distribution
(one distribution type must be present in the DR).

12.7.7. ADESTEFF

Address of the MD actual recipient.

12.7.8. NBDEST_PRINC

Number of primary recipients concerned by the "distribution secure mechanism" for the distribution type TYP-DIST.

NBDEST-PRINC is greater than zero.

12.7.9. NADEST_PRINC

List of primary recipients non reached whom message is delivered to NADESTEFF.

13. Message recipients

Because there exists a directory service in the System, the concepts of "co-recipient", "primary recipient" and "actual recipient" used in this document, have a special meaning.

The list of co-recipients (NADESTi) is a list of subscriber numbers for the recipients (addresses) of a message as supplied by the originator DT.

To each of the actual recipients of the message, the System supplies the list of co-recipients.

It does not include any address expansions as carried out by the directory service.

The primary recipient is the one to whom a sample of the message must be delivered initially.

His subscriber number can be the result of interpreting the list addresses, the implicit addresses performed by the directory service.

There is one recipient per expanded address.

The actual recipient is the one to whom the System delivers the message. Depending on the state of the ST concerned, this can be:

- the primary terminal;
- the alternate terminal;
- he back-up terminal;

- the host primary terminal, in case of forwarding service;
- the host alternate terminal, in case of forwarding service;
- the host back-up terminal, in case of forwarding service.

When the System delivers a message to a terminal, it does not give it the identity of the primary recipient. In the DESTEFF field, the System shows the condition governing delivery of the message to the actual recipient.

This allows the UDT to distinguish between messages actually meant for it and those received in the place of another terminal.

Case of the backup terminal:

The System delivers only one sample of the message MD to the backup terminal associated to a Distribution Report. This report contains the list of the primary recipients.

14. Format of message identifier

The identifier of a message (IDMESSAGE) is assigned when this message is submitted. This submission is performed at the HRSW of the originator DT (inter-personal messaging and external application messaging), at the VRSW of the originator DT (base network local messaging).

IDMESSAGE is composed of the following fields:

- TTD: type of originator DT (UDT or EDT) (1 character)
- ORD: sequence number (1-5 characters)
- ATE: RFSI address of the originator DT (9 characters)
- DAY: day in month (2 characters)
- MONTH: month in year (2 character)
- PMS: priority of message (1 character)

Thus specified, the identifier of a message is composed of a total of 20 printable characters maximum.

The encoding of a message identifier (IDMESSAGE) on the SDP protocol is specified by the contents of the TYPIDENT sub-field.

TYPIDENT = 0

The message has been submitted in an RSW, which then assigns an identifier to it (originator UDT or EDT).

IDMESSAGE has a fixed length of 6 octets, and contains the elements making up the identifier.

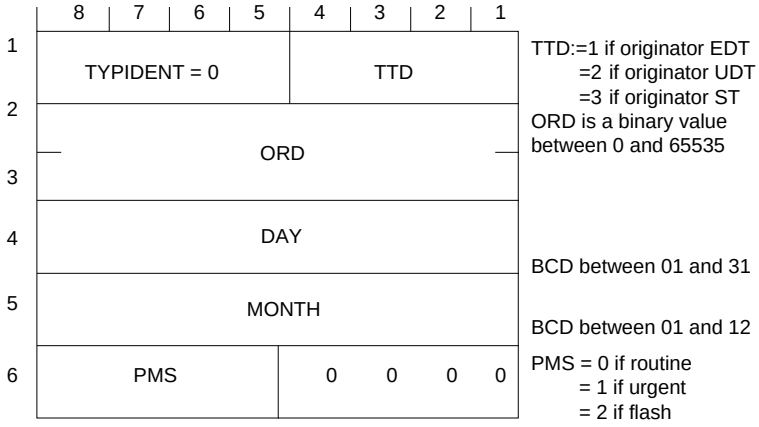

Figure 19: Message Identifier format for TYPIDENT = 0

TYPIDENT = 1
The message has been submitted in an MTAX400, which then assigned an identifier to it before sending it to an RSW. The message identifier is the "printable string" field, of variable length (character string of 64 characters maximum), specified in IP_Message_ID of the IM-UAPDU envelope (P2 protocol) - see PAS 0001-4 [8].

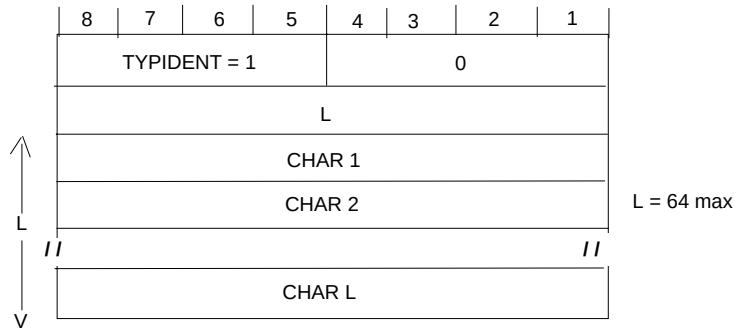

Figure 20: Message Identifier format for TYPIDENT = 1

L is encoded in one octet.

15. Correspondence between SDP header and X.400 elements

15.1. Presentation

When passing between the SDP and the X.400 protocols, a message undergoes a format conversion. This section describes the correspondence between the SDP header and the X.400 P1 and P2 protocol elements.

15.2. Message identifier

In X.400, the size of the identifier is limited to 16 characters, by the size of the "UA-content-ID" element, supplied by the UA to the MTA in the submission request primitive.

In order to respect this limit, the nine characters of the ATE field of IDMESSAGE will not form part of the X.400 identifier. These are transmitted by the P1 protocol, in the "name" element of the originator O/R name.

The X.400 identifier, located in "UA-content-ID", is therefore composed of a maximum of 11 characters as shown below:

- TTD (1 character)
- DAY (2 characters)
- MONTH (2 characters)
- PMS (1 character)
- ORD (1-5 characters)

The System fills in the "printable string" field of IP_Message_ID, with the content of UA_Content_ID.

Composition of IDMESSAGE

- On transmission

If the recipient is a DT (UDT or EDT), IDMESSAGE is reconstituted on reception.

If the recipient is an external subscriber, the identifier of the message transferred to an MTAX400 is composed only of the TTD, DAY, MONTH, ORD and PMS fields.

- On reception

If the message comes from an RSW, IDMESSAGE is reconstituted from components "printable string" of IP_MESSAGE_ID (P2 protocol) and "name" of the originator O/R name of the UMPDU envelope (protocol P1), with TYPIDENT = 0.

If the message comes from an MTAX400, then IDMESSAGE is a copy of the "printable string" component of IP_MESSAGE_ID of the IM-UAPDU envelope (protocol P2), with TYPIDENT = 1.

15.3. Other fields in the SDP header

table 3: SDP header fields

SDP HEADER	ELEMENTS OF X.400 PROTOCOL
PRIO	The priority element of the "UMPDU envelope"
TYPAPDON	/ / / / / / / /
ID_LOCAL	/ / / / / / / /
TYPMES	/ / / / / / / /
TYP_SERV	/ / / / / / / /
IDMESSAGE	The "ID-Message-IP" component of "MPDU envelope"
NAEXP	The "name" component of the sending O/R name
GDH_DEPOT	The "arrival" component of "domain-supplied-info"
NADESTi	The "primary recipient" component of the P2 header
TYPE_CODAGE	/ / / / / / / /
APC	The "result indication" parameter of the submit confirmation primitive.
ANPC_CAUSE	The "reason for failure" parameter of the submit confirmation primitive.
ANR_CAUSE ANR_DIAG	"Reason" and "diagnosis" components of "delivery-report-content" parameter.
CAUSE_NR	Reason for non-reception.

16. Encoding of subscriber numbers

The format of the "subscriber number" fields, NAEXP and NADESTi, agrees with that used internally by the entities of the System.

The "subscriber number" field is composed of three parts:

LI: the end-of-list indicator. This one-bit field indicates whether the subscriber number field to which it belongs is the last in the list (LI=0) or is followed by other subscriber numbers (LI=1).

CNA: This field determines the format of the subscriber number:

CNA = 1 => address of the RFSI type

CNA = 2 => X.400 O/R name

Subscriber number encoded according to the format specified in CNA.

CNA = 1

The subscriber number contained in the NAEXP or NADESTi field is an RFSI address (9 digits) encoded in BCD.

RFSI = r1r2r3 f1g1g2 i1i2i3

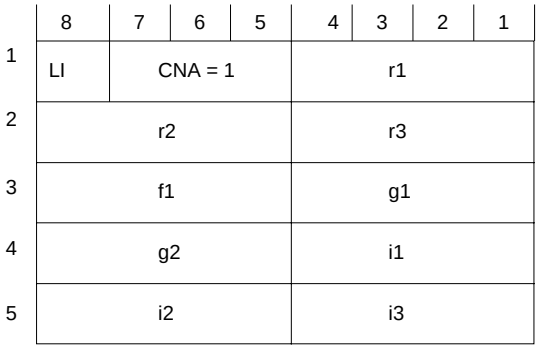

Figure 21: Encoding of subscriber numbers

CNA = 2

The subscriber number contained in the NAEXP or NADESTi field is an X.400 O/R name.

The encoding of the O/R name is of variable size, due to the format variants which are possible in X.400.

To optimise the handling of O/R names, the encoding selected is not that described by X.400 in ASN.1, but that used by the X.400 server of the RSW, which is of the TLV type (Type Length Value).

The format of the O/R name sent and received by the DT is as follows:

ORName::=

{

LG ORNAME (2 octets)

ValORName

}

ValORName ::=

{

LG_COUNTRY_NAME (1 OCTET) (<= CTRY_MAX_LENGTH + 1)

TYP_COUNTRY_NAME (1 OCTET) [NUMERIC, PRINTABLE]

VAL_COUNTRY_NAME

LG_ADMD_NAME_ (1 OCTET) (<= ADMD_MAX_LENGTH + 1)

TYP_ADMD_NAME (1 OCTET) [NUMERIC, PRINTABLE]

VAL_ADMD_NAME

LG_X121ADDRESS (1 OCTET) (<= X121ADR_MAX_LENGTH)

VAL_X121ADDRESS

LG_TERMINAL_ID (1 OCTET) (<= TTYID_MAX_LENGTH)

VAL_TERMINAL_ID

LG_PRMD_NAME_ (1 OCTET) (<= PRMD_MAX_LENGTH + 1)

TYP_PRMD_NAME (1 OCTET) [NUMERIC, PRINTABLE]

VAL_PRMD_NAME

LG_ORGANIZATION_NAME (1 OCTET)

VAL_ORGANIZATION_NAME (<= ORG_MAX_LENGTH)

LG_UNIQUE_UA_IDENTIFIER (1 OCTET) (<= UAID_MAX_LENGTH)

VAL_UNIQUE_UA_IDENTIFIER

PersonalName

NUMBER_OF_ORGANIZATIONAL_UNIT (1 OCTET) (<= ORGU_NB_MAX)

FOR EACH ORGANIZATIONAL_UNIT
{
LG_PRINTABLE_STRING (1 OCTET) (<= ORGU_MAX_LENGTH)
VAL_PRINTABLE_STRING
}

NUMBER_OF_DOMAIN_DEFINED_ATTRIBUTE

(1 BYTE)(<= DDAT_NB_MAX)

FOR EACH DOMAIN_DEFINED_ATTRIBUTE
{
LG_TYPE (1 OCTET) (<= DDAT_MAX_LENGTH)
VAL_TYPE
LG_VALUE (1 OCTET) (<= DDAV_MAX_LENGTH)
VAL_VALUE
}

}

PersonalName::=

{
LG_SURNAME (1 OCTET) (<= SNAME_MAX_LENGTH)
VAL_SURNAME
LG_GIVENNAME (1 OCTET) (<= GNAME_MAX_LENGTH)
VAL_GIVENNAME
LG_INITIALS (1 OCTET) (<= INAME_MAX_LENGTH)
VAL_INITIALS
LG_GENERATION_QUALIFIER (1 OCTET) (<= QNAME_MAX_LENGTH)
VAL_GENERATION_QUALIFIER
}

The type and maximum length of each field are defined in PAS 0001-4 [8].

The NUMERIC type is encoded 0X01
The PRINTABLE type is encoded 0X00.

History

Document history		
Date	**Comment**	**Status**
10/10/95	First version	Version 1.0.0
21/11/95	Corrections following review	Version 0.1.0
07/12/95	Editorial Corrections	Version 0.1.1
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30/04/96	TETRAPOL Forum approval	Version 1.0.1
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