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SERIES X: DATA NETWORKS AND OPEN SYSTEM COMMUNICATION

Public data networks – Interfaces

Procedures for the exchange of control information and user data between a Facsimile Packet Assembly/Disassembly (FPAD) facility and a packet mode Data Terminal Equipment (DTE) or another FPAD

ITU-T Recommendation X.39

(Previously "CCITT Recommendation")

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For further details, please refer to ITU-T List of Recommendations.

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (ITU). The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation X.39 was revised by ITU-T Study Group 7 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 5th of October 1996.

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NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

CONTENTS

SUMMARY

This Recommendation describes procedures for the exchange of control information and user data between a Facsimile Packet Assembly/Disassembly (FPAD) and a packet mode DTE or another FPAD.

Recommendation X.39

PROCEDURES FOR THE EXCHANGE OF CONTROL INFORMATION AND USER DATA BETWEEN A FACSIMILE PACKET ASSEMBLY/ DISASSEMBLY (FPAD) FACILITY AND A PACKET MODE DATA TERMINAL EQUIPMENT (DTE) OR ANOTHER FPAD

(Geneva, 1991; revised in 1996)

Preface

The establishment in various countries of public data networks providing packet switched data transmission services creates a need to produce standards to facilitate international interworking.

The ITU-T,

considering

(a)   that Recommendations X.1 and X.2 define the user classes of service and facilities in a public data network, and Recommendation X.96 defines call progress signals;

(b)   that Recommendation X.5 defines the FPAD in a public data network;

(c)   that Recommendation X.38 defines the G3 facsimile equipment/DCE interface for a G3 facsimile equipment accessing the FPAD in a public data network;

(d)   that Recommendation X.25 defines the interface between the DTE and the DCE for DTEs operating in a packet mode in public data networks;

(e)   the need to allow interworking between a G3 facsimile equipment in a general switched telephone network or a leased line and a packet mode DTE using the virtual call facility of the packet switched transmission service;

(f)   the need to allow interworking between FPADs;

(g)   that the packet mode DTE shall not be obliged to use the control procedures for FPAD functions, but that some packet mode DTEs may wish to control specific functions of the FPAD,

unanimously declares that

(1)   the X.39 procedures shall apply to the X.25 interface between the DCE and the packet mode DTE;

(2)   the X.39 procedures shall be applied for interworking between FPADs;

(3)   the procedures be as specified in clause 1;

(4)   the manner in which user data is transferred be as specified below in clause 2;

(5)   the procedure for the control of the FPAD via FPAD messages be as specified below in clause 3;

(6)   the formats of data fields which are transferable on a virtual call be as specified below in clause 4.

        NOTE – For ease of understanding, this Recommendation refers to specific packet types and procedures of Recommendation X.25. When FPAD to FPAD interworking is considered within a national network, these packet types or procedures may have a different form from those used in Recommendation X.25 but will have the same operational meaning.

1 Procedures for the exchange of FPAD control information and user data

1.1 The exchange of control information and user data between an FPAD and a packet mode DTE or between FPADs is performed by using data fields defined in Recommendation X.25.

1.2 Address field and destination G3FE telephone number

The telephone number of the destination G3FE is placed in the call request packet either in the address field or in the call user data field.

The originating FPAD shall choose which field to use in placing a call according to prior knowledge of the capabilities of the remote FPAD, the intermediary networks, and/or the remote DTE which receives the call. In cases where the call user data field is used, the address field of the call request packet contains the DTE address of the remote FPAD or the remote DTE.

When an FPAD receives a call, it shall check the call user data field in the call request packet according to 1.3.1 to determine which field contains the destination G3FE telephone number.

NOTE – Recommendation X.39 (1992) defines only the use of the address field to carry the destinaiton G3FE telephone number. If an FPAD conforms to such a version of Recommendation X.39, it will always use the address field of the call request packet to receive the destination G3FE telephone number.

Other methods, in addition to those specified herein to transfer the telephone number of the destination G3FE, may also be supported.

1.3 Call user data

The FPAD will send call request packets and receive incoming call packets including a call user data field.

The call user data field is comprised of two fields:

    a)   the protocol identifier field; and

    b)   the call data field.

1.3.1 Protocol identifier field

The format of the protocol identifier field is defined in 4.2.1. Incoming calls with an invalid protocol identifier field will be cleared.

Bits 2 and 1 of octet 3 of the protocol identifier field are used as follows:

    –   Bits 2 and 1 = 00   the destination G3FE telephone number is contained in the address field and the call data field shall be discarded if received.

              = 01   the destination G3FE telephone number is contained in the call data field or the call shall terminate in the FPAD.

              = 10   reserved.

              = 11   reserved.

NOTE – A call may be terminated in an FPAD to carry information for billing, management, maintenance, etc. The details of such calls are for further study.

1.3.2 Call data field

Call data field is used only when bits 2 and 1 of octet 3 of the protocol identifier field are '01' respectively. If bits 8 to 1 of octet 1 of the call data field are '0000 0010', the destination G3FE telephone number is contained in octet 6 and subsequent octets, using a maximum of 8 octets, but no more than necessary. The telephone number in the format of E.164 is encoded in BCD, with the first digit in the high 4 bits 8, 7, 6 and 5 of octet 6, the second digit in the low 4 bits 4, 3, 2 and 1 of octet 6 and subsequent digits in subsequent octets. If the total number of digits is odd, the low 4 bits of the last octet used is filled with '1111'.

Combinations other than '0000 0010' of octet 1 are reserved. The action by the FPAD upon receiving an incoming call packet with a reserved combination of octet 1 is for further study.

1.4 User sequences

1.4.1 User sequences are used to exchange facsimile image data (which is defined in Recommendations T.4 and T.30) between an FPAD and a packet mode DTE or a remote FPAD.

1.4.2 User sequences are conveyed in the user data fields of complete packet sequences with $Q = 0$ in both directions on a virtual call (see Recommendation X.25).

1.4.3 There will be only one user sequence in a complete packet sequence.

1.4.4 The FPAD will transmit all data packets with D-bit set to 0.

On reception of a data packet with the D-bit set to 1, the FPAD will transmit the corresponding acknowledgement as soon as possible.

If the FPAD does not support the D-bit procedure, the FPAD may clear the virtual call.

NOTE – The possibility of linking the D-bit operation of Recommendation X.25 with the T.30 error correction mode to guarantee end-to-end delivery is for further study.

1.4.5 One user sequence may be conveyed in one or several complete packet sequences.

1.5 FPAD messages

1.5.1 FPAD messages are used to exchange the following between the FPAD and the packet mode DTE or a remote FPAD:

a) FPAD control information;

b) signals, commands and responses as defined in Recommendation T.30; and

c) ancillary signals, commands and responses.

1.5.2 FPAD messages are conveyed in the user data fields of complete packet sequences with $Q = 1$, in both directions on a virtual call (see Recommendation X.25).

1.5.3 There will be only one FPAD message in a complete packet sequence.

1.5.4 The FPAD will transmit all data packets with the D-bit set to 0.

On reception of a data packet with both the Q-bit and D-bit set to 1, the FPAD will transmit the corresponding acknowledgement as soon as possible.

If the FPAD does not support the D-bit procedure, the FPAD may clear the virtual call.

2 User Data Transfer

2.1 Data packets will be forwarded by the FPAD in accordance with data forwarding conditions provided in 4.8/X.38.

2.2 The occurrence of a data forwarding condition will not cause the FPAD to transmit empty data packets.

3 Procedure for the use of FPAD messages

3.1 Procedures for reading, setting, and setting and reading of FPAD parameters

NOTE – The use of the plural in reference to FPAD parameters implies the existence of more than one; however, only one FPAD parameter has so far been defined. The use of plural has been continued throughout this and the other Recommendations of the Series as an indication that other FPAD parameters are for further study.

3.1.1 The current values of FPAD parameters may be changed and read by transmitting to the FPAD a set, read, or set and read FPAD message.

3.1.2   When the FPAD receives a set, read or set and read FPAD message, any data previously received will be delivered to the G3 facsimile equipment before taking action on the FPAD message. The FPAD will also consider the arrival of such an FPAD message as a data forwarding condition.

3.1.3   The FPAD will respond to a valid read or set and read FPAD message by transmitting a parameter indication FPAD message. This FPAD message will have a parameter field containing a list of parameter references and current values (after any necessary modification) of the FPAD parameters to which the received FPAD message referred.

3.1.4   The FPAD will not return a parameter indication FPAD message in response to a valid set FPAD message received.

3.1.5   Table 1 specifies the FPAD's response of the FPAD to set, set and read, and read FPAD messages.

3.1.6   If the function of a character is duplicated by the selection of parameter values by use of the set or set and read FPAD message, the FPAD will consider these parameter changes as valid, and will respond as described in this Recommendation.

TABLE 1/X.39

**FPAD message transmitted by the FPAD in response to set,
set and read, and read FPAD message**

FPAD message received by the FPAD		Action upon FPAD parameters	Corresponding parameter indication FPAD message transmitted to the packet mode DTE
Type	Parameter field		
Set	None	Reset all implemented X.5 parameters to their initial values corresponding to the initial profile	None
	List of selected parameters with the desired values	Set the selected parameters to the given values: a) if no error is encountered b) if the FPAD fails to modify the values of some parameters	 a) none b) list of these invalid parameters (Note)
Set and read	None	Reset all implemented X.5 parameters to their initial values corresponding to the initial profile	List all implemented X.5 parameters and their initial values
	List of selected parameters with the desired values	Set the selected parameters to the given values	List of these parameters with their new current values (Note)
Read	None	None	List all implemented X.5 parameters with their current values
	List selected parameters	None	List of these parameters with their current new value
NOTE – If any of the parameters contain an error, the error bit is set and the value field is coded as described in Table 3.			

3.2 Procedures for inviting the FPAD to clear

3.2.1 The invitation to clear FPAD message is used to request that the FPAD clears the virtual call, after transmission of all data previously transmitted to the G3 facsimile equipment.

NOTE – The clear indication packet, which is transmitted by the FPAD after delivery of the last data to the G3 facsimile equipment, will have a clearing cause field set to DTE clearing.

3.3 Error handling procedures by the FPAD

3.3.1 If the FPAD receives a set, read or set and read FPAD message containing an invalid reference to an FPAD parameter, the parameter field within the parameter indication FPAD message transmitted by the FPAD will contain an indication that this has occurred. The remaining valid references to FPAD parameters are processed by the FPAD.

Possible reasons for an invalid access to an FPAD parameter are:

    a) the parameter reference has not been implemented in the FPAD;

    b) the parameter value has not been implemented in the FPAD or cannot be altered from the current setting;

    c) the parameter is a read-only one (set and set and read FPAD messages only).

3.3.2 The FPAD will transmit an error FPAD message containing the message code of an invalid FPAD message received under the following conditions:

    a) if the FPAD receives an unrecognizable message code;

    b) if the parameter field following a recognizable message code is incorrect or incompatible with the message code;

    c) if the parameter field following a recognizable message code has an invalid format;

    d) if the FPAD receives an unsolicited parameter indication FPAD message;

    e) if the FPAD receives an FPAD message that is too long.

3.3.3 The FPAD will transmit an error FPAD message if an FPAD message containing less than 8 bits is received.

3.3.4 If the FPAD receives an error FPAD message, it will not respond with an FPAD message of any type. Subsequent action is for further study.

3.4 Procedure for inviting the FPAD to reselect the called DTE

The exact procedure for the reselection by the FPAD is for further study. It is anticipated that the procedure will be similar to the procedure outlined in 3.6/X.29.

3.5 Facsimile procedure

On receipt of an FPAD message with the message code indicating a control forwarding of a T.30 defined procedure, an FPAD transmits the corresponding signal, command or response defined in Recommendation T.30 to the G3 facsimile equipment in accordance with the procedure given in clause 4/X.38.

3.6 Ancillary signals, commands and responses procedures

On receipt of an FPAD message with the message code indicating an Ancillary control message, the FPAD passes the applicable parameter data to the applicable ancillary device indicated in the message for forwarding across the G3 facsimile equipment/DCE interface.

Codings of the ancillary control messages are defined in Table 6.

4 Formats

4.1 Introduction

Bits of an octet are numbered 8 to 1 where bit 1 is the low order bit and is transmitted first. Octets of user sequences and FPAD messages are consecutively numbered starting from 1 and are transmitted in this order.

4.2 Call user data format

See Figure 1.

4.2.1 Protocol identifier format

The coding of the protocol identifier field standardized by ITU-T consists of four octets.

The first octet is coded as follows:

– Bits 8 and 7 = 00   for ITU-T use.

= 01   for national use.

= 10   reserved for international user bodies (including ITU-T).

= 11   for DTE-DTE use.

When bits 8 to 1 of octet 1 are set to 10100001, it indicates that an ITU-T non-start-stop mode PAD is in use.

When the packet assembly/disassembly facility is a G3 facsimile PAD facility (FPAD), bits 8 to 1 of octet 2 are set to "0000 0001". Use of bits 2 and 1 of octet 3 is defined in 1.3.1. Bits 8 to 3 of octet 3 and all bits of octet 4 are '0' and they are reserved as a future mechanism to providing a called PAD facility or packet mode DTE with additional information pertinent to the calling party.
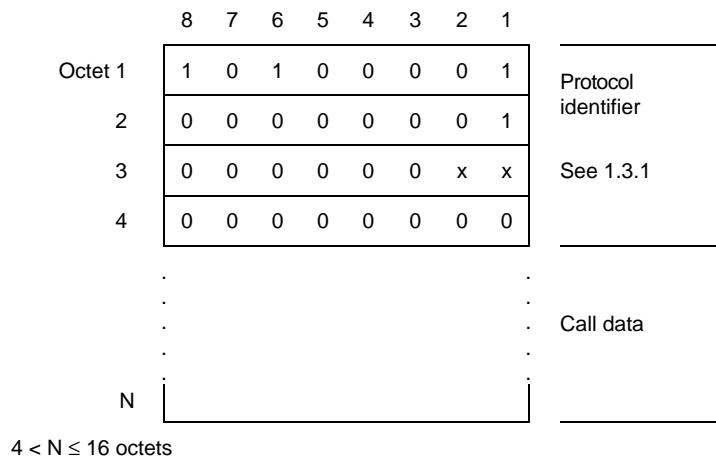

FIGURE 1/X.39

Call user data field format

4.3 User sequence format

4.3.1 The order of bit transmission, octet by octet, from an originating FPAD to the physical line of the packet network is the same as the bit order from the local G3 facsimile equipment to the originating FPAD on the PSTN line.

4.3.2 No maximum is specified for the length of a user sequence.

4.4 Control message format

Bits 8, 7, 6, 5 of octet 1 of a user data field of a complete packet sequence with Q = 1 are defined as the control identifier field. This field is used to identify the facility to be controlled.

4.4.1 The control identifier field coding for FPAD messages is 0001.

NOTE – Other codings of the control identifier field are reserved for future standardization by the ITU-T (see 4.4/X.29). In addition, the possibility of extending the control identifier field is for further study.

4.4.2 Bits 4, 3, 2, 1 of octet 1 are defined as the message code field. The message code field is used to identify specific types of FPAD messages as given in Table 2

TABLE 2/X.39

Type and coding of octet 1 of FPAD message

FPAD message type	Message code
	Bits 4 3 2 1
Set	0 0 1 0
Read	0 1 0 0
Set and read	0 1 1 0
Parameter indication	0 0 0 0
Invitation to clear	0 0 0 1
Reselection	0 1 1 1
Error	0 1 0 1
Reselection with TOA/NPI	1 0 0 0
T.30 signal	1 1 0 1
Ancillary control	1 1 1 0
NOTE – The possibility of extending the message code field is for further study.	

4.4.3 All FPAD messages consist of a control identifier field (bits 8, 7, 6, 5 of octet 1 equal to 0001) and a message code field (bits 4, 3, 2, 1 of octet 1). When present, a parameter field is comprised of a variable length (1 or more octets) length indicator and optionally, parameter value(s).

Set, read, set and read and parameter indication FPAD messages consist of octet 1 which may be followed by one or more parameter fields. Each parameter field consists of a parameter reference octet and a parameter value octet.

The parameter value octets of the read FPAD message contain the value 0.

The error FPAD message consists of octet and one or two octets giving the reason for the error.

The invitation to clear FPAD message consists of octet 1 only.

The T.30 signal FPAD messages consist of octet 1, and one or more octets containing T.30 and non-T.30 information.

The ancillary control FPAD messages consist of octet 1 and one or more octets containing ancillary control data.
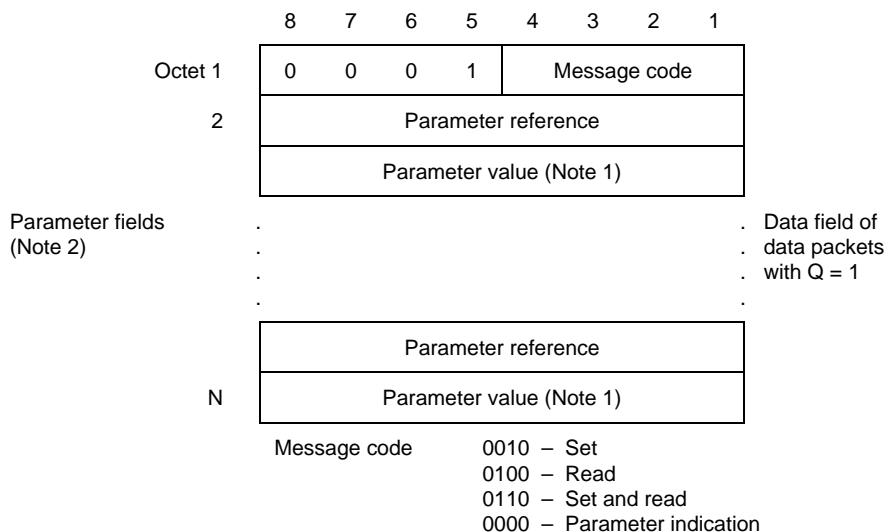
The formats of the FPAD messages are described in Figures 2 through 5.

Parameter indication FPAD messages consist of octet 1 which may be followed by one or more parameter fields.

4.4.4 The maximum length of FPAD message is network dependent.

4.4.5 **Parameter field for set, read, set and read, and parameter indication FPAD message**

See Figure 2.

FIGURE 2/X.39

Set, read, set and read, and parameter indication
FPAD message format

A parameter field contained in one of these FPAD messages consists of a reference field and a value field. A parameter field is two octets in length, except when the extension mechanism is used (see 4.4.5.1 below).

4.4.5.1 A reference field consists of a parameter reference, identified as a decimal number in Recommendation X.5, and is binary coded in bits 7 to 1, where bit 1 is the low order bit. Reference fields need not be ordered by increasing parameter reference numbers.

The code 1111111 (decimal 127) in bits 7 to 1 of the reference field will be used for the extension of this field. Such coding will indicate that there is another octet following. The following octet is coded with the parameter reference of Recommendation X.5 minus 127.

4.4.5.2 In FPAD messages received by the FPAD, bit 8 of each octet will be ignored. In parameter indication FPAD messages, bit 8 of each reference field set to 1 will indicate an invalid access to the referred parameter as described in 3.3 above.
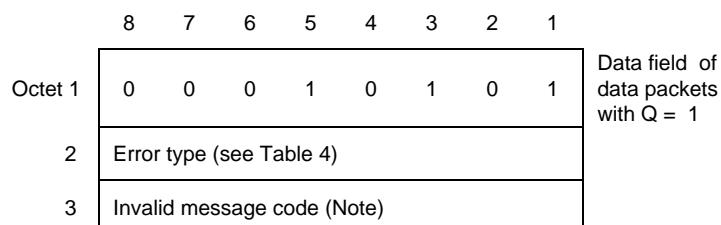
4.4.5.3 A parameter value field consists of a value of the parameter reference, identified as a decimal number in Recommendation X.5, and is binary coded in bits 8 to 1, where bit 1 is the low order bit. Value fields in read FPAD messages are coded as all binary 0s. In set and set and read FPAD messages, they will indicate the requested value of parameters. In parameter indication FPAD messages, they will indicate the current values of FPAD parameters, after modification, if any. If bit 8 (error bit) is set to 1 in the preceding octet (i.e. the parameter reference field), the parameter value field will indicate the reason for the error, as given in Table 3.

TABLE 3/X.39

Coding parameter value field in case of error

Parameter value field code	Parameter value field	
	Bits 8 7 6 5 4 3 2 1	Decimal
No additional information	0 0 0 0 0 0 0 0	0
The parameter reference does not exist or has not been implemented in the FPAD	0 0 0 0 0 0 0 1	1
The parameter value is invalid or has not been implemented	0 0 0 0 0 0 1 0	2
The parameter value cannot be altered from the current setting	0 0 0 0 0 0 1 1	3
The parameter is read-only	0 0 0 0 0 1 0 0	4
The parameter follows an invalid parameter separator	0 0 0 0 0 1 0 1	5
NOTE – The value 0 is mandatory. Other values are optional.		

4.4.6   Format of error FPAD messages

See Figure 3.

	8	7	6	5	4	3	2	1	
Octet 1	0	0	0	1	0	1	0	1	Data field of data packets with Q = 1
2	Error type (see Table 4)								
3	Invalid message code (Note)								

NOTE – Does not occur for error type 00000000.

FIGURE 3/X.39

Error FPAD message format

4.4.6.1   Octet 2 of the error FPAD message will be coded as shown in Table 4.

4.4.6.2   In cases b, c, d, e and f in Table 4, octet 3 of an error FPAD message will contain the message code of the received FPAD message.

Coding and meaning of octet 2 of error FPAD message

Case	Meaning	Coding Bits 8 7 6 5 4 3 2 1
a	Received FPAD message contained less than eight bits	0 0 0 0 0 0 0 0
b	Unrecognized message code in received FPAD message	0 0 0 0 0 0 0 1
c	Parameter field format received FPAD message was incorrect or incompatible with message code	0 0 0 0 0 0 1 0
d	Received FPAD message did not contain an integral number of octets	0 0 0 0 0 0 1 1
e	Received parameter indication FPAD message was unsolicited	0 0 0 0 0 1 0 0
f	Received FPAD message was too long	0 0 0 0 0 1 0 1
g	Unauthorized reselection FPAD message	0 0 0 0 0 1 1 0

	8	7	6	5	4	3	2	1
Octet 1	0	0	0	1	1	1	0	1
2	T.30 overall length indicator (K-2)
3	Length indicator (J-3)
J	T.30 signal 1
J+1	Length indicator 2 (K-J-1)
K	T.30 signal 2
K+1	Non-T.30 parameter indicator 1
K+2	Length indicator 1 (L-K-2)
L	Non-T.30 parameter indicator 1

. Data field of
. data packets
. with Q = 1

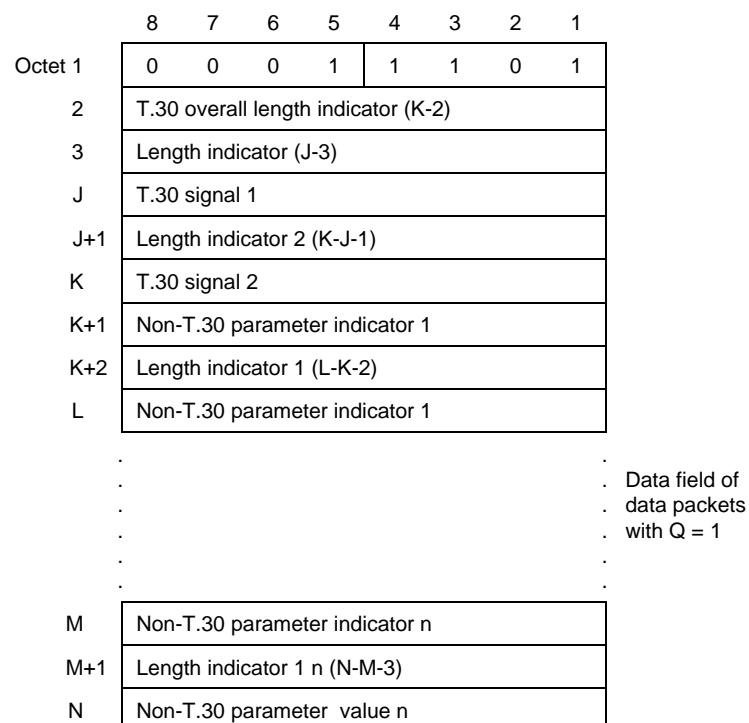| M | Non-T.30 parameter indicator n |
| M+1 | Length indicator 1 n (N-M-3) |
| N | Non-T.30 parameter value n |

FIGURE 4/X.39

T.30 signal FPAD message format

4.4.7 T.30 signal FPAD messages

The format of the T.30 signal FPAD message is described in Figure 4.

Octet 2 of this message starts the T.30 overall length indicator. The value of this indicates the overall length of the T.30 signals processed. The encoding of this length indicator is in accordance with 4.4.12.

The subsequent octets, up to the maximum number indicated in the T.30 overall length indicator, contain one or more T.30 signals, each individually represented by a length indicator (also coded as per 4.4.12) followed by one or more octets with the T.30 encoded information.

Multiple T.30 signals are present in the T.30 signal FPAD message if the T.30 command or response to be represented contains multiple frames (e.g. CSI-DIS, CIG-DTC, TSI-DCS); T.30 signal 1 and T.30 signal 2 contain the two frames in the order of reception (e.g. T.30 signal 1 contains CSI, CIG or TSI and T.30 signal 2 contains respectively DIS, DTC or DCS).

The address field, control field and FCS in T.30 command or response shall be omitted in T.30 signal FPAD message.

Octets beyond the T.30 signalization are used for non-T.30 parameters. Encodings are in accordance with Table 5. Each non-T.30 parameter is individually represented by a length indicator (also coded as per 4.4.12) followed by one or more octets with the non-T.30 encoded information.

The order of bit transmission for T.30 Signal FPAD messages, octet by octet, from an originating FPAD to the physical line of the packet network is the same as the bit order for T.30 signals from the local G3 facsimile equipment to the originating FPAD on the PSTN line.

TABLE 5/X.39

Non-T.30 parameters

Parameter	Description	Values
00	Reserved	
01	Ring back control	0 = Off 1 = On
02	Image conversion	0 = Off 1 = MH/MR to/from MMR
03	CED	1 = On
04	Reserved	(Note)
....	....	
....	....	
99	Reserved	
NOTE – This parameter is reserved for conversion from characters to facsimile coding scheme.		

4.4.8   Parameter field for invitation to clear FPAD message

See Figure 5.

	8	7	6	5	4	3	2	1	
Octet 1	0	0	0	1	0	1	0	1	Data field of data packets with Q = 1
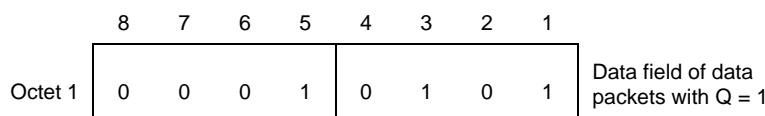
FIGURE 5/X.39

Invitation to clear FPAD message format

This FPAD message will not contain a parameter field.

4.4.9 Reselection FPAD message format

The format is for further study.

4.4.10 Reselection with TOA/NPI FPAD message format

The format is for further study.

4.4.11 Ancillary control FPAD message format

The format for this message is given in Figure 6. Codings for the messages are given in Table 6.
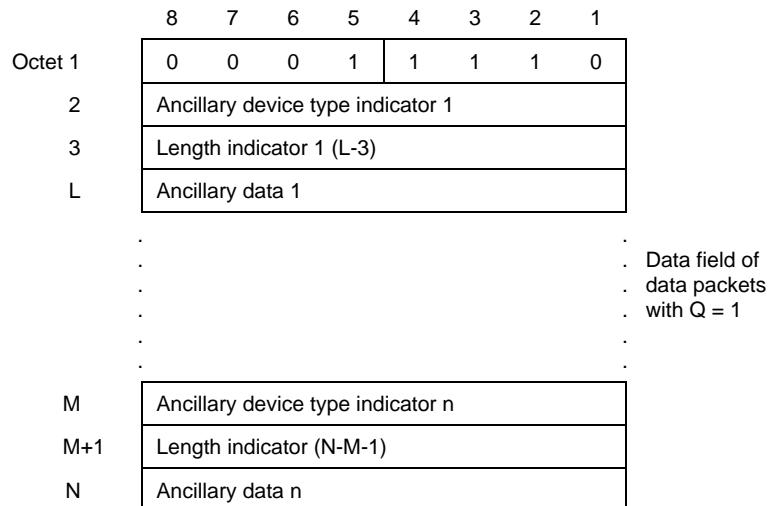
FIGURE 6/X.39

Ancillary control FPAD message format

4.4.11.1 Ancillary device type indicator

Octet 2 of the ancillary control FPAD message consists of the device type (or device number) of the ancillary control device associated with the specific G3 facsimile/DCE interface (see Table 6).

TABLE 6/X.39

Ancillary device values

Device type	Description	Data encoding
00	Service signal	X.38 FPAD service signal numbers 2, 3, 4 or 5 (see Table A.2/X.38)
01	DTMF generator	IA5 string
02	Reserved	
....	....	
....	....	
99	Reserved	
NOTE – It is a network dependent matter as to the support of device type 00 requests, as well as under which signal formats the request will be permitted.		

4.4.11.2 Data length indicator

The data length indicator shall consist of one or more octets encoded as outlined below in 4.4.12.

4.4.11.3 Ancillary data

The one or more octets of data to be passed to the ancillary device in accordance with 3.6.

4.4.12 Length encoding

Length indicators used in FPAD messages shall be encoded as follows:

a) If the overall data length is less than or equal to 127 octets, a single octet in which bit 8 is zero and bits 7 to 1 encode the number of octets of data that follow, as an unsigned binary integer with bit 7 as the most significant bit.

b) If the overall data length is greater than 127 octets, the data length indicator shall consist of an initial octet and one or more subsequent octets. The initial octet shall be encoded as follows:

i) bit 8 shall be set to one;

ii) bits 7 to 1 shall encode the number of subsequent octets in the length octets, as an unsigned binary integer with bit 7 as the most significant bit;

iii) the value 11111111 is reserved for future extensions.

Bits 8 to 1 of the first subsequent octet followed by bits 8 to 1 of the second subsequent octet, followed in turn by bits 8 to 1 of each further octet up to and including the last subsequent octet, shall be the encoding of an unsigned binary integer equal to the number of octets of data, with bit 8 of the first subsequent octet as the most significant bit.

Annex A

(This annex forms an integral part of this Recommendation)

TABLE A.1/X.39

T.30 signal FPAD messages

Facsimile control field	Command/ Response	Remarks
DIS (Digital identification signal) (Note 1)	Command and Response	
CSI-DIS (Called subscriber identification-DIS) (Note 1)		
NSF-CSI-DIS (Non-standard facility-CSI-DIS) (Note 1)		
DCS (Digital command signal) (Note 2)		
TSI-DCS (Transmitting subscriber identification-DCS) (Note 2)		
NSS (Non-standard set-up)		
TSI-NSS		
DTC (Digital transmit command) (Note 1)		
CIG-DTC (Calling subscriber identification-DTC) (Note 1)		
NSC-CIG-DTC (Non-standard facility command-CIG-DTC) (Note 1)		

T.30 signal FPAD messages

Facsimile control field	Command/ Response	Remarks
CTC (Continue to correct)	Command	
MPS (Multi-page signal)		
EOM (End of message)		
EOP (End of procedure)		
PRI-MPS (Procedure interrupt MPS)		
PRI-EOM (Procedure interrupt EOM)		
PRI-EOP (Procedure interrupt EOP)		
EOR-NULL (End of retransmission NULL)		
EOR-MPS (End of retransmission MPS)		
EOR-EOP (End of retransmission EOP)		
EOR-EOM (End of retransmission EOM)		
EOR-PRI-MPS (End of retransmission PRI-MPS)		
EOR-PRI-EOP (End of retransmission PRI-EOP)		
EOR-PRI-EOM (End of retransmission PRI-EOM)		
PPS-NULL (Partial page signal NULL)		
PPS-MPS (Partial page signal MPS)		
PPS-EOP (Partial page signal EOP)		
PPS-EOM (Partial page signal EOM)		
PPS-PRI-MPS (Partial page signal PRI-MPS)		
PPS-PRI-EOP (Partial page signal PRI-EOP)		
PPS-PRI-EOM (Partial page signal PRI-EOM)		
RR (Receive ready)		
DCN (Disconnect)		
CFR (Confirmation to receive)	Response	
FTT (Failure to train)		
MCF (Message confirmation)		
RTP (Retrain positive)		
RTN (Retrain negative)		
CRP (Command repeat)		
CTR (Response to continue to correct)		
ERR (Response for end of retransmission)		
PIN (Procedure interrupt negative)		
PIP (Procedure interrupt positive)		
PPR (Partial page request)		
RNR (Receive not ready)		

NOTES

1   When transferring the T.30 signal FPAD message [(CSI)-DIS or (CIG)-DTC], the receiving FPAD shall include the non-T.30 parameter image conversion with the value set to 1 if the receiving FPAD supports image conversion.

2   If the received T.30 signal FPAD message [(CSI)-DIS or (CIG)-DTC] contains the non-T.30 parameter Image Conversion with the value set to 1, when transferring the T.30 signal FPAD message [(TSI)-DCS], the emitting FPAD shall include the non-T.30 parameter image conversion with the value set to either 0 or 1 depending upon the selection by the user at call setup. See 4.1/X.38.

Annex B

Characteristics of virtual calls and Recommendation X.25 as related to the FPAD representation of a G3 facsimile equipment and a packet mode DTE (or remote FPAD)

(This annex forms an integral part of this Recommendation)

B.1 General interface characteristics

B.1.1 The mechanical, electrical, functional and procedural characteristics to activate, maintain and deactivate the physical access path between the DTE and the DCE will be in accordance with the physical level procedures of Recommendation X.25.

B.1.2 The link access procedures for data interchange across the link between the DTE and DCE will be in accordance with the link level procedures of Recommendation X.25.

B.1.3 The packet format and control procedures for the exchange of packets containing control information and user data between the DTE and the DCE will be in accordance with the packet level procedures of Recommendation X.25.

B.2 Interface procedures for virtual call control

B.2.1 The sending of call request packets by the FPAD on the DTE interface is effected by a state transition on the G3 interface from state 3 to state 4 (as defined in Recommendation X.38).

B.2.2 Incoming calls are indicated on the DTE interface as specified in Recommendation X.25. Any use of optional user facilities are indicated in accordance with clause 6/X.25 and clause 7/X.25.

B.2.3 The default throughput classes used are determined by the maximum data rate offered by the FPAD (where exact correspondence is not obtained, the next higher throughput class is used).

B.2.4 The FPAD and the packet mode DTE will use the clearing procedures specified in 4.1.7/X.25, 4.1.8/X.25 and 4.1.9/X.25.

B.3 Interface procedures for data transfer

B.3.1 Data transfer on a virtual call only takes place in the data transfer state and when flow control permits (see 4.4/X.25). The same is true for the transfer of interrupt packets (see 4.3/X.25).

B.3.2 Interrupt packets transmitted by the packet mode DTE will be confirmed by the FPAD following the procedures in Recommendation X.25.

B.3.3 The reset procedure may be used by the packet mode DTE to reinitialize the virtual call and received by the FPAD. Procedures will conform to those described in 4.4.3/X.25.

B.4 Virtual call characteristics

B.4.1 Call clearing

Data packets transmitted immediately before a clear request packet is sent, may be overtaken within the network by the clear request packet and subsequently be destroyed, as described in 4.5/X.25.

Annex C

Alphabetical list of abbreviations used in this Recommendation

(This annex forms an integral part of this Recommendation)

CFR	Confirmation to receive
CIG-DTC	Calling subscriber identification-DTC
CRP	Command repeat
CSI-DIS	Called subscriber identification-DIS
CTC	Continue to correct
CTR	Response to continue to correct
DCN	Disconnect
DCS	Digital Command Signal
DIS	Digital Identification Signal
DTC	Digital transmit command
EOM	End of message
EOP	End of procedure
EOR-EOM	End of retransmission EOM
EOR-EOP	End of retransmission EOP
EOR-MPS	End of retransmission MPS
EOR-NULL	End of retransmission NULL
EOR-PRI-EOM	End of retransmission PRI-EOM
EOR-PRI-EOP	End of retransmission PRI-EOP
EOR-PRI-MPS	End of retransmission PRI-MPS
ERR	Response for end of retransmission
FTT	Failure to train
MCF	Message confirmation
MPS	Multi-page signal
NSC-CIG-DTC	Non-standard facility command-CIG-DTC
NSF-CSI-DIS	Non-standard facility-CSI-DIS
NSS	Non-standard set-up
PIN	Procedure interrupt negative
PIP	Procedure interrupt positive
PPR	Partial page request
PPS-EOM	Partial page signal EOM
PPS-EOP	Partial page signal EOP

PPS-MPS	Partial page signal MPS
PPS-NULL	Partial page signal NULL
PPS-PRI-EOM	Partial page signal PRI-EOM
PPS-PRI-EOP	Partial page signal PRI-EOP
PPS-PRI-MPS	Partial page signal PRI-MPS
PRI-EOM	Procedure interrupt EOM
PRI-EOP	Procedure interrupt EOP
PRI-MPS	Procedure interrupt MPS
RNR	Receive not ready
RR	Receive ready
RTN	Retrain negative
RTP	Retrain positive
TSI-DCS	Transmitting subscriber identification-DCS

Annex D

Access to MHS

(This annex forms an integral part of this Recommendation)

D.1   Introduction

Annex B/X.5, Annex E/X.38 and this annex define together a new application of an FPAD, which may be used by a G3FE to access MHS (Message Handling System). MHS is defined in the X.400 Series Recommendations (see D.2: "References").

Access to MHS is an optional feature of FPAD. These annexes cover only IPMS access (Recommendations F.420 and F.423) of MHS. Access to "COMFAX" service (Recommendation F.162) through FPAD would be also possible in following the same principles described for MHS access but is left for further study.

The parameters sent by the G3FE to access the MHS via FPAD (see Annex B/X.5) are carried from the FPAD to the IPM-UA in the "**MHS related FPAD messages**".

This present annex specifies the format of these particular X.39 signals and their mapping to MHS features.

The principles and services for the access of a G3FE to MHS via FPAD devices is defined in Annex B/X.5.

Annex E/X.38 specifies:

–   the definition and the format of the requests from the G3FE to MHS;

–   the various DTMF sequences to code these requests [at present, only the access by DTMF tones (dual-tone multi-frequency codes defined in Recommendation Q.23) is considered];

–   the particular service signals sent back by the FPAD to the G3FE upon MHS services requests.

D.2 References

The following Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

– ITU-T Recommendation X.400/F.400 (1993), *Message handling services: Message handling system and service overview*.

– CCITT Recommendation X.402 (1992), *Message handling systems: Overall architecture*.

– CCITT Recommendation X.411 (1992), *Message handling systems: Message transfer system: Abstract service definition and procedures*.

– CCITT Recommendation X.420 (1992), *Message handling systems: Interpersonal messaging systems*.

– CCITT Recommendation F.420 (1992), *Message handling services: The public interpersonal messaging services*.

– CCITT Recommendation F.423 (1992), *Message handling services: Intercommunication between the interpersonal messaging service and the telefax services*.

– CCITT Recommendation E.164 (1991), *Numeric plan for the ISDN era*.

D.3 Format of the MHS related FPAD messages

D.3.1 General

All the rules specified in 4.4 apply. This present annex contains only the specific description of the MHS related FPAD messages.

Each MHS related FPAD message carries information between an FPAD and the MHS.

D.3.2 Message code

For MHS related FPAD messages, the message code (bits 4, 3, 2, 1 of octet 1, as defined in 4.4.2) is equal to "0 0 1 1" .

D.3.3 Format

The detailed format of an MHS related FPAD message is described in Figure D.1.

Octet 2 of MHS related FPAD message starts the MHS related FPAD message length indicator. The value of this indicates the overall length of the MHS related FPAD message. The encoding of this length is in accordance with 4.4.12.

The subsequent octets can be divided in two parts:

– The first part contains all the MHS related facilities requested by a G3FE; the list of facilities used specifically for MHS is given in Table E.2/X.38 (those in **bold characters**).

– The second part contains the addresses as described in E.4.2/X.38, (the content of the address block).

Each of the MHS related facility and each address is represented by a specific indicator followed by the length indicator, followed by one or several octets coding the argument(s).

Octet		8	7	6	5	4	3	2	1
Octet	1	0	0	0	1	0	0	1	1
	2	MHS overall length indicator (M-2)							
	3	Number code of the first facility request							
	4	Length indicator (J-4)							
	5	First octet of the first facility request							
	.	.							
	J	Last octet of the first facility request							
	J+1	Number code of the last facility request							
	J+2	Length indicator (K-J-2)							
	J+3	First octet of the last facility request							
	.	.							
	K	Last octet of the last facility request							
	K+1	Address indicator							
	K+2	Length indicator (L-K-2)							
	K+3	First octet of the first address							
	.	.							
	L	Last octet of the first address							
	L+1	Address indicator							
	L+2	Length indicator (M-L-2)							
	L+3	First octet of the last address							
	.	.							
	M	Last octet of the last address							

FIGURE D.1/X.39

MHS related FPAD message format

D.3.3.1   First part of the MHS related FPAD message

Each facility is coded as follows:

– First the "Number code" of the facility request is given. The "Number code" is taken from Table E.2/X.38 and is hexa-decimal encoded.

For example, the Facility request code "71" (Password) is coded:

```
8 7 6 5 4 3 2 1
0 1 1 1 0 0 0 1
```

–   Then, the length in octets of the facility argument(s) is indicated. This length indicator is coded in accordance with 4.4.12.

–   Finally, the digits of the facility argument follow.

Each digit received from the G3FE is coded in a semi-octet in binary coded decimal with bit 5 or 1 being the low order bit of the digit.

The digits are encoded in the same order as they are received from the G3FE: in an octet, bits 8, 7, 6, 5 encode the digit received before the digit encoded by bits 4, 3, 2, 1.

If the number of digits of the argument(s) is odd, there is an unused semi-octet at the end of the last octet of the facility. This last semi-octet is coded "1111".

Example:

For the *Delivery-time-request* (see E.4.5/X.38). If *7201411 is received from the G3FE (*Deferred-delivery-time* on the 14th of the month, at 11 o'clock), the coding of the whole facility is:

```
8 7 6 5 4 3 2 1
. . . . . . . .
0 1 1 1 0 0 1 0    Facility code
0 0 0 0 0 0 1 1    3 octets
0 0 0 0 0 0 0 1    digits "0" and "1"
0 1 0 0 0 0 0 1    digits "4" and "1"
0 0 0 1 1 1 1 1    digit "1"
. . . . . . . .
```

D.3.3.2   Second part of the MHS related FPAD message

The second part contains the addresses as described in E.4.2/X.38, (the content of the address block). The second part is present only for *Message-submission* operation.

Each address is encoded as follows:

–   First the "Address indicator" is given.

Format:

```
8 7 6 5 4 3 2 1
0 0 0 0 0 0 0 0
```

–   Then, the length in octets of the address is indicated. This length indicator is coded in accordance with 4.4.12.

–   Finally, the digits of the address are coded.

Each digit received from the G3FE is coded in a semi-octet in binary coded decimal with bit 5 or 1 being the low order bit of the digit.

The digits are encoded in the same order as they are received from the G3FE: in an octet, bits 8, 7, 6, 5 encode the digit received before the digit encoded by bits 4, 3, 2, 1.

If the number of digits is odd, there is an unused semi-octet at the end of the last octet of the address. This last semi-octet is coded "1111".

D.3.4 Example of an MHS related FPAD message

Selection FPAD command signal received from the G3FE with:

– the facility "Packet size selection": 1024;

– an NUI: 12345;

– the *Message-submission* from the G3FE with:

• an *Originator-report-request*: "non-delivery-report and no notification";

• a *Password*: 1234;

• a *Priority*: "urgent";

• a simple number: 24242424;

• an abbreviated number: 1234;

• an abbreviated number: 123.

*1412345*161024***7002***711234*732**24242424*1234*123#

<-------facility block-------------------><----address block---->

NOTE – As already specified in E.4/X.38, the *Originator-report-request* is mandatory in the *Message-submission* operation.

The corresponding MHS related FPAD message is coded as shown in Figure D.2.

D.4 Mapping of the MHS related FPAD messages to the MHS features

The mapping of content of FPAD messages and user sequences with the MHS features is described in this subclause. This mapping is the responsibility of the IMP-UA. See Table D.1.

	8	7	6	5	4	3	2	1
octet 1	0	0	0	1	0	0	1	1
Overall length indicator	0	0	0	1	1	1	0	1
NUI	0	0	0	1	0	1	0	0
length : 3	0	0	0	0	0	0	1	1
	0	0	0	1	0	0	1	0
	0	0	1	1	0	1	0	0
	0	1	0	1	1	1	1	1
Originator-report-request	0	1	1	1	0	0	0	0
length : 1	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	1	0
Password	0	1	1	1	0	0	0	1
length : 2	0	0	0	0	0	0	1	0
	0	0	0	1	0	0	1	0
	0	0	1	1	0	1	0	0
Priority	0	1	1	1	0	0	1	1
length : 1	0	0	0	0	0	0	0	1
	0	0	1	0	1	1	1	1
Simple number (address)	0	0	0	0	0	0	0	0
length : 4	0	0	0	0	0	1	0	0
	0	0	1	0	0	1	0	0
	0	0	1	0	0	1	0	0
	0	0	1	0	0	1	0	0
	0	0	1	0	0	1	0	0
Abbreviated (address)	0	0	0	0	0	0	0	0
length : 2	0	0	0	0	0	0	1	0
	0	0	0	1	0	0	1	0
	0	0	1	1	0	1	0	0
Abbreviated (address)	0	0	0	0	0	0	0	0
length : 2	0	0	0	0	0	0	1	0
	0	0	0	1	0	0	1	0
	0	0	1	1	1	1	1	1

NOTES

1   The order of the facilities encoded in the X.39 MHS related FPAD message is purposeless.

2   It must be noticed that the facilities not related to MHS access (in the above example: "Packet size selection") are not transmitted to the IPM-UA in X.39 messages.

FIGURE D.2/X.39

MHS related FPAD message format

TABLE D.1/X.39

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status [a)]
Arguments sent from the FPAD to the IPM-UA for a Message submission operation			
Fax-originator-name (in MHS related FPAD message)	MTS-bind 8.1.1.1/X.411	Initiator-name 8.1.1.1.1.1/X.411	The IPM-UA binds to the MTS in using the *Fax-originator-name* as the Initiator-name (and optionally the *Password* as Initiator-credential) The authentication of an IPM-UA by MTS is mandatory in the scope of MHS. The authentication of the IPM-UA by MTS is based on the authentication of a G3FE by the IPM-UA. Then, authentication of the G3FE by the IPM-UA via an FPAD is mandatory. Therefore, if *Fax-originator-name* and *Password* arguments are absent, it is required to authenticate the G3FE by the IPM-UA by alternative means (e.g. authentication based on the networks)	O
	Originate IPM 12.1.2/X.420	Originator in Heading 7.2.2/X.420 Originator-name in envelope 8.2.1.1.1.1/X.411	The IPM-UA converts the *Fax-originator-name* received from the FPAD when building the envelope and the heading of the IMP message. If the *Fax-originator-name* is absent, the IPM-UA relies on the authentication of the G3FE (alternative means) to create the Originator of the message when building the envelope and the heading	
Fax-recipient-name (in MHS related FPAD message)	Originate IPM 12.1.2/X.420	Primary recipients in Heading 7.2.4/X.420 Recipient-name in envelope 8.2.1.1.1.2/X.411	The IPM-UA converts the Fax-recipient name received from the FPAD when building the envelope and the heading of the IMP message	M

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status [a)]
Arguments sent from the FPAD to the IPM-UA for a Message submission operation *(continued)*				
Originator-report-request (in MHS related FPAD message)	Originate IPM 12.1.2/X.420	Originator-report-request 8.2.1.1.1.22/X.411	This argument concerns all the recipients of the message. It may take one of the three following values: no-report, non-delivery-report, report. If the argument is not present, the default value is: non-delivery-report	M
		Notification-requests in Heading 7.1.2/X.420	The argument permits also to indicate three possible values at IPM level: – non-receipt notification, – receipt and non receipt notification, – no notification. If the argument is not present, the default value at IPM level is: non-receipt notification	
Fax-content (in User sequences)	Originate IPM 12.1.2/X.420	Body Part g3-facsimile 7.3.3/X.420	The IPM-UA builds the body part of the IPM message with the facsimile message received from the FPAD	M
Delivery-time-request (in MHS related FPAD message) value "*Deferred-delivery-time*" value "Latest delivery time"	Originate IPM 12.1.2/X.420	Deferred-delivery-time 8.2.1.1.1.12/X.411 Latest-delivery-time 8.2.1.1.1.13/X.411	This argument concerns all the recipients of the message	O

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status[a]
Arguments sent from the FPAD to the IPM-UA for a Message submission operation *(concluded)*				
Priority (in MHS related FPAD message)	Originate IPM 12.1.2/X.420	Priority 8.2.1.1.1.8/X.411	This argument concerns all the recipients of the message. It may take one of the three following values: normal, non-urgent, urgent. If the argument is not present, the default value is: normal	O
Password (in MHS related FPAD message)	MTS-bind 8.1.1.1/X.411	Initiator-credentials 8.1.1.1.1.2/X.411	See the text for *Fax-originator-name.* The password may be handled either locally by the FPAD or by the IPM-UA	O
Arguments sent from the IPM-UA to the FPAD for a Message delivery operation				
Recipient-fax-number (in call request packet from IPM-UA to FPAD)	Receive IPM 12.2.2/X.420	Recipient-name in envelope 8.2.1.1.1.2/X.411	In case of an IPM-UA, as the MTS delivers the message to the particular IPM-UA handling the G3FE, the *Recipient-fax-number* is known by the IPM-UA In case of a PFAXAU, the FPADAU[b] converts the Recipient-name contained in the envelope of the IPM message into the *Recipient-fax-number* The *Recipient-fax-number* (GSTN number of the G3FE) is transmitted to the FPAD in the call request packet	M
Fax-Content (in User sequences)	Receive IPM 12.2.2/X.420	Body Part g3-facsimile 7.3.3/X.420	The Body Part g3-facsimile is extracted by the IPM-UA or the FPADAU from the IPM received from the MTS. The g3 message is sent to FPAD	M
Arguments sent from the FPAD to the IPM-UA for a Command operation				
Cancel-deferred-delivery-request (in MHS related FPAD message)	Cancel-deferred-delivery 8.2.1.3/X.411		The *Cancel-deferred-delivery-request* argument requests the Cancel-deferred-delivery X.411 operation	O

TABLE D.1/X.39 *(continued)*

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status [a)]
Arguments sent from the FPAD to the IPM-UA for a Command operation *(concluded)*				
Fax-originator-name (in MHS related FPAD message)	MTS-bind 8.1.1.1/X.411 Cancel-deferred-delivery 8.2.1.3/X.411	Initiator-name 8.1.1.1.1.2/X.411	The IPM-UA binds to the MTS in using the *Fax-originator-name* as the Initiator-name (and optionally the *Password* as Initiator-credential). The authentication of an IPM-UA by MTS is mandatory in the scope of MHS. The authentication of the IPM-UA by MTS is based on the authentication of the G3FE by the IPM-UA. Then, authentication of the G3FE by the IPM-UA via an FPAD is mandatory. Therefore, if *Fax-originator-name* and *Password* arguments are absent, it is required to authenticate the G3FE by the IPM-UA by alternative means (e.g. authentication based on the networks)	O
Fax-message-submission-identifier (in MHS related FPAD message)	Cancel-deferred-delivery 8.2.1.3/X.411	Message-submission-identifier 8.2.1.3.1.1/X.411	As specified in Recommendation X.411	M
Password (in MHS related FPAD message)	MTS-bind 8.1.1.1/X.411	Initiator-credentials 8.1.1.1.1.2/X.411	See the text for *Fax-originator-name*. The password may be handled either locally by the FPAD or by the IPM-UA	O

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status [a)]
		Arguments sent from the IPM-UA to the FPAD for a Report operation		
Recipient-fax-number (in call request packet from IPM-UA to FPAD)	Originate IPM for Result or Error 12.1.2/X.420 Cancel-deferred-delivery for Result or Error 8.2.1.3/X.411 Receive RN 12.2.3/X.420 Receive NRN 12.2.4/X.420 Receive report 12.2.1/X.420		The *Recipient-fax-number* is known by the IPM-UA The *Recipient-fax-number* (GSTN number of the G3FE) is transmitted to the FPAD in the call request packet	M The *Recipient-fax-number* is mandatory to reach the G3FE

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status [a)]
Arguments sent from the IPM-UA to the FPAD for a Report operation *(continued)*				
Fax-content (in User sequences) for Result or Error of *Message-submission*	Originate IPM 12.1.2/X.420	Result or Error 12.1.2/X.420	The Message-Submission-Identifier (as indicated in 12.1.2/X.420) is taken from the reply by the MTS. The IPM-UA converts the Message-Submission-Identifier into the *Fax-message-submission-identifier* defined in E.7.1/X.38 In case of success, the Message-Submission-Time (as indicated in 12.1.2/X.420) is taken from the reply by the MTS In case of failure, the error (as indicated in 12.1.2/X.420) is taken from the reply by the MTS In both cases, the IPM-UA encodes the information [*Fax-message-submission-identifier*, Message-Submission-Time (or error)] with the *Fax-originator-name* into a facsimile message and the corresponding User sequences are sent to FPAD. The layout of the facsimile message is implementation matter. It may contain other information apart from the arguments listed above	M The *Fax-content is mandatory*. The mandatory information inside is indicated in the "Use of the argument" column
for Result or Error of *Cancel-deferred-delivery*	Cancel-deferred-delivery 8.2.1.3/X.411	Result or Error 8.2.1.3.2/X.411, 8.2.1.3.3/X.411	In case of success, the MTS replies an empty result (ok result). In case of failure, the MTS replies an error In both cases, the IPM-UA encodes the information with the *Fax-originator-name* and the *Message-submission-identifier* (defined in E.7.1/X.38) into a facsimile message and the User sequences are sent to FPAD. The layout of the facsimile message is implementation matter. It may contain other information apart from the arguments listed above	

TABLE D.1/X.39 *(concluded)*

Mapping of the MHS related FPAD messages to the MHS features

Argument at the FPAD level (in MHS related FPAD messages, User sequences or in call request packet)	Corresponding X.400 abstract operation where the argument is involved X.400 reference	Corresponding X.400 argument / result / error X.400 reference	Use of the argument	Status [a]
Arguments sent from the IPM-UA to the FPAD for a Report operation *(concluded)*				
Fax-content (in User sequences) for Receive RN, Receive NRN, Receive report	Receive RN 12.2.3/X.420 Receive NRN 12.2.4/X.420 Receive report 12.2.1/X.420	Argument set 12.2.3/X.420 Argument set 12.2.4/X.420 Argument set 12.2.1/X.420	The Message-Submission-Identifier (as indicated in 12.1.2/X.420 and in 12.2.1/X.420) is taken from the message coming from the MTS with the result depending on the operation: "RN", "NRN", "delivery/non-delivery". The IPM-UA converts the Message-Submission-Identifier into the *Fax-message-submission-identifier* defined in E.7.1/X.38 The IPM-UA encodes the information with the *Fax-originator-name* into a facsimile message and the User sequences are sent to FPAD. The layout of the facsimile message is implementation matter. It may contain other information apart from the arguments listed above	

a)   The column "Status" indicates if the argument is mandatory or optional when the corresponding operation is performed.

b)   The FPADAU is defined in Annex B/X.5.

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