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CCITT F.410

THE INTERNATIONAL
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MESSAGE HANDLING SERVICE
OPERATIONS AND DEFINITION OF SERVICE

MESSAGE HANDLING SERVICES: THE PUBLIC MESSAGE TRANSFER SERVICE

Recommendation F.410

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT 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 Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation F.410 was revised by Study Group I and was approved under the Resolution No. 2 procedure on the 4th of August 1992.

CCITT NOTE

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

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Recommendation F.410

MESSAGE HANDLING SERVICES:
THE PUBLIC MESSAGE TRANSFER SERVICE

(revised 1992)

The establishment in various countries of message handling services in association with public networks creates the need to produce Recommendations covering the aspects of public message handling services.

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1 Purpose and scope

1.1 *General*

This Recommendation specifies the general, operational and quality of service aspects of the public international Message Transfer service.

This type of Message Handling (MH) service is an international telecommunication service offered by Administrations, enabling subscribers' user agents to submit standardized classes of messages to Message Transfer agents for their transfer to another Message Transfer agent in the same Administration's domain, in another Administration's domain, or to private domains, via telecommunication networks using store and forward techniques.

The Message Transfer service also may transfer messages submitted through a message store (MS), and delivered to a message store, and to and from access units (AUs) to other services.

Locally provided functions, for which communication with other user agents or message transfer agents is not required, are not covered by CCITT Recommendations.

The Message Transfer (MT) service enables subscribers to request a variety of features to be performed during the transfer of messages.

Some features are inherent in the basic MT service. Other non-basic features may be selected by the subscriber, either on a per-message basis or for an agreed contractual period of time, if they are provided by Administrations.

Elements of service belonging to the basic Message Transfer service and essential optional user facilities are to be made available internationally by Administrations.

MT service may be provided using any physical network. MT service may be offered separately or in combination with various telematic or data communication services. It can be obtained by making appropriate arrangements.

Technical specifications and protocols, to be used in the MT service are defined in the X.400-Series of Recommendations.

The service definition is contained in § 2. Sections 3 and 4 describe the operation of the service and quality of service, and network requirements are given in § 5.

1.2 *Message handling systems used in the provision of Message Transfer service*

1.2.1 *1984 and 1992 implementations*

This Recommendation assumes that the message handling systems implemented to provide the service outlined herein are based on the 1992 version of the X.400-Series of technical Recommendations. It is recognized however, that for some time after the publication of this Recommendation, several implementations of Message Transfer service will still be based on the 1984 X.400-Series of Recommendations.

1.2.2 *1988 and 1992 implementations*

Minor revisions between 1988 and 1992 MH service Recommendations are referenced in Annex C of F.400. All revisions introduced are classified as optional additional user facilities. The Quality of Service time targets should be supported as detailed in this Recommendation.

Administrations are encouraged to adopt the latest CCITT Recommendations.

1.2.3 *Interworking*

In order to protect the investment of Administrations who have implemented previous systems for the provision of Message Transfer service, 1992 Administration management domain (ADMD) implementations shall be able to interwork to 1984 and 1988 ADMDs (see Note). Interworking from 1992 ADMDs to private management domain (PRMDs), which support previous versions is a local matter.

Note – A future version of this Recommendation will make support for the interworking with 1984 ADMDs optional.

2 Message transfer service

2.1 *General service requirements*

2.1.1 The fundamental ability of the MT service is to provide for the transfer of messages submitted by other services subscribing to the MT service. These other services may submit messages from their user agents, if they are services that follow the X.400-Series of Recommendations. Services may also access the MT service from standardized access units. Messages may also be transferred to and from message stores. The access units and message stores are not part of the MT service. Conversion of messages when different codings and other formats are used may be provided by the MT service.

2.1.2 The public MT service will be provided by Administrations using systems that conform to the X.400-Series Recommendations.

Management domains (MDs) are defined for the purpose of responsibilities boundaries. The MD managed by an Administration is called an Administration management domain (ADMD). The MD managed by an organization is called a private management domain (PRMD).

2.1.3 International exchange of messages are performed between Administration management domains through CCITT standardized public data transmission services. Each Administration will designate one or more message transfer agent (MTAs) in its management domain as international access points to the MT service.

2.1.4 Different classes of messages may be exchanged through this service. Some classes of messages may be standardized by CCITT Recommendations, such as Recommendation F.420. Other classes of messages may also be transferred, provided that the format adheres to the appropriate X.400-Series of Recommendations.

2.1.5 An Administration may provide different methods of access to the MT service. The possible methods are:

1) from a subscribing service's user agent, message store, or access unit;

2) from an MTA in a private management domain.

2.1.6 Each Administration is responsible for the national access to its management domain.

2.1.7 The characteristics of the direct interfaces to the MT service, or between a private domain and the MT service are a national matter, although they should generally conform to the X.400-Series Recommendations. Interworking with postal systems, or other physical delivery systems, should be in accordance with Recommendation F.415.

2.1.8 The national implementation of the MT service may provide intercommunication of subscribing services with other telematic services such as telex, teletex, facsimile and videotex. When implemented, the interface between the MT service and the other services shall be according to relevant CCITT Recommendations. Intercommunication may also be provided to a physical delivery system (PDS).

2.1.9 As the service is providing indirect communication, cases of non-delivery of the message to the intended recipient may occur. The MT service provides for non-delivery notification and, as an optional user facility, for delivery notification.

2.1.10 Due to the intermediate storage of the message, the service may provide conversion optional user facilities: speed, access procedures, networks and coding of message contents.

2.1.11 The message belongs to the originator until delivery has taken place. After delivery, the message belongs to the recipient.

2.1.12 Where sender and recipient have different and conflicting requirements, the sender's requirements shall take precedence (e.g. content type conversion or redirection control).

2.1.13 Management domains shall relay messages even if some additional optional user facilities are not supported by that domain.

2.2 *Message Transfer service features*

2.2.1 *Introduction*

Recommendation F.400, § 19, defines elements of service which are available in the MT service and are classified as either belonging to the basic service or as MT optional user facilities. Elements of service comprising the basic MT service are inherently part of the service, and are always provided and available. The optional user facilities that are classified as essential are always provided and those classified as additional may be available nationally or internationally on the basis of bilateral agreement.

In the MT service there is the following grouping of elements of service:

1) basic service which corresponds with the basic elements of service listed in Table 4/F.400;

2) optional user facilities, which correspond to the MT optional user facilities listed in Table 5/F.400.

Basic features are inherent in the service. Optional user facilities may be selected on a per-message basis or for an agreed contractual period of time.

2.2.2 *The basic Message Transfer service*

The basic MT service shall be implemented according to the requirements of Recommendation X.411. The basic MT service enables user agents (UAs) to access and be accessed by the message transfer system (MTS) in order to exchange messages. Each message is assigned a unique message reference identification. If a message cannot be delivered, the originating UA is informed. To facilitate meaningful communication, a UA may specify the types of encoded information that can be contained in messages delivered to it. The content type, the original encoded information types, the time of submission and delivery and whether conversion occurred are indicated for each message. The elements of service comprising the basic MT service are listed in Recommendation F.400, Table 4/F.400.

2.2.3 *Optional user facilities in the Message Transfer service*

Two classes of optional user facilities are available in the MT services. The first class is selectable on a per-message basis. The second class may be provided to the subscribing service when agreed to over a contractual period of time. The classes are described and cited in § 19.3 of Recommendation F.400 and in Table 5/F.400, and are available in the service based on the MT service.

2.2.4 *Naming and addressing*

Naming and addressing as used in the MT service, are described in overview in Recommendation F.400, § 12. The rules for naming and addressing in an Administration management domain are given in Recommendation F.401.

3 Operation of the service

3.1 *General*

3.1.1 The MT service provides that messages can be sent, transferred, delivered and received using fully automatic procedures.

Manual delivery of messages can be provided in the case of interworking with postal systems, and is described in Recommendation F.415.

3.1.2 Messages are prepared by subscribers services user agents/access units or by user agents/access units in other management domains.

3.1.3 Each Administration providing the MT service should validate its subscribers identities, at the time of access. It should also validate the identity of other management domains at their points of access.

3.1.4 Connectivity of the MT service to message transfer in private management domains, which will allow users of these systems to exchange messages, is desirable. This is recognized to be a national matter. If these interconnections are provided, they should take place between management domains in accordance with CCITT Recommendations.

3.1.5 When implicit conversion is provided by the Administration via the message transfer service, the message will be converted if necessary, unless prohibited by the originator. The conversion will be in accordance to the rules specified in Recommendation X.408.

3.2 *Message transfer*

Message transfer is initiated when a message is received from a user agent/message store or access unit. Delivery is attempted to the address of the message. The body part of the message will be transferred in the form in which it was received, unless conversion has been performed.

The results of the transfer attempt may be conveyed by two notifications:

– non-delivery notification;

– delivery notification.

Delivery notification may be given to the originating domain by the destination domain to indicate successful delivery. This delivery notification should be provided if requested.

Non-delivery notification is automatically originated by the MTS, while delivery notification will be generated by the recipients MTA on request of the originator. If non-delivery notification is prevented, and delivery notification is not requested, no notification is possible. In the case of a message to a teletex terminal (auto) receipt notification may be returned by the teletex access unit (TTXAU).

4 Quality of Service

4.1 *Message status*

The unique identification of messages conforming to the requirements of X.400-Series Recommendations enables the system to provide information about, e.g. the status of an interpersonal (IP) message or other class of message.

In the event of system failure, all accepted and non-delivered messages should be traceable. If messages cannot be delivered, the originator must be informed by a non-delivery notification.

4.2 *Responsibility for messages*

The subscribers to the service using the MTS are responsible for the messages in their user agents/message stores. The service using the MT service is responsible for the transfer between the UAs/MSs in that service and the MT service.

The Administration providing the MT service is responsible for the message transfer and the optional user facilities performed within its management domain and for messages coming from or directed to private management domains connected to its management domain, unless other national regulations apply. In international interconnection of ADMDs, the responsibility to deliver passes from managements domains with the message.

Administrations should provide assistance to their subscribers, with regard to status and tracing of non-delivered messages.

Note – The international implications of this are for further study.

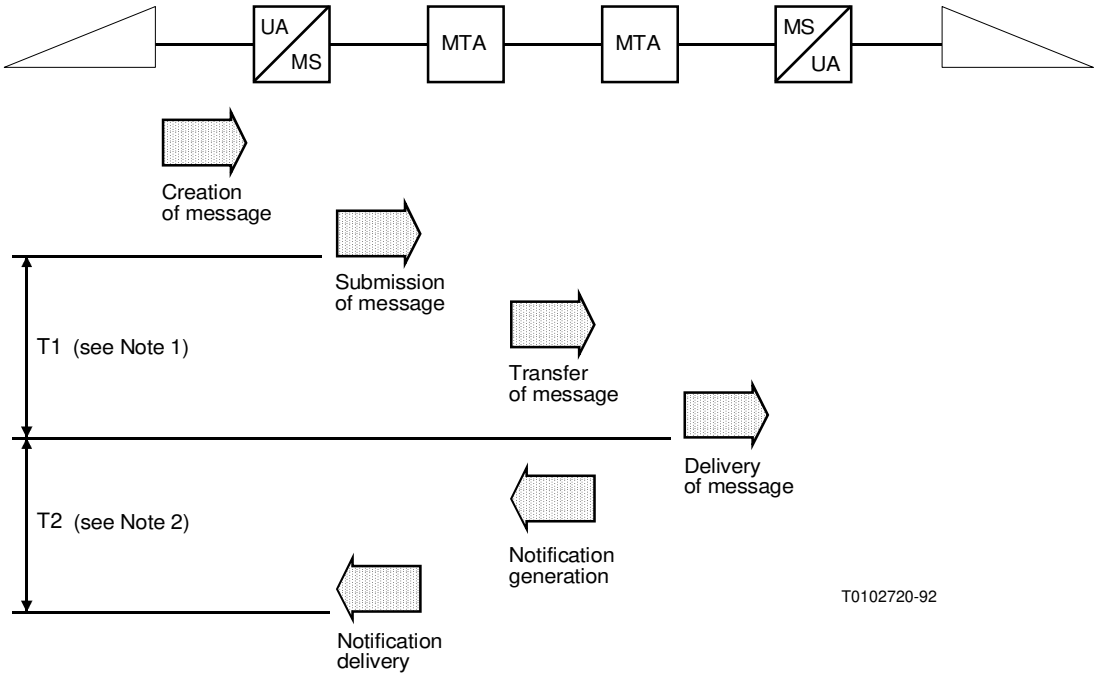
4.3 *Model of delivery and notification times*

See Figure 1/F.410.

4.4 *Delivery time targets*

The recipient ADMD should force non-delivery notification if it has not been able to deliver the message to the receiving UA after submission to the originating MTA according to the maximum delivery times given in Table 1/F.410 (or after date and time indicated for deferred delivery). The maximum delivery times are dependent on the grade of delivery requested by the originator as shown in Table 1/F.410.

To be able to meet these time targets, a message has to transit a transitting ADMD according to the transit time targets given in Table 2/F.410. These time targets are dependent on the grade of delivery requested by the originator.



T1 Delivery time
T2 Notification time

Note 1 – Starting time of T1 corresponds to the submission time stamp indication. Ending time of T1 corresponds to the delivery time stamp indication.

Note 2 – Starting time of T2 corresponds to the delivery time stamp indication. Ending time of T2 is the time that the delivery notification is made available to the user through the UA or MS.

FIGURE 1/F.410

Delivery and notification time model

TABLE 1/F.410

Delivery time targets

Grade of delivery	95% delivered within	Maximum delivery time
Urgent	0.25 hours	2 hours
Normal	1.0 hours	6 hours
Non-urgent	4.0 hours	12 hours

Note – It is expected that PRMDs will abide by these delivery time targets. If for any reason (including hold for delivery) the message cannot be delivered to the UA/AU/MS, a non-delivery notification shall be returned.

TABLE 2/F.410

Transit time targets

Grade of delivery	95% transitted within
Urgent	10 minutes
Normal	35 minutes
Non-urgent	2.4 hours

4.5 *Delivery notification time targets*

Non-delivery notifications or requested delivery notifications should be returned on a per-recipient basis, in order not to delay notifications for those messages in a multi-addressed message which have already been delivered, to enable the originating management domain either to return per-recipient notifications or to batch notifications to its subscribers (see Table 3/F.410).

TABLE 3/F.410

Notification time targets

Type	95% returned within
ND-notification	0.25 hours
D-notification	0.25 hours

Note – It is expected that PRMDs will abide by these notification time targets.

4.6 *Error protection*

Error protection on transmission is provided by the message handling system (MHS) and underlying protocols used in the provision of the MT service.

4.7 *Availability of service*

In principle the MT service should be available continuously. User agents or message stores connected to the MT service should be available for submission or delivery continuously (unless hold for delivery is invoked).

4.8 *Minimum storage capacity*

The storage capacity of the message transfer agent shall be sufficient to provide a high grade of service.

Note – This is for further study.

5 Network requirements

5.1 *General*

The MT service is network independent, that is, the basic service and the essential optional user facilities are provided independently of the type of network used for service access. Additional optional user facilities chosen by an Administration to offer may vary.

5.2 *Network requirements for international interconnection*

For interconnection of the public international message transfer service between Administrations, public packet switching connections shall be used. This does not preclude Administrations from using different means for this interconnection on a bilateral basis.

5.3 *Network requirements for service access*

Access to the public message transfer service is a local matter.

6 Use of the message transfer service within CCITT defined telematic services

See relevant F-Series Recommendations.

ANNEX A

(to Recommendation F.410)

Abbreviations

The following abbreviations are used in this Recommendation:

A	Additional (optional user facility)
AU	Access unit
ADMD	Administration management domain
E	Essential (optional user facility)
IP	Interpersonal
MD	Management domain
MH	Message handling
MHS	Message handling system
MS	Message store
MT	Message transfer
MTA	Message transfer agent
MTS	Message transfer system
PDS	Physical delivery system
PRMD	Private management domain
TTXAU	Teletex access unit
UA	User agent

Note 1 – For a glossary of terms see Annex A of Recommendation F.400.

Note 2 – For references see Recommendations F.400 and F.401.

APPENDIX I

(to Recommendation F.410)

Errata to Recommendation F.415 in Fascicle II.6 CCITT Blue Book 1989

I.1 Errata to Recommendation F.415

(Page 99, section 1, fourth paragraph). "(PM)" should be corrected to "(IPM)".

(Page 104, subsection 6.6, third paragraph). "MS" should be corrected to "MH".

(Page 104, section 7, sixth paragraph). "apply" should be corrected to "supply".

(Page 106, subsection B.2, first line). "printablea" should be corrected to "printable".

(Page 110, subsection B.7, first paragraph). "Annex A" should be corrected to "Annex A/X.408".