INTERNATIONAL TELECOMMUNICATION UNION

# CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

# F.410

(11/1988)

SERIES F: NON-TELEPHONE TELECOMMUNICATION SERVICES

Message handling services

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# MESSAGE HANDLING SERVICES: THE PUBLIC MESSAGE TRANSFER SERVICE

Reedition of CCITT Recommendation F.410
published in the Blue Book, Fascicle II.6 (1988)

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**NOTES**

1 CCITT Recommendation F.410 was published in Fascicle II.6 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

**Recommendation F.410**

# MESSAGE HANDLING SERVICES: THE PUBLIC MESSAGE TRANSFER SERVICE

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.

The CCITT,

*considering*

(a) the need for public message handling services;

(b) the strategic and commercial importance of standardization of message handling services;

(c) the urgent need for intercommunication arrangements for existing telematic services, and other services with public message handling services;

(d) the need for a clear distinction between the responsibilities to be allocated to service providers and those of subscribers and/or users;

(e) the need for establishing international compatibility between different messaging systems;

(f) the growth of the installed base of terminals and personal computers with the ability to access message handling systems;

(g) that several F series Recommendations describe public message handling services;

(h) that certain X and T series Recommendations cover relevant aspects of systems used for the provision of messaging services,

*unanimously declares*

the view that the requirements specified in this Recommendation should be applied for the provision of the public message transfer service internationally.

## CONTENTS

## 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 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, and delivered to a message store, and to and from access units to other services.

Locally provided functions, for which communication with other user agents or message transfer agents is not required, are nor 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 MT service*

1.2.1 *1984 implementations*

This Recommendation assumes that the message handling systems implemented to provide the service outlined herein are based on the 1988 version of the X.400 series of technical Recommendations. It is recognized however that for some time after the publication of this Recommendation, the majority of implementations of MT service will be based on the 1984 X.400 series of Recommendations. Administrations are encouraged to adopt the latest CCITT Recommendations; however, in the interim, they may make use of this Recommendation with 1984 implementations as outlined below.

1.2.2 *Elements of service*

The elements of service available for message handling services are listed and classified in Recommendation F.400. Annex B/F.400 provides a list of all the elements of service (called Service Elements in 1984) for MT service from the 1984 X.400 Recommendation. In addition the classifications of each element of service, as they were in 1984 in Recommendation X.401, are shown. In the 1988 X.400 Recommendation, there are many new elements of service representing new functionality that were not present in 1984. Most of these have been classified as additional, meaning that they do not have to be supported, hence the 1984 implementations can make use of this service Recommendation in most cases. Other differences between 1988 and 1984 are of two types, new elements of service that are classified as essential, and old (meaning 1984) elements of service that have been re-classified as essential for 1988. Annex C of Recommendation F.400 lists both the new elements of service in 1988 as well as changes in classification to any 1984 elements of service. In both cases to allow for 1984 implementations to be used for the provision of pubic MT service as described in this Recommendation, a grace period of 8 years is provided for Administrations to upgrade their implementations in this respect to the 1988 technical Recommendations.

1.2.3 *Name forms*

The specifications of the name forms in the 1988 Recommendations have been enhanced and postal O/R addresses have been added. The name forms and the mandatory components of the 1984 Recommendations have their equivalence in the new framework and are aligned in principle.

1.2.4 *Interworking*

In order to protect the investment of Administrations who have implemented 1984 systems for the provision of MT service, 1988 ADMD implementations must be able to interwork to 1984 ADMDs as outlined in Recommendation X.419, Annex B.

Interworking from 1988 ADMDs to 1984 PRMDs is a national matter.

## 2 MT 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 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 F.420. Other classes of messages may also be transferred, provided that the format adheres to the appropriate X.400 series or 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 of Recommendations. Interworking with postal systems, or other physical delivery systems, should be in accordance with 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.

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 CCITT Recommendation X.411. The basic MT service enables UAs to access and be accessed by the 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 MT 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 Recommendation F.400 (§ 19.3, and 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 is 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 TTXAU.

## 4 Quality of service

4.1 *Message status*

The unique identification of messages conforming to the requirements of CCITT X.400 series Recommendations enables the system to provide information about e.g., the status of an 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*

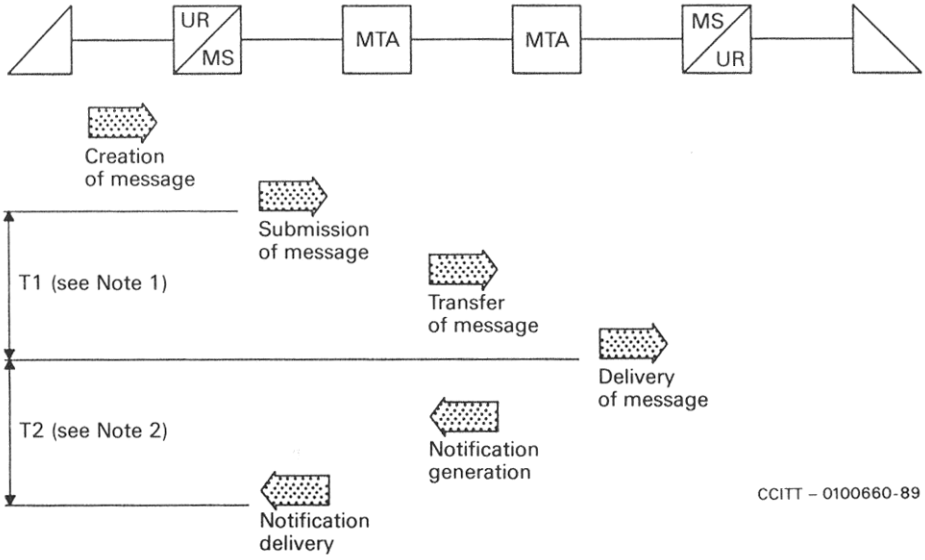
The subscribers to the service using the MTS are responsible for the messages in their User Agents/Message Stores. The service using the MT service is responsible for the transfer between the UAs/MSs in that service and the MT service.

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)*




T1 Delivery time

T2 Delivery notification

*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**

4.4 *Message transfer time targets*

The recipient ADMD should force non-delivery notification if it has not been able to transfer the message to the receiving UA before x hours after submission to the originating MTA (or after date and time indicated for deferred delivery), the value of x being dependent on the grade of delivery requested by the originator as shown in Table 1/F.410.

TABLE 1/F.410

| Grade of delivery | 95% delivered before | Non-delivery forced after *x* |
|---|---|---|
| Urgent | 0.75 hours | 4 hours |
| Normal | 4.0 hours | 24 hours |
| Non-urgent | 24.0 hours | 36 hours |

*Note* – Intercommunication with PRMDs is not included in the calculation of the time targets.

To be able to meet these time targets, a message has to transit a transiting ADMD within y hours, the value of y being dependent on the grade of delivery requested by the originator as shown in Table 2/F.410.

TABLE 2/F.410

| Grade of delivery | 95% transited before *y* |
|---|---|
| Urgent | 0.45 hours |
| Normal | 2.5 hours |
| Non-urgent | 14.5 hours |

*Note 1* – Time Targets assume that receiving UA is continuously available and excludes cases of Hold for Delivery.

*Note 2* – Intercommunication with PRMDs is not included in the calculation of the time targets.

4.5 *Delivery notification time targets*

Non-delivery notifications or requested delivery notifications should be returned on a per-recipient basis, in order not de 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

| Type | 95% returned before |
|---|---|
| ND-notification | 0.75 hours |
| D-notification | 0.75 hours |

*Note* – Time Targets assume that receiving UA is continuously available and excludes cases of Hold for Delivery.

4.6 *Error protection*

Error protection on transmission is provided by the 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 an interim period (8 years) in the interest of ease of 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 national matter.

## 6 Use of the MT 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 |
| ADMD | Administration Management Domain |
| E | Essential Optional User Facility |
| IP | Interpersonal |
| MD | Management Domain |
| 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.

ANNEX B

(to Recommendation F.410)

**MT elements of service for 1984 systems**

| Elements of service | Classification | | |
|---|---|---|---|
| | Basic | Optional | |
| | | Per message | Contractual |
| Access management | X | | |
| Alternate recipient allowed | | E | |
| Alternate recipient assignment | | | A |
| Content type indication | X | | |
| Conversion prohibition | | E | |
| Converted indication | X | | |
| Deferred delivery | | E | |
| Deferred delivery cancellation | | E | |
| Delivery notification | | E | |
| Delivery time stamp indication | X | | |
| Disclosure of other recipients | | E | |
| Explicit conversion | | A | |
| Grade of delivery selection | | E | |
| Hold for delivery | | | A |
| Implicit conversion | | | A |
| Message identification | X | | |
| Multi-destination delivery | | E | |
| Non-delivery notification | X | | |
| Original encoded information types indication | X | | |
| Prevention of non-delivery notification | | A | |
| Probe | | E | |
| Registered encoded information types | X | | |
| Return of content | | A | |
| Submission time stamp indication | X | | |

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

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Printed in Switzerland

Geneva, 2007