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SERIES F: NON-TELEPHONE TELECOMMUNICATION SERVICES

Telematic services

Operational requirements of an international store-and-forward facsimile switching service (COMFAX)

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NOTES

1 CCITT Recommendation F.162 was published in Fascicle II.5 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.162

OPERATIONAL REQUIREMENTS OF AN INTERNATIONAL STORE-AND-FORWARD FACSIMILE SWITCHING SERVICE (COMFAX)

1 Introduction

1.1 With the development of equipment that provides store-and-forward facilities for facsimile service, and that permits inter-operation between dissimilar facsimile terminals, there is a requirement to ensure that such systems should have the capability of interworking with each other.

1.2 It is therefore necessary to define the areas in which common procedures or facilities are essential to provide a standardized international service which may be accessed by a wide variety of terminals and which can employ a wide variety of networks for access and interworking purposes.

1.3 The service would be provided for registered users for the origination of traffic. However, to make the service attractive to potential users, the transmission of messages could be allowed to any facsimile terminal (preferably capable of automatic reception), connected to the public telephone network, the public data networks or by direct connection from the facsimile switching node.

2 Scope

2.1 This Recommendation defines the basic operational requirements of an international store-and-forward facsimile switching service, whereby switching and protocol conversion facilities are provided by Administrations using computer-controlled store-and-forward nodes.

2.2 As a national option, input from character terminals, for output to facsimile terminals, may be provided. Optionally, the service should be capable of receiving messages from a domestic or international Telemessage service (telex, Teletex and Videotex) for the transmission and/or delivery of messages in a facsimile mode.

2.3 Technical requirements of the service are not covered in this Recommendation. Facsimile terminals are covered in the Series-T (see also Recommendations F.180, § 1.3 and F.161).

2.4 Tariff and accounting aspects will be covered in D-series Recommendations.

3 General requirements

3.1 The service shall offer a range of store-and-forward facilities using message switching principles.

3.2 The service shall be capable of converting the transmission formats of a range of normally incompatible document facsimile terminals so that these can communicate with each other. The requirement is that facsimile terminals conforming to CCITT Group 3 and Group 4 standards should be acceptable. As a national matter, Group 2 access may be optionally offered.

3.3 The service shall be capable of accepting input from character-orientated terminals, for transmission to a facsimile terminal.

3.4 Customers shall gain access to a switching node either by dialling over the PSTN, or a data network, or by direct connection.

3.5 Customers shall receive transmissions from the node to the customer's facsimile terminal either by the switching node dialling over the PSTN or a PDN or by a direct connection.

3.6 Messages may be transmitted between store-and-forward nodes. Each node shall be uniquely identified by an identification code. The numbering of nodes is for further study.

3.7 Communications between nodes internationally shall be either by automatic dialling over the PSTN or a PDN or by a direct connection.

3.8 Access to an ISDN store-and-forward switching node is for further study.

4 Quality of service

4.1 The quality of service depends on the normal characteristics of the network used and of the facsimile terminals, in particular their scanning and reproduction parts.

4.2 Switching nodes should provide a means of assessing terminal-to-node quality.

In particular, the quality of the scanning and reproduction functions may be checked between:

a) manually operated terminal and the switching node;

b) automatic terminal and the switching node;

by:

i) automatic transmission of a test chart by the switching node to check the reproduction system of a receiving terminal;

ii) transmission of a test chart on paper to check the scanning system on the transmitting terminal.

The standardized CCITT test charts, Nos. 2 and 3, per CCITT Recommendation T.21 shall be used for this purpose.

4.3 Administrations shall perform test and measurement services:

a) to locate faults and to restore service on the public network, excluding terminal equipment; or

b) to assist users to locate and clear faults, including those involving the terminals.

4.4 *Terminal identification*

Identification of terminals is affected by the procedures laid down in relevant Series-T Recommendations.

4.5 *Error protection*

4.5.1 *Between Group 3 terminals and a switching node*

For further study.

4.5.2 *Between Group 4 terminals and a switching node*

To ensure integrity, error protection will be provided by Group 4 control procedures (see Recommendations T.62 and T.70).

4.5.3 *Between switching nodes*

For further study.

4.6 *International routes*

4.6.1 *Public switched telephone network*

Communications between international nodes shall operate at a data rate of 9.6 kbit/s, with fallback rates of 7.2, 4.8 and 2.4 kbit/s.

4.6.2 *Circuit switched public data network*

Store-and-forward facsimile nodes connected to a circuit switched data network shall operate in accordance with user classes of service 6 or 7 as defined in Recommendation X.1.

4.6.3 *Packet switched data network*

Store-and-forward facsimile nodes connected to a packet switched data network shall operate in accordance with user class ofservice 10 or 11 as defined in Recommendation X.1.

4.6.4 Store-and-forward facsimile nodes connected to an ISDN shall operate in accordance with user class of service 30 as defined in Recommendation X.1.

4.7 *Duration of service*

4.7.1 The national and international store-and-forward facsimile switching facilities shall be open continously.

4.7.2 Receiving terminals shall, in principle, be available to accept calls continously.

4.8 *Observations on the quality of service*

Administrations shall make observations to evaluate the quality of the store-and-forward facsimile switching service nationally as required and internationally at least once each year.

4.9 *Enquiries and complaints*

Enquiries and complaints services shall be provided by administrations. Unless bilaterally agreed otherwise between the administrations concerned, customers should address any enquiries or complaints to their own administration.

4.10 *Conversion rules*

4.10.1 Every S&F node should have the conversion facilities to realize communication between the mandatory mode of G3 and that of G4, class 1. Other conversion modes can be optional.

4.10.2 Information on conversion modes of the node on the recipient's side and information on subscriber terminal attributes should be sent to the node on the originator's side. The possibility of conversion should be examined at the node on the originator's side. Here also, requests not to convert documents should be handled.

4.10.3 The node on the originator's side should decide which node is to be used for converting documents by considering information on the conversion modes of both nodes and on subscriber terminal attributes.

5 Service facilities

5.1 *Broadcast transmissions*

Customers can register lists of destinations to which they regularly transmit identical messages, and can then initiate transmission to those destinations by input of a single address code. The system need not necessarily transmit a message to the required destinations simultaneously. Systems should be able to accept at least 40 destinations for a given message.

5.2 *Multi-address transmissions*

Customers can send the same message to many locations by entering the destination addresses sequentially before transmitting the message. The multi-address facility differs from the broadcast facility in that it is not necessary to specify destination addresses in advance. Broadcast facility would therefore be used for transmitting multi-address messages on a regular basis; multi-address facility would be used for occasional multi-destination messages. Systems should be able to accept al least 40 destinations for a given message.

5.3 *Abbreviated addressing*

5.3.1 Abbreviated address codes can be assigned to frequently called destination numbers; these are, in effect, broadcast lists containing a single entry.

5.3.2 A customer shall be able to retrieve the abbreviated address codes assigned to destination numbers by using a terminal for verification purposes. As an optional facility the customer, following validation as a registered user, may be able to add, delete or amend entries in an existing broadcast list.

5.3.3 Based on bilateral agreement, a customer shall be able to activate abbreviated codes in the node to which he is connected and in a node to which his call is routed by the originating node. In such cases, the customer will provide the originating node with routing instructions which specify the destination node and code for the abbreviated address stored in the destination node.

5.4 *Hold for delivery requested by the originator*

The node shall enable originators to send documents into the system that will not be delivered automatically, but will remain stored in the system.

The system shall inform the recipient that the message being sent to him is being held in the facility.

The receiving customer can retrieve the message whenever desired by inputting the appropriate request code and identification information.

5.5 *Hold for delivery requested by the recipient*

The system shall enable recipients to receive documents from the node that will not be delivered automatically, but will remain stored in the system.

Before accepting the message from the originator, the system shall inform the originator that a message will be held for delivery in the node.

The receiving customer can retrieve the message from the originator when desired by inputting the appropriate request code and identification information.

5.6 *Deferred delivery by the recipient*

The destination customer has the option of requesting that the delivery of all documents be deferred until a specified time, by input of a request code, followed by the delivery time. Before accepting the message from the originator, the system shall audibly inform him that the message will be held for delivery in the facility.

5.7 *Deferred delivery by the originator*

The originator has the option of requesting on a per document basis that the delivery of a document be deferred and take place as close to, but not before, the date and time specified as possible, by input of a request code followed by the required delivery time.

5.8 *Multi-page facility*

5.8.1 When transmitting a facsimile document of more than one page during a single session, the initial dialogue between the originating customer and computer establishes the information necessary to link the pages of a multi-page document.

5.8.2 For inputs to a facsimile store and forward node from a text terminal, the text message originator may transmit a code to the node within the message text to indicate that a page break should occur at that point. Additionally, the node shall automatically insert page breaks where otherwise the text would have exceeded a normal page length.

5.9 *Automatic reception*

The destination node shall recognize the tones generated by terminals capable of unattended automatic reception and, upon recognition of these tones, shall transmit the messages.

To ensure the most effective handling and delivery of facsimile documents it is considered preferable that the acceptance of messages is conditional upon the destination terminal having automatic reception. This should be a mandatory requirement for customer registration to the service. The delivery of messages to terminals having manual reception would lead to operational and technical difficulties and Administrations cannot be held responsible for possible non-delivery in these circumstances.

5.10 *Date, time and originator's identity*

The originating node shall include reference information on all documents. This information should be composed of date, time and calling terminal identification. Called terminal identification may be prepared as an option. Ideally, this reference information should appear on the first line of each page of the document.

The time mentioned above should be defined as the time that the reception of a message from an originating terminal has been completed.

To avoid any misunderstanding on the part of the recipient as to the originator of the message, the store and forward node ID could consist of alpha characters only. The originator ID as received by the node could be shown below the store and forward node ID, prefixed by ”Message from:”, which could be automatically generated by the node. By bilateral agreement these details, including date, time and a message reference number, could be delivered to the recipient as a separate covering page, as per the following example:

REF: LDN/ROME AHB082 2207 1987/1230 GMT
BTI COMFAX SERVICE
Message from: +44 1 404 5707

The above covering page generated by the node would be a non-chargeable item.

5.11 *Recall attempts*

If a destination terminal is busy, it shall be recalled at a certain interval during a maximum of four hours. The method and timing of making recall attempts is a national matter except where an international connection is involved. It that case, re-attempts should be made at 20 [1)]-minute intervals over a maximum period of 4 [1)] hours.

When it is impossible for a destination terminal to receive messages due to the absence of recording paper, lack of power supply or the terminal being out of order, a non-delivery advice should be sent to the originator after confirmation of this situation.

When the originator receives the non-delivery advice, the message shall be deemed “non-deliverable”.

5.12 *Closed user group*

Exchange of communication is limited to a group of terminals designated by a subscriber and no calls into or out of the closed user group are permitted. However, outgoing access from the closed user group may be provided at the discretion of the controlling Administration.

5.13 *Information retrieval*

Information may be stored in a node in advance which can be retrieved by any customers through dialling the appropriate number. Such information could be weather reports, stock market quotes, etc.

6 Operational requirements of nodes

6.1 Sufficient information shall be stored in the node to enable charging to be carried out. This information shall include, but not necessarily be limited to the following:

- date/time of submission
- date/time of delivery
- volume of data transmitted
- transmission holding time.

6.2 After the destination node has successfully completed the delivery of a message to the destination terminal, the destination notifies the originating node of the completion of the transmission.

6.3 If the destination node cannot deliver after recalls are attempted, it shall notify the originating node of this fact along with the call identification information.

6.4 Facsimile messages may be sent internationally by the originating node to distant customers in one of the following ways:

6.4.1 From the originating node to the destination node, and then to the customer.

The need for the originating node to verify connectibility of the distant customer's terminal at the destination node before accepting the message from the originating customer is for agreement between Administrations on a bilateral basis.

6.4.2 From the originating node directly to a distant customer in those cases where a node does not exist in the country concerned. This is subject to bilateral agreement.

7 User assistance

If a customer encounters difficulty in making a facsimile call, the input of a specific code gives access to an assistance operator at the origin node. Also, if an access procedure error occurs more than three times when setting up a call, the caller shall be automatically transferred to an assistance operator. The operator has equipment which can be used to obtain information and to identify procedural errors, and to give information on the progress of message delivery.

Alternatively, the node may provide coded information indicating operating errors or equipment faults. Registered users will use a manual to investigate the fault. The manual should provide appropriate information in an easily understood form, enabling the user to locate information and rectify errors without the need to contact

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1) Parameters for further study.

administration staff on the majority of occasions. The user manual will also provide appropriate details to enable the user to contact an enquiry point, at which administration staff will more fully investigate the fault.

8 Non-delivery advice

If a destination terminal is busy or out of order in spite of recalling, a non-delivery message shall be transmitted to the originator's terminal.

The non-delivery message should be composed of a non-delivery notification (NDN), the originating date and time, the destination identification and an indication of whether the whole or part of the document was not delivered.

9 Delivery confirmation

As an extra chargeable service, if a customer requests delivery confirmation this information will be transmitted to the customer when available.

10 Call establishment procedures

10.1 *Originating a call*

After gaining access to the switching node, the following information is provided to the node to establish a facsimile call.

10.1.1 *Destination customer's identity*

10.1.2 *Originating customer's identity*

The method of entry shall be at the discretion of the Administration. Further study is required on whether additional information is required.

10.2 *Receiving a call*

10.2.1 The store-and-forward system shall be able to handle calls that are automatically answered.

10.2.2 The destination customer's identity will be provided to the node.

10.2.3 Administrations may also provide for inaudible automatic reception over the public switched telephone network.

11 Customer information

11.1 *Directories*

A customer should provide all information required to be included in a directory for this service.

11.2 *Directory entries*

For further study.

12 Access to facsimile message handling facilities

Customers of the store-and-forward facsimile switching service should have access to the services offered by message handling facilities.

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