

Fax Working Group  
Internet Draft  
Expires: January 1999

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28 July 1998

## **Facsimile Applications for Internet Fax Full Mode**

[draft-ietf-fax-fullmode-application-00.txt](#)

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### **Abstract**

This memo explains Internet Fax Full Mode facsimile applications which can be implemented using the method of capability exchange in Internet Fax Full Mode. These applications are the same as implemented in G3FAX using T.30 protocol. These applications will be implemented under the Internet Draft 'Extended MDN for Internet Fax Full Mode' or other capability exchange mechanism.

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## **1. Introduction**

This memo explains Internet Fax Full Mode facsimile applications which can be implemented using the method of capability exchange in Internet Fax Full Mode. These applications are the same as implemented in G3FAX using T.30 protocol. These applications will be implemented under the Internet Draft "Extended MDN for Internet Fax Full Mode" [\[5\]](#) or other capability exchange mechanism.

It will be preferable to develop same facsimile application in Internet Fax Full Mode terminals as implemented in G3 facsimile. A dual mode terminal which has Internet Fax Full Mode and G3 FAX mode can perform same applications received via Internet Fax Full Mode and G3 Mode. Those facsimile application are based on T.30 protocol and T.30 frames defined in ITU-T Recommendation T.30 [\[2\]](#). These T.30 frames are SUB (Subaddress), SEP (Selective Polling), PWD (Password), SID (Sender ID) and others.

These facsimile applications can be implemented using the method of capability exchange which is described in the Internet Draft "Extended MDN for Internet Fax Full Mode" [\[5\]](#).

An additional MIME content-type for BFT is required for the BFT application of Internet FAX Full Mode.

Internet FAX Full Mode which has capability exchange and confirmation is defined in ITU-T F.185 [\[3\]](#) and T.37 [\[4\]](#). An extended MDN can be used to exchange Internet FAX recipient capabilities and to notify the sender of a message of any of several conditions that may occur after successful delivery, such as reception of the Internet FAX Full Mode or the recipient error in process of the Internet FAX Full Mode. An extended MDN will be used for terminal to terminal capabilities exchange and confirmation in Internet FAX Full Mode.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [\[4\]](#).

### 1.1 Facsimile Applications

There are facsimile applications such as Polling, Subaddress and Password, Relay Broadcast and BFT are based on ITU-T Recommendation [T.30 \[2\]](#). **Frames used for these applications in T.30 are SUB (subaddress)** SEP(Selective Polling), PWD(Password), SID(Senders ID) and others.

#### (a) Polling

Polling means a IFAX FullMode terminal requests to another IFAX Full Mode terminal that the other IFAX FullMode terminal send a document as TIFF-FX file that it is holding. Unlike normal sending and receiving, in polling the receiver always requests the sender. This is called polling to receive a document. The sender sends the document as TIFF-FX file in response to the polling by a request from the receiver. If the other IFAX FullMode terminal holding the document under both a subaddress and password or only a subaddress or password. Requesting IFAX FullMode terminal must send the subaddress and/or password.

#### (b) Subaddress and Password

Subaddress is an application which a IFAX FullMode terminal send the document as TIFF-FX file into the subaddress of a IFAX FullMode terminal. If the other IFAX FullMode terminal storing the document under both a subaddress and password or only a subaddress or password. Transmitting IFAX FullMode terminal must send the subaddress and/or password with a document as TIFF-FX.

#### (c) Relay Broadcasting

In a relay broadcast, the originator IFAX FullMode terminal sends a document over a long distance to another terminal called the relay

IFAX FullMode unit. After the relay IFAX FullMode unit receives the document, it automatically sends the document to several other terminal in the same locality with only one long distance transmission. In a relay IFAX FullMode terminal has the address list to broadcast the message. If the relay IFAX FullMode terminal control the address list for broadcast under both a subaddress and password or only a subaddress or password. the originator IFAX FullMode terminal must send the subaddress and/or password with a document as TIFF-FX.

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(d) BFT

BFT is one of file transfer options in which the transmitter send file to recipient. For technical description of BFT see T.434 [6], AnnexB/T.30 [2] and [Appendix VI/T.30 \[2\]](#). File transfer is optional feature of IFax which permits to transmit any data file with or without additional information concerning the file to be transmitted T.4 [7]. There are 4 transfer mode exist, such as Basic Transfer Mode: (BTM), Document Transfer Mode: (DTM), Binary File Transfer Mode: (BFT) and EDIFACT transfer: (EDI).

## **1.2 Method of capability exchange and confirmation**

One of the method of Capability exchange and confirmation is defined in the Internet Draft "Extended MDN for Internet Fax Full Mode" [5]. Other method of capability exchange can be used for these applications. This section describes about the method of capability exchange and confirmation in the Internet Draft "Extended MDN for Internet Fax Full Mode" [5].

A communication between Internet FAX Full Mode machines consists of two phases that are the capability exchange phase and the message transmission and confirmation phase.

In the capability exchange phase, a sender of Internet FAX Full Mode sends a request for a Message Disposition Notification which is an empty mail message with a Disposition-Notification-To header. A recipient of Internet FAX Full Mode must immediately return message with its capabilities using extended MDN. This is a change of behavior from the MDN. These capabilities are expressed using T.30 frame format

such as DIS frame.

In the message transmission and confirmation phase, based on this reply messages, the sender sends message, command data and confirmation request using a request for extended MDN. The command data is expressed using T.30 frame format such as DCS frame. Optional T.30 frames may be included in the extended MDN. The recipient must immediately returns confirmation message after the processing of image using extended MDN. The confirmation message includes human readable message, completion code, total received page, error page numbers, partial or full received message and capabilities of recipient.

Capability exchange phase and message transmission and confirmation phase are independent, and not required to succeeded. A sender may not perform capability exchange phase only when capabilities of the destination is registered in machine, before the sender performs the message transmission and confirmation phase for every transmission.

To Allow G3FAX applications such as Polling, Selective Polling, Subaddress, Relay, Password, BFT and NSF(Manufacturer proprietary mode) based on ITU-T T.30 protocol [2].

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## **2. Polling**

Polling is implemented for IFAX FullMode using optional subaddress and/or password in capability request. Requesting terminal may use a subaddress for the polling mode or a specific document number to select data in transmitting terminal. Requesting terminal may send a password to get data from transmitting terminal.

### **2.1 Method using capability exchange**

There is 6 steps to receive a polling data. To save protocol time, it is possible to cash a capability response and to start from Step-4.

#### **Step-1 Setup**

Set up polling image data in transmitting IFAX-FullMode terminal. Subaddress and password will be used to store the polling image data in transmitting IFAX-FullMode terminal.

#### **Step-2 Capability Request**

The Polling request terminal sends the capability request.

#### Step-3 Capability Response

The Polled Tx terminal replies its capability response indicating polling data exist.

#### Step-4 Polling Request

The Polling request terminal sends polling request. Requesting terminal may send subaddress to select data in called terminal. Requesting terminal may send a password to get data from transmitting terminal when password is required.

#### Step-5 Message Transmission

The Polling Tx terminal checks a subaddress and password. When these are valid, it sends the requested image data as TIFF-FX file.

#### Step-6 Confirmation

The Polling request terminal sends a confirmation when the data is received.

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### **3. Subaddress and Password**

Subaddress is an application which a IFAX FullMode terminal send data into the subaddress of a IFAX FullMode terminal. Transmitting terminal may use subaddress to select subaddress in receiving terminal. Transmitting terminal may send a sender identity to be checked by receiving terminal for reception of the data.

#### **3.1 Method using capability exchange**

There is 5 steps to send image data into a subaddress with password. To save protocol time, it is possible to cash capability response and to start from Step-4.

##### Step-1 Setup

Set up Subaddress and Password in the recipient IFAX-FullMode terminal.

#### Step-2 Capability Request

The transmission terminal sends capability request.

#### Step-3 Capability Response

The recipient terminal replies its capabilities indicating Subaddress and Password capability.

#### Step-4 Message Transmission

The Tx terminal send image data as TIFF-FX file.  
Transmitting terminal may send subaddress to select subaddress in receiving terminal. Transmitting terminal may send sender identity to be checked by receiving terminal for reception of the data.

#### Step-5 Confirmation

The recipient terminal checks subaddress and password. When these are valid, it receives the data as TIFF-FX file, and sends confirmation.

#### **4. Relay Broadcast**

In a relay broadcast, the originator IFAX FullMode terminal sends a document over a long distance to another terminal called the relay IFAX FullMode unit. After the relay IFAX FullMode unit receives the document, it automatically sends the document to several other terminal in the same locality with only one long distance transmission. If the relay IFAX FullMode terminal control the address list for broadcast under both a subaddress and password or only a subaddress or password. The originator IFAX FullMode terminal must send the subaddress and/or password with a document as TIFF-FX. The originator terminal may send subaddress to select subaddress in relay terminal. The originator terminal may send sender identity to be checked by relay terminal for reception of subaddress.



#### **4.1 Method using capability exchange**

There is 5 steps to send image data for relay broadcast.  
To save protocol time, it is possible to cash capability response and to start from Step-4.

##### **Step-1 Setup**

Set up Subaddress and Password in the relay IFAX-FullMode terminal.

Set up broadcast address in the relay IFAX FullMode terminal.

##### **Step-2 Capability Request**

The originator IFAX FullMode terminal sends capability request to the Relay broadcast terminal.

##### **Step-3 Capability Response**

The relay terminal replies its capabilities indicating capability.

##### **Step-4 Message Transmission**

The originator IFAX FullMode terminal send image data as TIFF-FX file.  
The originator terminal use subaddress and password to select subaddress in receiving terminal. The originator terminal may send subaddress and password sender identity to be checked by receiving terminal for reception of subaddress.

##### **Step-5 Confirmation**

The recipient terminal checks subaddress and password. When these are valid, it receives the data as TIFF-FX file, and sends confirmation.

#### Step-7 Broadcast

The recipient terminal broadcast the message to other IFAX using sends report of relay.

#### Step-6 Relay report

The recipient terminal sends a report of relay to the originator IFAX FullMode terminal.

## **5. BFT**

BFT is one of file transfer options in which the transmitter send file to recipient. For technical description of BFT see T.434 [\[6\]](#), AnnexB/T.30 [\[2\]](#) and [Appendix VI/T.30 \[2\]](#). File transfer is optional

feature of IFax FullMode which permits to transmit any data file with or without additional information concerning the file to be transmitted [T.4 \[7\]](#). BFT file is attached with new MIME type as bft.

### **[5.1](#) Method using MDN capability exchange**

There is 5 steps to send BFT data to send.

To save protocol time, it is possible to use a cash of capability response and to start from Step-4.

#### **Step-1 Setup**

Set up BFT data in Tx IFAX-FullMode terminal

#### **Step-2 Capability Request**

The transmission terminal sends capability request to the recipient terminal.

#### **Step-3 Capability Response**

The recipient terminal replies its capabilities indicating BFT capability.

#### **Step-4 BFT message transmission**

The BFT Tx terminal send BFT data as MIME attachment with new MIME type.

#### **Step-5 Confirmation**

The recipient terminal checks BFT data and sends confirmation.

## **6. Security**

Password mechanism in G3 FAX mode may be not enough for security in SMTP mechanism. More security mechanism will be added for password.

## **7. Acknowledgments**

## **8. References**

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [RFC 2119](#), March 1997.
- [2] ITU-T (CCITT), "Procedures for Document Facsimile Transmission in the General Switched Telephone Network ", ITU-T (CCITT) Recommendation T.30.
- [3] ITU-T, "Internet Facsimile: Guidelines for the Support of the Communication of Facsimile Documents", ITU-T Recommendation F.185
- [4] ITU-T, "Procedures for the Transfer of Facsimile Data via Store and Forward on the Internet", ITU-T Recommendation T.37
- [5] Maeda, T., Internet Draft "Extended MDN for Internet Fax Full Mode" 22 May 1998.
- [6] ITU-T, "Binary File Transfer Format For the Telematic Services", ITU-T Recommendation T.434
- [7] ITU-T, "Terminal Equipments and protocols for Telematic Services", ITU-T Recommendation T.4

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