

## **APPARATUS AND METHOD FOR PROCESSING ELECTRONIC MESSAGES**

### Background and Field of the Invention

This invention relates to apparatus and method for processing electronic messages, more particularly but not exclusively, to apparatus and method for automatically confirming receipt of electronic messages received from a sender.

In electronic mailing (e-mail), a sender sends an electronic message over a communications medium to a recipient. Typically, the recipient uses a software application to retrieve and view the message. If required, the recipient may reply to the sender's email indicating confirmation of receipt but there is no way for the sender to ensure that all the information is indeed sent and received by the recipient, particularly if the message includes an attached electronic document which is large in size. In cases where there is an attached document, the sender may ask the recipient to confirm receipt by attaching the original document to the reply message so that the sender will know what the recipient has received. However, re-sending the document back to the sender does not ensure that the re-sent document is what the recipient will actually be viewing since more likely than not, the recipient will print a hardcopy of the document for review. Thus, there is no way for the sender to tell whether the information on the printed copy corresponds to what he actually sent.

The above may be one of the reasons why, despite the popularity of electronic mailing (e-mail), paper-based mailing is still widely used as a communication tool since a sender has the assurance of being able to physically inspect the physical documents prior to sending the document to the recipient. The sender also has the choice of using a more secure service such as door-to-door courier to deliver the documents to ensure that the recipient confirms receipt of the document in a way conventional e-mailing systems do not provide. However, such a method is costly and time consuming.

It is an object of the present invention to provide apparatus and method for processing electronic messages which alleviates at least one of the disadvantages of the prior art and/or to provide the public with a useful choice.

#### Summary of the Invention

In a first aspect of the invention, there is provided apparatus for processing electronic message, the apparatus comprising a printing device arranged to print the electronic message; and a scanning device arranged to automatically scan the printed electronic message to capture an image thereof.

An advantage of the described embodiment of the invention is that since the scanning is performed after the hard copy is printed, the captured image will be a good representation of what is being printed. Thus, the image can be used subsequently by a recipient of the original electronic message for confirming receipt thereof by sending a copy of the image to the sender. In an alternative,

the recipient may send the electronic image, rather than forwarding the original electronic message, to a further recipient since this would ensure that what is being sent corresponds to what is being printed. In a further alternative, the apparatus may be used by a sending party to print out a copy of the electronic message which is scanned to capture an image of the printed copy and then sending the captured image to a recipient. This ensures that the sender has a hard copy record of what is being sent since the captured image is a good representation of the printed record.

Preferably, the apparatus further comprises means to receive the electronic message from a sender and the printing device may print the electronic message automatically upon receipt. The apparatus may further comprise means to send the image or a copy thereof to the sender or to another recipient after the printed message is scanned.

Preferably, the apparatus further comprising means to create a watermark or insert a reference number on the printed electronic message or image. The mark or number can be used as an indication of receipt to the sender. In addition, the apparatus may further comprise means to insert date and/or time stamp on the printed electronic message or image.

If the electronic message includes an attached electronic document, the printing device may also print the attached document for scanning by the scanning device to capture an image of the document.

The apparatus may further comprise means for storing a plurality of electronic messages and the apparatus may thus further include means for inputting a user identifier to select which message from the plurality of messages to process. The input means may be a card reader and the user identifier may be stored in a magnetic card. Alternatively, the input means may be a computer keyboard.

The apparatus may further include means to inform the sender of an electronic message if the message is not printed by the recipient within a time period. In addition, the apparatus may also comprise means to verify the association of the electronic message with a user identifier and wherein the electronic message is printed if there is such an association.

In a second aspect of the invention, there is provided a method of processing an electronic message comprising the steps of: printing the electronic message; and automatically scanning the printed electronic message to capture an image thereof.

More specifically, the present invention also includes a third aspect which provides a method of confirming receipt of an electronic message received from a sender, the method comprising the steps of: printing the electronic message; automatically scanning the printed electronic message to capture an image thereof; and sending the captured image or a copy thereof to the sender.

### Brief Description of the Drawings

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which,

Figure 1 illustrates a schematic view of an apparatus for processing an electronic message including a printing and scanning unit according to the preferred embodiment of the present invention; and

Figure 2 illustrates in detail the printing and scanning unit of the apparatus of Figure 1.

### Detailed Description of the Preferred Embodiment

Figure 1 illustrates a schematic view of a printing and scanning apparatus 100 according to the preferred embodiment of the present invention. The apparatus 100 comprises an input/output port 200, system control unit 400 and a printing and scanning unit 500. The apparatus 100 also comprises a user ID input device 600 and in this embodiment the input device 600 is in the form of a card reader.

In this embodiment, a user (an individual or an organisation/entity) of the apparatus 100 is identified by a user identifier 101. This identifier can simply be in the form of an email address, a unique name or an alphanumeric pass code which is preferably stored in a magnetic or electronic card 103. The card 103 is then inserted into the card reader 600 to identify the user to the apparatus 100.

The port 200, which may use parallel or serial communications, is arranged to be connected to an electronic data source such as a computing system (not shown). Alternatively, the port 200 may be connected to a local area network to a mail server or database and the port 200 may be a LAN port. In a further alternative, the port 200 may be connected directly to a modem and thus electronic messages are received directly by the apparatus 100. The electronic message from the data source may be in the form of an electronic document such as an e-mail or a document attachment in an email. Each document has information to associate the document with its sender, recipient and/or subject as in a normal e-mail. In this embodiment, the port 200 is connected to a database server within a LAN.

As shown in Figure 1, incoming electronic messages are received via the port 200 and processed by the system control unit 400, which may include a computer system and memory. The system control unit 400 first extracts the recipient's identification from the electronic message and saves the message in the memory area using the recipient's identification as the filename of the saved message. The recipient's identification is the same as the user identifier 101 mentioned earlier and thus the identification may be in the form of a name, e-mail address or other forms of identification. The sender's identification (i.e. name, e-mail address or some other forms of identification) will be saved as part of the message, preferably in the form of a hyperlink. If more than one electronic message is received by the apparatus 100 with the same recipient's

name, the next message will have a running number appended to the file name and then subsequent messages are incremented accordingly.

To select which of the saved messages or documents to print, the system control unit 400 uses the user identifier 101 obtained from the card reader 600. After locating the documents associated with the user identifier 101 (= recipient identification), the system control unit 400 then selects the document and sends the document to the printing and scanning unit 500 via output 104. If there are more than one document associated with the user identifier 101, the system control unit 400 will select and send the document to the printing and scanning unit 500 one at a time. Figure 2 shows a detailed schematic of the printing and scanning unit 500 which comprises a printing device 502 and a scanning device 504 connected to the printing device 502 as an integrated unit. The printing device 502 has a conventional printing drum and roller assembly 506 which receives a sheet of paper 508 and which prints out the electronic message on the sheet of paper 508. The printing drum used herein is similar to that used in a normal laser printer. As the document is being printed, the printed portion is guided via guides 524 to the scanning device 504 which automatically captures an image of the printed document through a support glass plate 510. The scanning device 504 also transmits the scanned images via output 106 to the system control unit 400. The scanning process continues until the paper document 508 outputs through a pair of guide rollers 512 and into a collection tray 514.

If the electronic message has more than one page (i.e. having the same file name), the printing and scanning unit 500 repeats the printing and scanning process until all the pages associated with the same filename has been printed and scanned.

The system control unit 400 receives a copy of the captured or scanned image from the output 106 of the scanning device 504 and appends the scanned image to the original message. The system control unit 400 next activates the hyperlink (which is the identification of the sender of the original message) and composes a return message including the original message and the captured image of the printed message for transmission back to the sender. The message is routed through the port 200 and sent via normal means through the database server which may be online. In this way, the recipient confirms receipt of the original message and after which the original messages and captured image may be removed or deleted from the unit's memory.

Since the scanning is performed after the electronic message is printed, the captured image corresponds to what would appear on the hard copy document collected on the collection tray 514. Thus, the scanned document is an accurate representation of the hard copy received by the recipient. In this way, the recipient confirms receipt to the sender with greater ease and the sender can confirm exactly what the recipient has received. Alternatively, the image may not be sent back to the sender but transmitted to a further recipient. The captured image is used in place of the original received electronic message

since the image is an accurate representation of what has been received by the recipient.

The apparatus 100 may have other secondary functions to track or manipulate the printing and scanning process. For example, the system control unit 400 may insert a watermark on the printed page which can be performed during the printing process or after the scanning process. Alternatively, a reference number or some other words may be inserted on every page that is printed. The reference number may be a running number such that each page bears a different reference number. Instead of having a different reference number for each page, alternatively, the pages of the same document (i.e. having the same file name) will have the same reference number and only different documents have different reference numbers. Each reference number may be a controlled series such that the number may include a prefix to associate the reference number to a particular company.

To insert the watermark or reference number, a software application may be provided in the computer system of the system control unit 400 and which controls and provides the necessary information to the printing device 502. Such a software application will not be elaborated here since this is well known in the art. A user may designate a specific area on the paper 508 to show the watermark or the reference number. When the printing device 502 receives the information from the system control unit 400, the printing device 502 adds the watermark or reference number during printing of the message onto the paper 508.

The watermark or inserted words/numbers serve as an indication that the recipient is in receipt of those pages that has the inserted text. This is analogous to the case when the recipient is requested to make a copy of the received hard copy document, initialise on each copy by hand or company stamp, before returning the initialised copy to the sender as confirmation of receipt.

In addition, the system control unit 400 records information relating to the printed quantity, sender and recipient identification, time and date of the print/scan for tracking purposes. All this information may be saved in a single file and the user may access the file through the computer system in the system control unit 400. However, for security purposes, only such information is available for access by the user and not the actual content of the electronic messages.

The apparatus 100 is described in the above embodiment as automatically selecting which documents to print based on the user identifier. Alternatively, the selection may be performed by a user using a graphical interface such as a software application that runs alongside the user's electronic mailbox.

The described embodiment should not be construed as limitative. For example, the ID input device 600 may not be a card reader. Instead, the input device may be a computer keyboard which is connected to the apparatus 100 for keying in the user identifier 101. Instead of using the user identifier 101 to select the

documents to process (print/scan), the selection can be based on other identifiers for example, the sender's identification. This can be input via the keyboard.

The computer system of the system control unit 400 may be any conventional PC which includes a display monitor and keyboard or other computer peripherals for the user to access the required information or interact with the apparatus 100 as mentioned earlier.

It is also envisaged that the apparatus 100 may be connected to a dedicated private communications line such as for use between financial institutions. Thus the sending and receiving party is fixed and thus there is no need for a user identifier and the apparatus 100 can then be used to confirm receipt of all electronic documents communicated between both parties.

The system control unit 400 may also track received electronic messages that are not retrieved for printing and scanning by the recipient. The control unit 400 tracks the receipt date and if the message is not printed within a predetermined time, the control unit 400 may reject the received message by sending a non-receipt message back to the sender.

In addition, the user identifier may be more than a name or e-mail address. A unique PIN number may be associated with each user identifier and in addition to inputting the user identifier to the apparatus 100, the user is required to input the PIN number as well. This acts to further enhance the security of the system.

In addition, apparatus 100 may be located at different locations but connected to a central system such as a central database server so that a user can use any of the apparatus for retrieving, printing and confirming receipt of his electronic messages by inputting his user identifier and PIN. The central server may send all the electronic messages to a specific address, such as an e-mail address, as directed by the user. The user can then check for any electronic messages at any apparatus 100 by entering his identifier and PIN and he may also search for selected messages from the central server for printing and scanning.

Having now fully described the invention, it should be apparent to one of ordinary skill in the art that many modifications can be made hereto without departing from the scope as claimed.

**CLAIMS**

1. Apparatus for processing an electronic message comprising a printing device arranged to print the electronic message; and a scanning device connected to the printing device and arranged to automatically scan the printed electronic message to capture an image thereof.
2. Apparatus according to claim 1, further comprising means to receive the electronic message from a sender.
3. Apparatus according to claim 2, further comprising means to send the image or a copy thereof to the sender.
4. Apparatus according to claim 1 or claim 2, further comprising means to transmit the image or a copy thereof to a recipient.
5. Apparatus according to any one of the preceding claims, further comprising means to create a watermark on the printed electronic message or image.
6. Apparatus according to claim 1 or 2, further comprising means to insert a reference number on the printed electronic message or image.

7. Apparatus according to any one of the preceding claims, further comprising means to insert date and/or time stamp on the printed electronic message or image.
8. Apparatus according to any one of the preceding claims, wherein the electronic message includes an attached electronic document and the printing device prints the attached document for scanning by the scanning device to capture an image of the document.
9. Apparatus according to any one of the preceding claims, further comprising means for storing a plurality of electronic messages.
10. Apparatus according to claim 9, wherein the electronic message is associated with a user identifier.
11. Apparatus according to claim 10, further comprising means for inputting the associated user identifier to select which message from the plurality of messages to process.
12. Apparatus according to claim 11, wherein the input means is a card reader and the user identifier is stored in a magnetic card.
13. Apparatus according to claim 11, wherein the input means is a computer keyboard.

14. Apparatus according to any one of claims 2 to 13, further including means to inform the sender of an electronic message if the message is not printed by the recipient within a time period.
15. Apparatus according to claim 10, further comprising means to verify the association of the electronic message with a user identifier and wherein the electronic message is printed if there is such an association.
16. Apparatus according to claim 10, further comprising means to verify the association of the electronic message with a user identifier and wherein the verification means rejects the electronic message if the electronic message is not associated therewith.
17. Apparatus according to any one of the preceding claims, wherein the printing device prints the electronic message automatically upon receipt.
18. A method of processing an electronic message comprising the steps of:  
printing the electronic message; and  
automatically scanning the printed electronic message to capture an image thereof.
19. A method of confirming receipt of an electronic message received from a sender, the method comprising the steps of:  
printing the electronic message;

automatically scanning the printed electronic message to capture an image thereof; and  
sending the captured image or a copy thereof to the sender.