(54) Title: METHOD AND APPARATUS FOR EFFECTING QUICK DISCONNECT OF AN ATM/POS

(57) Abstract: A system for effecting an electronic transaction. The system includes an electronic device for use by a customer to initiate the electronic transaction, a host computer for managing the transaction and generating a termination message signifying completion of the transaction, and network connected to the electronic device to establish a connection between the electronic device and the host. The system is operable to terminate the connection after the termination message is transmitted to the electronic device and before a confirmation signal is transmitted from the electronic device. In one aspect of the invention, the system includes a modem connected between the electronic device and the network. The modem is operable to receive the termination message and to transmit an acknowledgement message back to the network prior to the termination of the connection.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
METHOD AND APPARATUS FOR EFFECTING QUICK DISCONNECT OF AN ATM/POS

RELATED APPLICATIONS

This application claims priority to provisional application serial no. 60/207,679 filed on May 26, 2000.

BACKGROUND OF THE INVENTION

The invention relates to a system for effecting electronic transactions, and particularly to a method and apparatus for controlling the connection between an automated teller machine (ATM) or point of sale machine (POS) and a financial services network.

Typically, the system supporting the operation of an ATM or POS includes the ATM/POS machine including a modem, a network that allows dial-up connection of the ATM/POS through the modem, and a host connected to the network. The network is typically a public phone network, a cable network, a local area network (LAN), etc. In some systems, the connection between the modem and the network is a leased line which is effectively always open for communication between the ATM/POS and the host. In other situations, the modem “dials up” the connection to the network each time that a user initiates action at the ATM/POS. Charges for the dial-up connection are based upon the amount of time that the connection remains open, and the charges are usually paid by the financial institution that owns the ATM/POS.

In a typical transaction, the user initiates a financial request from the ATM/POS and the modem initiates dialing of a connection into the network. The network typically responds with confirmation that a connection has been established and the financial request proceeds from the ATM/POS modem to the host which processes the financial request. At some point, the host provides a response to the financial request and the ATM or POS initiates a “ready 9” or “ready B” confirmation message. Upon receiving and interpreting the confirmation message from the ATM/POS, the host then proceeds to authorize the termination of the dial-up connection.
SUMMARY OF THE INVENTION

Until recently, the operators of the various networks charged based on relatively large time increments. For example, public phone companies would typically charge based on one minute increments. Under this scheme, the cost of a five second connection would be identical to the cost of a sixty second connection. Both the five second connection and the sixty second connection would be billed as a one minute connection.

Recently, network operators have begun charging based on smaller time increments. It is now common for phone companies to charge based on ten second increments, six second increments, and even one second increments. In light of the smaller billing increments being used today, the invention recognizes that the additional time spent waiting for the ATM/POS to generate and transmit the “ready 9” or “ready B” confirmation message adds a significant amount of cost to each transaction conducted over a “dial-up” connection. The additional time is estimated to be about ten to fifteen seconds per ordinary transaction. Given the number of transactions initiated at each ATM/POS machine, the additional cost to the ATM/POS owner resulting from waiting for the “ready 9” or “ready B” confirmation message with each ATM/POS transaction is significant.

Accordingly, the invention provides a system for effecting transactions from an electronic device such as an ATM/POS wherein the connection between the ATM/POS modem and the network is terminated when the financial response or various other forms of termination messages from the host are generated and sent to the ATM/POS. Thus, there is no need to wait for the “ready 9” or “ready B” confirmation message from the ATM/POS. In one preferred embodiment, the ATM/POS machine still generates the “ready 9” or “ready B” confirmation message, but a specially configured modem connected to the ATM/POS will not transmit the confirmation message to the network when the previous message from the host had a header with a session management byte indicating that the connection should be terminated.

In another preferred embodiment, the ATM/POS is configured so that no “ready 9” or “ready B” confirmation message is generated or sent after completion of the financial transaction. The connection is simply terminated when the ATM/POS sends a protocol acknowledgement to the network acknowledging receipt of a termination message from the host. The termination message will have had a header with a session management byte indicating that the connection should be terminated. This embodiment operates with a standard pass-through modem that need not be specially configured.
The invention also includes a method of effecting an electronic transaction. The method includes establishing a dial-up connection between an electronic device used by a customer and a host that manages the transaction. The method also includes generating a termination message at the host and immediately terminating the dial-up connection in response to a successful transmission of the termination message to the electronic device. In one aspect of the invention, the dial-up connection occurs over a network and the method further includes using a modem connected between the electronic device and the network to receive the termination message and to send an acknowledgement message back to the network prior to terminating the connection.

The invention also includes a system for effecting an electronic transaction between an electronic device used by a customer to initiate the transaction and a host computer that manages the transaction and generates a termination message confirming completion of the transaction. The system includes host computer software that attaches a network routing header to the termination message. The network routing header has at least one byte of data operable to initiate termination of the connection.

**BRIEF DESCRIPTION OF THE DRAWING**

Figs. 1 and 2 can be assembled to illustrate a flow chart for an electronic financial transaction system and method embodying the invention.

Figs. 3 and 4 can be assembled to illustrate a flow chart for another embodiment of an electronic financial transaction system and method embodying the invention.

Before one embodiment of the invention is explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. The use of “including” and “comprising” and variations thereof herein is meant to encompass the items listed thereafter and equivalents thereof as well as additional items.
DESCRIPTION OF THE PREFERRED EMBODIMENTS

Shown in Figs. 1 and 2 is a system and method for effecting electronic transactions embodying the invention. The electronic transactions can include financial transactions, status and administrative transactions, information loading or programming transactions, or any other general commercial transactions, including purchasing items such as stamps and the like. The system 10 includes an ATM (or POS) 14, a modem 18 connected to the ATM 14, a financial services network 22 connected to the modem 18 through a dial-up connection, and a host 26 connected to the network 22. The modem 18 may be internal to the ATM 14 or directly connected to the ATM 14 as a stand-alone unit. Moreover, each of the ATM 14, modem 18, network 22, and host 26 include both hardware and software components designed to effect their respective functions.

As shown in Fig. 1, the ATM 14 generates a financial request message 30 based on the ATM user’s input request, and sends the financial request message to the modem 18, thereby informing the modem of the pending financial request 30. The financial request message 30 is commonly known in the industry as a “function 11” message. The modem 18 initiates dialing 38 of the network. That is, the modem 18 dials the telephone number for the network 22 to establish the dial-up connection with the network 22. Typically, such a dial-up connection is billed to the owner of the ATM 14 on a time basis. Stated differently, the charge for each dial-up connection depends upon the amount of the time that the connection remains open. When the network 22 answers or connects 42 so that the connection between the modem 18 and the network 22 has been successfully established, the network 22 sends a protocol enquiry 46 back to the modem 18 which initiates a transmission of the financial request 30 through the network 22 to the host 26. The network 22 sends a protocol acknowledgement 54 back to the modem 18 indicating that the financial request 30 has been successfully received by the network 22. The host 26 then processes the request 58.

If there is a surcharge ascribed to the transaction, such as may exist where the user of the ATM 14 is not a customer of the financial institution that owns the ATM 14, a surcharge notification message 62 is sent from the host 26 back to the ATM 14. The surcharge notification message 62 is in the form of a “function 4” message transmitted through the network 22 and the modem 18 to the ATM 14. The surcharge notification “function 4” message 62 includes a network routing header 64 having a session management byte that is set to “Continuation 00.” The session management byte, which is
preferably the first byte of the header 64, is used to indicate whether the session should be
continued or disconnected. By setting the session management byte of the header 64 to
"Continuation 00," the host 26 is instructing the network 22 to continue the connection
with the modem 18. The network 22 is programmed to analyze and interpret the session
management byte as will be described in more detail below.

The modem 18 sends a protocol acknowledgement 66 to the network 22
acknowledging receipt of the surcharge notification "function 4" message 62, and the
network 22 responds with a protocol enquiry 70 back to the modem 18. At this point, the
ATM 14 generates a "ready 9" or "ready B" message 74 and sends the message 74 back to
the host 26. The "ready 9" or "ready B" message 74 indicates that the ATM 14 received
the surcharge notification "function 4" message 62 and that the surcharge notification
"function 4" message 62 was appropriate at this point in the application. Once the "ready
9" or "ready B" message 74 is received by the network 22, the network 22 sends a
protocol acknowledgement 78 to the modem 18.

Upon receiving the "ready 9" or "ready B" message 74, the host 26 sends a "Host
G" message 82 to the network 22. The "Host G" message 82 also includes a network
routing header 86 having a session management byte that is set to "Continuation 00."
Again, by setting the session management byte of the header 86 to "Continuation 00," the
host 26 is instructing the network 22 to continue the connection with the modem 18.

When the user accepts the surcharge, the ATM 14 generates a "function 11" message 90
that is sent through the modem 18 and network 22 to the host 26. The network 22 sends a
protocol acknowledgement message 92 to the modem 18 confirming receipt of the
"function 11" message at the network 22. The host 26 then generates a financial response
in the form of a "function 4" message 94. When the financial response "function 4"
message 94 is complete, it is sent through the network 22 and modem 18 to the ATM 14.
The financial response "function 4" message 94 instructs the ATM 14 on how to proceed
(i.e., how much cash to dispense, etc.). In the illustrated embodiment, the financial
response "function 4" message 94 also acts as a termination message signifying the
completion of the transaction, as will be described in detail below. Denial of a surcharge
by the user will be also discussed below.

The surcharge routine described above is known as a dual-pass surcharge routine.
The invention can also be practiced with a single-pass surcharge routine. In a single-pass
surcharge routine, the surcharge notification and acceptance occur at the ATM 14 without
any communication between the ATM 14 and the host 26. All of the surcharge
information is loaded directly on the ATM 14. The requisite surcharge, if any, is established and conveyed to the user prior to connecting to the host 26. If a single-pass surcharge routine were used, the financial response “function 4” message 94 would be sent right after processing the request 58.

The financial response “function 4” message 94 includes a network routing header 102 having a session management byte that is set to “Disconnect 90.” As is the case with the headers 64 and 86, the session management byte of the header 102 is used to indicate whether the session should be continued or disconnected. By setting the session management byte to “Disconnect 90,” the host 26 is instructing the network 22 that the dial-up connection should be terminated. The “Disconnect 90” setting is given to the session management byte of the header 102 when the transaction has proceeded normally and successfully, i.e., the PIN has been entered correctly, and the customer account has sufficient funds to satisfy the transaction request. It should be noted that the “Disconnect 90” setting can also be given to various other types of termination messages generated at the host 26, and is not limited to use with the financial response “function 4” message 94.

The network 22 is configured with analysis and interpretation logic 104 that analyzes and interprets the session control byte of the headers 64, 86, and 102. The analysis and interpretation logic 104 is shown in three separate locations 104a (when the network 22 receives the surcharge notification “function 4” message 62), 104b (when the network 22 receives the “Host G” message 82), and 104c (when the network 22 receives the financial response “function 4” message 94, and actually occurs each time the network 22 receives a message having a network routing header.

The network 22 removes the network routing headers from the various host messages and replaces them with new headers (not shown) to be used by the modem 18. When the session control byte is set to “Continuation 00,” the network 22 understands that the dial-up session is continuing. A new header indicating the continuing session status is attached and the message is sent on to the modem 18 (e.g., 104a and 104b). When the network 22 receives a session control byte that is set to “Disconnect 90,” the network 22 is alerted of the upcoming session termination and sets a control byte in the newly attached header to disconnect 106 (e.g., 104c). The network 22 then sends the message 94 on to the ATM 14 via the modem 18 and waits for a protocol acknowledgement 110 from the modem 18.

Referring now to Fig. 2, upon receiving the protocol acknowledgement 110, the network 22 sends a protocol end-of-transmission (EOT) message 112 to the modem 18 to
indicate that the dial-up session should be terminated. When the EOT message 112 is received by the modem 18, the modem 18 will disconnect from the network 22 by going “on-hook” at 114. The term “on-hook” is known in the art to mean that there is no network connection or that the network connection has been terminated. At this point, the network connection is terminated and no more connection fees are being incurred. If the modem 18 does not go on-hook after a set period of time, the network 22 will force the modem 18 to disconnect.

Once the connection is terminated, a disconnect status message 118, indicating the disposition of the dial-up session, is sent from the network 22 to the host 26. Specifically, the disconnect status message 118 includes a disconnect status byte telling the host 26 that the connection has been terminated. Additionally, the disconnect status byte tells the host 26 whether the protocol acknowledgement 110 was received by the network 22.

While it is conceivable that the network 22 could send the EOT 112 message immediately after sending the financial response “function 4” message 94 to the modem 18, it is preferred that the network 22 waits for the protocol acknowledgement 110 from the modem 18 before sending the EOT message 112. Waiting for the protocol acknowledgement 110 ensures that the financial response “function 4” message 94 was properly received by the modem 18. If the financial response “function 4” message 94 was not properly received by the modem 18, the session disconnect status message 118 alerts the host 26 so that the host 26 can take the appropriate action to reverse the transaction. In an alternative embodiment, the network 22 could terminate the dial-up connection by going on-hook after sending the financial response “function 4” message 94 to the modem 18. Preferably, the network 22 would still wait to receive the protocol acknowledgement 110 before terminating the connection. Of course, other methods for terminating the dial-up connection, including using the modem to effect the termination, are also contemplated.

After sending the protocol acknowledgement 110 to the network 22, and the subsequent termination of the dial-up connection 114, the modem 18 sends the financial response “function 4” message 94 to the ATM 14. After receiving the financial response “function 4” message 94, the ATM 14 generates a “ready 9” or “ready B” message 122 acknowledging that cash has been dispensed in response to the financial response “function 4” message 94. In prior art systems, this “ready 9” or “ready B” message also acts as a confirmation message to the host that the connection between the network and the ATM can be terminated. However, unlike the prior art systems that require the “ready 9”
or "ready B" confirmation message to be received by the host prior to termination of the connection, the system 10 does not require the "ready 9" or "ready B" message 122 to be received by the host 26 prior to termination of the connection. Rather, as described above, the dial-up connection for the system 10 has already been terminated after confirmation that the financial response "function 4" message 94 was received by the modem 18.

The modem 18 is specially configured or programmed with analysis and interpretation logic 126 that analyzes and interprets the disconnect status of incoming messages from the host 26 and determines whether a subsequent "ready 9" or "ready B" message must be transmitted to the network 22. In other words, the analysis and interpretation logic 126 determines whether the transaction is ongoing, was successfully completed, or encountered a problem (i.e., the dial-up connection was improperly terminated during the transaction). The analysis and interpretation logic 126 is shown in two separate locations 126a (when the modem 18 receives the surcharge notification "function 4" message 62) and 126b (when the modem 18 receives the financial response "function 4" message 94), and actually occurs each time the modem 18 receives a message from the host 26.

Specifically, the analysis and interpretation logic 126 asks whether a control byte on the previous message from the host 26 was set to disconnect by the network 22. With respect to block 126a, the analysis and interpretation logic 126 determines that no control byte was set to disconnect on the surcharge notification "function 4" message 62. This indicates that the transaction is ongoing. As a result, the surcharge notification received "ready 9" or "ready B" message 74 is sent to the network 22 via the established dial-up session as shown. If the dial-up session were inadvertently terminated due to the loss of connection between the modem 18 and the network 22, the modem 18 would attempt to re-establish the dial-up connection and transmit the surcharge notification received "ready 9" or "ready B" message 74 to the network 22. The transaction would pick up where it left off prior to the inadvertent disconnection.

With respect to block 126b, the analysis and interpretation logic 126 determines that the control byte in the header of the financial response "function 4" message 94 was set to disconnect 106. This indicates that the transaction has been successfully completed and that transmission of the financial response received "ready 9" or "ready B" message 122 is not necessary. The modem 18 simply does not transmit the financial response received "ready 9" or "ready B" message 122 to the network 22.
If the user responds to the surcharge notification message 62 with a denial, the ATM 14 generates a surcharge denial “function 11” message (not shown) instead of the surcharge acceptance “function 11” message 90. The surcharge denial “function 11” message is sent to the host 26 in the same manner as described above with respect to the surcharge acceptance “function 11” message 90, however, instead of responding with the financial response “function 4” message 94, the host 26 responds with a surcharge denied “function 4” message (not shown). The surcharge denied “function 4” message also confirms that the transaction is complete, and includes a network routing header that is set to “Disconnect 90.” At this point, the system 10 operates in the same manner described above to terminate the connection and interpret the disconnect status.

The system 10 described above requires a modem 18 that is capable of carrying out the analysis and interpretation logic 126, in addition to the standard protocol communication operations. The modem 18 must be pre-programmed (with software) to perform the analysis and interpretation logic 126 described above. Additionally, the network 22 must be configured with the analysis and interpretation logic 104 to read the session management byte of the network routing headers, and when the session management byte is set to “Disconnect 90,” to set a control byte to disconnect 106. The network 22 must also be configured to immediately cause the termination of the dial-up connection upon receiving the protocol acknowledgment 110 from the modem 18.

Finally, the host 26 must be programmed to set the session management byte of the network routing headers to either “Continuation 00” or “Disconnect 90” under the appropriate circumstances. The host 26 must also be programmed to interpret the disconnect status message 118 and either record or reverse the transaction with the user’s financial institution. Furthermore, the host 26 must be programmed not to wait for the “ready 9” or “ready B” message 122 from the ATM 14.

The modem communication protocol used in the system 10 is known in the industry as dial-up spoofing or modem spoofing. In a modem spoofing system, the modem 18 initiates normal polling with the ATM 14, thereby spoofing a leased line protocol. The ATM operates as if it were connected directly to the host via a dedicated line. The network and modem software and hardware configurations for the operation of the system 10 are available from PSINet Transaction Solutions of Ashburn, VA. The host software necessary for the operation of the system 10 are available from eFunds Corporation of Phoenix, AZ.
Figures 3 and 4 illustrate a flow chart for a system and method that form another embodiment of the invention. The system 200 includes an ATM (or POS) 214 having a standard pass-through modem (not shown), a financial services network 222 connected to the ATM 214 through a dial-up connection, and a host 226 connected to the network 222. The system 200 is similar to the system 10, however, the system 200 does not require a specially configured or programmed modem, but rather is operable with a standard pass-through modem. There is no modem spoofing in the system 200, and therefore no polling between the ATM 214 and its modem. In the following description, functions will be described as being carried out by the ATM 214 with the understanding that the pass-through modem is operating in the known manner.

In the system 200, the ATM 214 initiates dialing 230 to establish the dial-up connection with the network 222. When the connection has been successfully established, i.e., the network 222 answers/connects 234 with the ATM 214, the network 222 sends a protocol enquiry 238 back to the ATM 214. After the connection is established and the protocol enquiry 238 is received, the ATM 214 generates a financial request "function 11" message 242 based on the ATM user’s input request, and sends the financial request "function 11" message 242 through the network 222 to the host 226. The network 222 sends a protocol acknowledgement 246 back to the ATM 214 indicating that the financial request 242 has been successfully received by the network 222. The host 226 then processes the request 250.

If applicable, the system 200 proceeds with the surcharge routine. A surcharge notification "function 4" message 254 is sent from the host 226 back to the ATM 214. The surcharge notification "function 4" message 254 includes a network routing header 258 having a session management byte that is set to "Continuation 00." The session management byte of the header 258 is used to indicate whether the session should be continued or disconnected as described above with respect to the system 10. By setting the session management byte of the header 258 to "Continuation 00," the host 226 is instructing the network 222 to continue the connection with the ATM 214. The ATM 214 sends a protocol acknowledgement 262 to the network 222 acknowledging receipt of the surcharge notification "function 4" message 254, and the network 222 responds with a protocol enquiry 266 back to the ATM 214. At this point, the ATM 214 generates a "ready 9" or "ready B" message 270 and sends the message 270 back to the host 226. The "ready 9" or "ready B" message 270 indicates that the ATM 214 received the surcharge notification "function 4" message 254 and that the surcharge notification "function 4"
message 254 was appropriate at this point in the application. Once the “ready 9” or “ready B” message 270 is received by the network 222, the network 222 sends a protocol acknowledgement 274 to the ATM 214.

Upon receiving the “ready 9” or “ready B” message 270, the host 226 sends a “Host G” message 278 to the ATM 214. The “Host G” message 278 also includes a network routing header 282 having a session management byte that is set to “Continuation 00.” Again, by setting the session management byte of the header 282 to “Continuation 00,” the host 226 is instructing the network 222 to continue the connection with the ATM 14. Referring now to Fig. 4, when the user accepts the surcharge, the ATM 214 generates a surcharge acceptance “function 11” message 286 that is sent through the network 222 to the host 226. The network 222 sends a protocol acknowledgement message 288 to the ATM 214 confirming receipt of the “function 11” message at the network 222. The host 226 then generates a financial response in the form of a “function 4” message 290. When the financial response “function 4” message 290 is complete, it is sent through the network 222 to the ATM 214. The financial response “function 4” message 290 instructs the ATM 214 on how to proceed (i.e., how much cash to dispense, etc.). The financial response “function 4” message 290 also acts as a termination message signifying the completion of the transaction.

The financial response “function 4” message 290 includes a network routing header 294 having a session management byte that is set to “Disconnect 90.” As is the case with the headers 258 and 282, the session management byte of the header 294 is used to indicate whether the session should be continued or disconnected. By setting the session management byte of the header 294 to “Disconnect 90,” the host 226 is instructing the network 222 that the dial-up session should be terminated. The “Disconnect 90” setting is given to the session management byte of the header 294 when the transaction has proceeded normally and successfully, i.e., the PIN has been entered correctly, and the customer account has sufficient funds to satisfy the transaction request. As mentioned above, the “Disconnect 90” setting can also be given to any other messages that signify the completion of the transaction.

The network 222 is configured with analysis and interpretation logic 298 that analyzes and interprets the session control byte of the headers 258, 282, and 294. The analysis and interpretation logic 298 is shown in three separate locations 298a (when the network 222 receives the surcharge notification “function 4” message 254), 298b (when the network 222 receives the “Host G” message 278), and 298c (when the network 222
receives the financial response “function 4” message 290), and actually occurs each time the network 222 receives a message having a network routing header.

In the system 200, the network 222 uses the network routing headers to determine the status of the dial-up session, but does not replace the network routing headers with new headers. When the session control byte is set to “Continuation 00,” the network determines that the session is ongoing and takes no action terminate the connection. The message is simply sent on to the ATM 214 (e.g., 298a and 298b). When the network 222 receives a session control byte that is set to “Disconnect 90,” the network 222 is alerted of the upcoming connection termination and initiates the quick disconnect feature of the present invention (e.g., 104c) by sending the message 290 on to the ATM 214 and waiting for a protocol acknowledgement 302 from the ATM 214.

Upon receiving the protocol acknowledgement 302, the network 222 sends a protocol end-of-transmission (EOT) message 306 to the ATM 214 to indicate that the dial-up session should be terminated. When the EOT message 306 is received by the ATM 214, the ATM 214 will disconnect from the network 222 by going on-hook at 308. At this point, the network connection is terminated and no more connection fees are being incurred. If the ATM 214 does not go on-hook after a set period of time, the network 222 will force the ATM 214 to disconnect.

Once the connection is terminated, a disconnect status message 310, indicating the disposition of the dial-up session, is sent from the network 222 to the host 226. Specifically, the disconnect status message 310 includes a disconnect status byte telling the host 226 that the connection has been terminated. Additionally, the disconnect status byte tells the host 226 whether the protocol acknowledgement 302 was received by the network 22. If the financial response “function 4” message 290 was not properly received by the ATM 214, the session disconnect status message 310 alerts the host 226 so that the host 226 can take the appropriate action to reverse the transaction.

While it is conceivable that the network 222 could send the EOT message 306 immediately after sending the financial response “function 4” message 290 to the ATM 214, it is preferred that the network 222 waits for the protocol acknowledgement 302 from the ATM 214 before sending the EOT message 306. Waiting for the protocol acknowledgement 302 ensures that the financial response “function 4” message 290 was properly received by the ATM 214. In an alternative embodiment, the network 222 could terminate the dial-up connection by going on-hook after sending the financial response.
“function 4” message 290 to the ATM 214. Preferably, the network 222 would still wait to receive the protocol acknowledgement 302 before terminating the connection.

Unlike the system 10, the system 200 does not include any action after the network connection is terminated and reported to the host. The ATM 214 is configured so that no “ready 9” or “ready B” message is generated in response to the financial response “function 4” message 290. The system 200 is therefore an improvement over prior art systems which require that a confirmation message, in the form of a “ready 9” or “ready B” message, is both generated by the ATM and received by the host prior to the termination of the dial-up connection. The system 200 also achieves quick disconnect without requiring the specially programmed modem 18 to analyze and interpret the disconnect status as described with respect to blocks 126a and 126b of Figs. 1 and 2.

If the user responds to the surcharge notification message 254 with a denial, the ATM 214 generates a surcharge denial “function 11” message (not shown) instead of the surcharge acceptance “function 11” message 286. The surcharge denial “function 11” message is sent to the host 226 in the same manner as described above with respect to the surcharge acceptance “function 11” message 286, however, instead of responding with the financial response “function 4” message 290, the host 226 responds with a surcharge denied “function 4” message (not shown). The surcharge denied “function 4” message confirms that the transaction is complete, and includes a network routing header that is set to “Disconnect 90.” At this point, the system 200 operates in the same manner described above to terminate the connection. Similar to the system 10, a single-pass surcharge routine could be used.

While the terminology utilized in the above description is well-known in this industry, it should be noted that other terminology could be substituted in both the description and the claims without changing the nature or scope of the present invention.

Other features and advantages of the invention are set forth in the following claims.
1. A system for effecting an electronic transaction, the system comprising: an electronic device for use by a customer to initiate the electronic transaction; a host computer for managing the transaction and generating a termination message signifying completion of the transaction; and a network connected to the electronic device to establish a connection between the electronic device and the host, wherein the system terminates the connection after the termination message is transmitted to the electronic device and before a confirmation signal is transmitted from the electronic device.

2. The system of claim 1, further including a modem connected between the electronic device and the network, the modem being operable to receive the termination message prior to the termination of the connection.

3. The system of claim 2, wherein the modem transmits an acknowledgement message to the network after the modem receives the termination message, and the connection is terminated upon receipt of the acknowledgement message.

4. The system of claim 2, wherein the confirmation signal is transmitted to the modem after the connection is terminated.

5. The system of claim 4, wherein the modem does not attempt to transmit the confirmation signal to the host computer when: a previous message from the host computer was the termination message having a header with a session management byte indicating that the connection should be terminated.

6. The system of claim 1, wherein the confirmation signal generated by the electronic device is a "ready 9" signal.

7. The system of claim 1, wherein the confirmation signal generated by the electronic device is a "ready B" signal.
8. The system of claim 1, wherein the termination message generated by the host computer is a "function 4" message.

9. The system of claim 1, wherein the termination message includes a network routing header, and at least one byte of data in the network routing header instructs the network to terminate the connection.

10. The system of claim 9, wherein the at least one byte of data is the first byte of data in the network routing header.

11. The system of claim 1, wherein the electronic device is operable to receive the termination message and to transmit an acknowledgement message back to the network prior to the termination of the connection.

12. The system of claim 11, wherein the connection is terminated upon receipt of the acknowledgement message.

13. The system of claim 1, wherein the electronic device does not transmit a confirmation signal to the host computer after receiving the termination message.

14. The system of claim 1, wherein the electronic device does not generate a confirmation signal after receiving the termination message.

15. The system of claim 1, wherein the electronic device is an ATM.

16. The system of claim 1, wherein the electronic device is a POS.
17. A system for effecting an electronic transaction, the system comprising:
   an electronic device for use by a customer to initiate the electronic
   transaction;
   a host computer for managing the transaction and generating a termination
   message signifying completion of the transaction, the termination message including a
   network routing header;
   a network connected to the electronic device to establish a connection
   between the electronic device and the host; and
   a modem connected between the electronic device and the network;
   wherein the network routing header includes at least one byte of data that
   initiates termination of the connection; and
   wherein the system terminates the connection after the termination message
   is transmitted to the electronic device through the network and the modem, and before a
   confirmation signal is transmitted from the electronic device.

18. The system of claim 17, wherein the modem transmits an acknowledgement
   message to the network after the modem receives the termination message, and the
   connection is terminated upon receipt of the acknowledgement message.

19. The system of claim 17, wherein the confirmation signal is transmitted to
   the modem after the connection is terminated, but the confirmation signal is not
   transmitted to the host computer when:
   a previous message from the host computer was the termination message
   having a header with a session management byte indicating that the connection should be
   terminated.

20. The system of claim 17, wherein the electronic device does not transmit a
    confirmation signal to the host computer after receiving the termination message.

21. The system of claim 17, wherein the electronic device does not generate a
    confirmation signal after receiving the termination message.

22. The system of claim 17, wherein the electronic device is an ATM.
23. The system of claim 17, wherein the electronic device is a POS.
24. A method of effecting an electronic transaction, the method comprising:
establishing a dial-up connection between an electronic device used by a customer and a host that manages the transaction;
generating a termination message at the host; and
terminating the dial-up connection in response to a successful transmission of the termination message to the electronic device.

25. The method of claim 24, wherein the dial-up connection occurs over a network and wherein the method further includes:
using a modem connected between the electronic device and the network to receive the termination message and to transmit an acknowledgement message to the network prior to terminating the connection.

26. The method of claim 25, further including:
terminating the connection upon receipt of the acknowledgement message at the network.

27. The method of claim 25, further including:
transmitting a confirmation signal from the electronic device to the modem after the connection is terminated.

28. The method of claim 27, wherein the modem does not attempt to transmit the confirmation signal to the host computer when:
a previous message from the host computer was the termination message having a header with a session management byte indicating that the connection should be terminated.

29. The method of claim 24, further including:
attaching a network routing header to the termination message, at least one byte of data in the network routing header being operable to initiate the termination of the connection.
30. A method of effecting an electronic transaction, the method comprising:
establishing a dial-up connection over a network between an electronic
device used by a customer, and a host that manages the transaction;
generating a termination message at the host;
attaching a network routing header to the termination message, at least one
byte of data in the network routing header being operable to initiate the termination of the
connection;
using a modem connected between the electronic device and the network to
receive the termination message and to transmit an acknowledgement message to the
network; and
terminating the connection upon receipt of the acknowledgement message
at the network.

31. The method of claim 30, further including:
transmitting a confirmation signal from the electronic device to the modem
after the connection is terminated.

32. The method of claim 31, wherein the modem does not attempt to transmit
the confirmation signal to the host computer when:
a previous message from the host computer was the termination message
having a header with a session management byte indicating that the connection should be
terminated.
33. A system for effecting an electronic transaction between an electronic device used by a customer to initiate the transaction and a host computer that manages the transaction and generates a termination message signifying completion of the transaction, the system comprising:

host computer software that attaches a network routing header to the termination message, the network routing header having at least one byte of data operable to initiate termination of the connection.