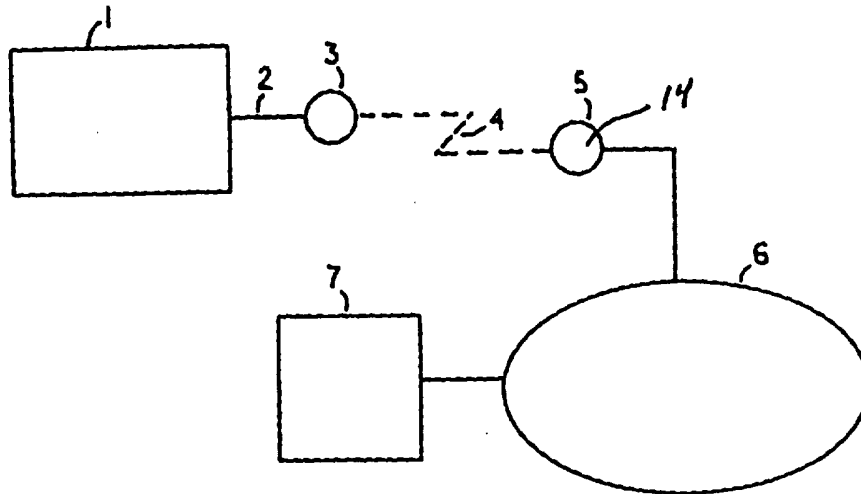




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<p>(21) International Application Number: PCT/US95/14286 (22) International Filing Date: 3 November 1995 (03.11.95) (30) Priority Data: 334,875 7 November 1994 (07.11.94) US (71) Applicant (for all designated States except US): CASH ON DEMAND, INC. [US/US]; 2 Crow Canyon Court #200, San Ramon, CA 94583 (US). (72) Inventor (for all designated States except US): AVERILL, Wayne; 430 Sycamore Valley Road West, Danville, CA 94526 (US). (72) Inventor; and (75) Inventor/Applicant (for US only): NAGELMANN, Frank [US/US]; 430 Sycamore Valley Road West, Danville, CA 94526 (US). (74) Agents: GUILLOT, Robert, O. et al.; Bronson, Bronson & McKinnon, Suite 600, Ten Almaden Boulevard, San Jose, CA 95113 (US).</p>		<p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, LS, MW, SD, SZ, UG).</p> <p>Published With international search report.</p>

(54) Title: METHOD AND SYSTEM FOR REMOTE TERMINAL DIAL-UP



(57) Abstract

A system for conducting banking transactions using a remote terminal (1) with access to an ATM host computer (7) through a remote terminal (1) which includes a communication protocol of an ATM machine, a host computer (7) for the ATM, and a non-continuous communications link (4) between the remote terminal (1) and the host computer (7), including a first emulator (3) on the remote terminal side of the non-continuous communications link (4), the first emulator (3) emulating to the remote terminal (1) a continuous communication link with the host computer (7); and a second emulator (14) on the host computer side of the non-continuous communication link (4), the second emulator (14) emulating to the host computer (7) a continuous communication link with the remote terminal (1).

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1 the ATMs of any of the banks on the network. However,
2 the customer is still generally forced to go to a bank.

3 Another partial solution has been the use of the
4 ATM card for point-of-sale (POS) transactions. POS
5 transactions can use either a credit card or a debit
6 card. In a routine POS transaction, a customer's credit
7 card is scanned at the merchant's location. The
8 information from the credit card and the amount of
9 credit sought is transmitted over a POS network to the
10 credit card issuer's central computer which verifies the
11 availability of credit and then performs a debit and
12 credit reconciliation by appropriate adjustment of the
13 customer's and merchant's accounts. In a POS
14 transaction using an ATM card, POS networks route the
15 POS transaction to the appropriate regional ATM network
16 to debit the ATM card holder's bank account and credit
17 the merchant's bank account. Instead of a credit card,
18 the ATM card merely acts as a debit card.

19

20

SUMMARY OF THE INVENTION

21 Most ATMs are connected by an internal bank network
22 routed to a central computer (a "host" or "host
23 computer") of a financial institution or a shared host
24 computer of a group of financial institutions. Host
25 computers are sometimes interconnected to form a host
26 network. ATMs are polled by their host at regular
27 intervals for data. If an ATM is not polled for a
28 certain period of time or the communication connection
29 is broken, the ATM shuts down and must be restarted by
30 commands from the host. The polling relationship
31 between ATMs and their host requires continuous
32 communications through a dedicated line. This makes
33 dial-up communications impossible.

34 Host networks are interconnected through regional,
35 national and international ATM networks such as Cirrus®
36 and Plus System® and regional networks such as Star
37 System®, Pulse®, Alert®, Honor®, NYCE®, MagicLine®,
38 Tyme®, Shazam® and Minibank® ("inter-host networks").
39 This permits an ATM card user of any host network (a

1 "client") to use, for a fee, all ATMs of all financial
2 institutions on the inter-host network if he is a client
3 of any one financial institution. To cross between host
4 networks, the host identifies the ATM card user as a
5 non-client and passes the transaction data on to an
6 inter-host network for routing to the host where the ATM
7 card user is a client. A standard host thus has two
8 functions; processing its client's ATM data or passing
9 its non-client's ATM data on to an inter-host network.

10 The present invention is the configuration of a
11 host emulator located proximate to an ATM and directly
12 connected thereto, separated by a dial-up telephone
13 connection from an ATM emulator located proximate to the
14 host and directly connected thereto. The increasing
15 affordability of computing power makes smart remote
16 terminals cost effective and the present invention
17 possible.

18 The host emulator maintains the on-line status of
19 the ATM at the ATM site. The ATM emulator maintains the
20 on-line status of the host. When a client inserts his
21 ATM card, the host emulator dials the ATM emulator at
22 the host site, thus creating a virtual dedicated circuit
23 linking the ATM to the host via the switched network.
24 The ATM is identified by the host, and maintains direct
25 communications with the ATM until the transaction is
26 completed. By this configuration, a polling
27 relationship between industry standard ATMs and the host
28 is emulated; however, the ATM can now use a dial-up
29 telephone line to connect with a host computer only when
30 needed to process a client's transaction.

31 In an augmented embodiment, the ATM emulator may
32 operate to either connect the ATM to an ATM network (as
33 discussed above), or it may directly connect the ATM to
34 a particular ATM card issuing financial institution,
35 specifically the financial institution encoded in the
36 user's ATM card. In the latter case, the ATM will
37 display the specific user transaction screens of the
38 particular financial institution, whereby the user views
39 instruction screens that the user is familiar with. In

1 this way, the user of any ATM receives screen
2 instructions as though from a dedicated ATM of the card
3 issuing financial institution.

4 Several objects and advantages of the present
5 invention are:

6 (a) The invention eliminates the cost of dedicated
7 lines for ATM data transactions.

8 (b) The invention permits installation of ATMs
9 without installation of dedicated lines, dedicated
10 networks or dedicated host computers.

11 (c) The invention permits greater competition to
12 provide ATM's service to more customers at more
13 locations through greater flexibility to share revenues
14 with merchants.

15 (d) The invention permits ATM service in more
16 marginal foot traffic locations.

17 (e) The ATM relies on the switched network, and
18 consequently has higher reliability since the ATM can
19 take advantage of back-up or alternate routing
20 algorithms typical of switched networks.

21 (f) The invention speeds installation time and
22 lowers installation cost.

23 (g) A user of any ATM can receive screen
24 instructions in the familiar format of the user's card
25 encoded financial institution.

26 Still further objects and advantages will become
27 apparent from a consideration of the ensuing description
28 and drawings.

29

30

IN THE DRAWING

31 **FIG. 1** is a block diagram illustrating the system
32 and method of the present invention in connection with
33 an ATM.

34 **FIG. 2** is a schematic of a minimal function network
35 access controller (MFNAC), a remote network end point

36 **FIG. 3** is a schematic of the communication's
37 traffic and connections in the ATM standby mode of the
38 present invention.

39 **FIG. 4** is a schematic of the communications traffic

1 and connections in the ATM processing mode of the
2 present invention.

3 **FIG. 5** is a schematic diagram of an augmented
4 system and method of the present invention for
5 connecting an ATM to one or more financial institutions
6 without utilizing an ATM EFT network.

7 **Reference Numerals in Drawings**

- 8 1. An industry standard automatic teller machine
9 (ATM) with standard 9600 baud modem.
- 10 2. A digital connector from the ATM to a minimum
11 function computer network access controller (MFNAC).
- 12 3. A minimum function computer network access
13 controller (MFNAC).
- 14 4. A dial-up telephone connection (a switched
15 network).
- 16 5. A network access controller (NAC) of a
17 commercial computer network exchange service with access
18 to ATM networks.
- 19 6. An ATM network.
- 20 7. A host computer to the ATM in communication to
21 the ATM network carrying the ATM's data.
- 22 8. A 9600 baud modem.
- 23 9. A 1200 baud modem.
- 24 10. A dial-up interface employing a SNA/SDLC (IBM®
25 System Network Architecture/Synchronous Data Link
26 Control) protocol.
- 27 11. External power supply module.
- 28 12. Internal lithium battery.
- 29 13. A host emulator at the MFNAC.
- 30 14. An ATM emulator at the NAC.
- 31 15. A financial institution.
- 32 16. A switch processor.

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DESCRIPTION OF THE PREFERRED EMBODIMENTS

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FIG. 1 shows a typical configuration of the
components of the present invention. An ATM 1
represents one of a number of commercially available
ATM's configured with a 9600 baud modem using a SNA/SDLC

1 (IBM® System Network Architecture/Synchronous Data Link
2 Control) protocol. A digital connector 2 represents an
3 RS 232 electrical interface employing a serial binary
4 data interchange between the ATM 1 and a minimum
5 function network access controller (MFNAC) 3, fully
6 described in the discussion of FIG. 2 below. A dial-up
7 telephone connection 4 represents a potential commercial
8 telephone connection through a switched network from the
9 MFNAC 3 to a full function network access controller
10 (NAC) 5 of a commercial computer network service with
11 access to an ATM network 6. A host computer 7
12 represents the central computer for the ATM 1 having
13 communication with the ATM 1 through the ATM network 6.
14 The NAC 5 has ATM polling response emulation software at
15 its location.

16 FIG 2. shows a schematic of the MFNAC 3. The MFNAC
17 3 is a Z-80 based network access controller providing
18 the functionality of an SDLC network interface with
19 autodial and network management capabilities. In
20 addition to its support logic, the MFNAC 3 contains 256k
21 of CMOS RAM (random access memory) and EPROM (erasable,
22 programmable, read only memory). A modem 8 represents a
23 9600 baud modem in the MFNAC 3 in communication with the
24 9600 baud modem in the ATM 1 via the digital connector
25 2. A modem 9 represents a 1200 baud modem in the MFNAC
26 3 capable of communications with the NAC 5 via dial-up
27 interface 10. The MFNAC 3 is powered by an external
28 power supply module 11. Auxiliary memory power is
29 maintained by an internal lithium battery 12. The MFNAC
30 3 communication and dial-up features are driven by
31 software that provides host emulation to the ATM 1,
32 running SNA/SDLC firmware.

33 FIG. 3 shows a schematic of the communication's
34 traffic and connections in the ATM ready state of the
35 present invention. A host emulator 13 at the MFNAC 3
36 sends a periodic "polling" communication to the ATM 1
37 which responds back to the host emulator 13. An ATM
38 emulator 14 at the NAC 5 responds to periodic "polling"
39 communication from the host computer 7. The host

1 emulator 13 and ATM emulator 14 are software driven.
2 The dial-up telephone connection 4 between the MFNAC 3
3 and the NAC 5 is not connected.

4 **FIG. 4** shows a schematic of the communication's
5 traffic and connections in the ATM processing state of
6 the present invention. Processing of actual data
7 between the ATM 1 and the host computer 7 causes the
8 host emulator 13 at the MFNAC 3 and the ATM emulator 14
9 at the NAC 5 to stand aside, creating a virtual
10 dedicated circuit linking the ATM 1 to the host computer
11 6 via the switched network. The dial-up telephone
12 connection 4 between MFNAC 3 and NAC 5 is connected
13 after dial-up.

14 **Operation - FIGS. 1, 2, and 3**

15 The present invention has essentially two
16 operational states, ready to process (the ready state)
17 and processing (the processing state). **FIGS. 1, 2, and**
18 **3** describe the ready state. In the ready state, the
19 host emulator 13 is periodically polling with an
20 electronic signal the ATM 1 to maintain the ready state
21 of the ATM 1. This is achieved by the host emulator 13
22 replicating the electronic signal demanded by the
23 polling response specification of the ATM 1 and the host
24 emulator 13 receiving the electronic response generated
25 by the ATM 1. Simultaneously, across the open dial-up
26 telephone connection 4, the host computer 7 is
27 periodically polling the ATM emulator 14 to maintain the
28 ready state of the host computer 7. This is achieved by
29 the host computer 7 generating the electronic signal
30 demanded by the polling specifications of the ATM 1 and
31 the ATM emulator 14 receiving said signal and responding
32 with an electronic signal duplicative of the poll
33 response specification of the ATM 1.

34 Communications between the ATM 1 and the MFNAC 3
35 are continuously maintained between the ATM 1's 9600
36 baud modem and the MFNAC 3's modem 8 over the hard wire
37 connection provided by the digital connector 2.
38 Communications between the host computer 7 and the NAC 5
39 are continuously maintained through the ATM network 6

1 providing such services and functionality.

2 **Operation - FIGS. 1, 2, and 4**

3 **FIGS. 1, 2, and 4** describe the processing state of
4 the present invention. Initially, the present invention
5 is in the ready state. An ATM card is inserted into ATM
6 1 and the client enters his personal identification
7 number (PIN). This data is encrypted at the ATM 1 and
8 is resident in the memory of the ATM 1 for the duration
9 of the transaction. When the host emulator 13 next
10 polls the ATM 1, the presence of client's identification
11 data at the ATM 1 causes the MFNAC 3 to communicate over
12 dial-up telephone connection 4 to the NAC 5, an
13 electronic signal to the ATM emulator 14 to stand aside
14 and permit the next host computer 7 poll to travel to
15 the host emulator 13, which will in turn stand aside,
16 permitting the true host computer 7 poll to be received
17 by the ATM 1. This sequence creates a virtual dedicated
18 circuit linking the ATM 1 to the host computer 7 until
19 the client transactions are concluded. At the
20 conclusion of the client transactions (as defined by
21 operational specifications at the host computer 7), the
22 host computer 7 will resume transmission of polling
23 signals.

24 The MFNAC 3 controls the duration of the virtual
25 dedicated circuit through a series of timers activated
26 by the absence of communication between ATM 1 and the
27 host computer 7. When any timer is tripped, the MFNAC 3
28 reactivates the host emulator 13 and the ATM emulator 14
29 and then terminates the dial-up telephone connection 4.

30 The MFNAC 13 provides four communication timer
31 intervals (T 1 - 4). If any of these timers expire, the
32 MFNAC 13 will drop the connection of the connection
33 attempt to the NAC 5. The timer intervals are:

34 T1 = 60 seconds. Dial-up to the NAC 5, connect
35 and receive the host computer 7 message within 60
36 seconds.

37 T2 = 15 seconds. On receipt of the host computer
38 7 message, T2 will cancel T1, T3 and T4 and extend
39 the NAC 5 connection for 15 seconds.

1 T3 = 10 seconds. If the status response is sent
2 to the host computer 7 before T2 expires, T3
3 extends the time remaining in T2 for 10 seconds.
4 T4 = 60 seconds. If another customer request is
5 sent to the host computer 7 before T2 expires, T4
6 will cancel T2 and extend the NAC 5 connection for
7 60 seconds.

8 It is therefore to be understood that the present
9 invention depicted in **FIGS. 1 - 4** provides a facility
10 that allows an ATM to access a select financial
11 institution or number of financial institutions from an
12 ATM that is not directly connected to that financial
13 institution through the regional or international ATM
14 EFT (electronic fund transfer) networks. An augmented
15 embodiment of the present invention is depicted in **FIG.**
16 **5** which allows an ATM 1 to directly access a financial
17 institution 15 without using the ATM EFT networks 6. In
18 this embodiment, a particular ATM card holder's
19 financial institution 15 is directly accessed through a
20 switching process without access to the ATM EFT network
21 6. The process is accomplished by using the ATM
22 emulator 14 as a network controller which provides a
23 routing function. In this direct mode, the controller 5
24 acts only as a router, to route the transaction directly
25 from the controller 5 to the participating financial
26 institution 15. ATM cards that are not issued by a
27 financial institution that participates in the direct
28 dial access interconnection are interconnected through a
29 switch processor 16 for access to their accounts by the
30 ATM EFT networks available to the ATM.

31 This alternative direct dial up method allows
32 participating financial institutions to use the ATM
33 terminals of other participating financial institutions.
34 By doing so, the ATM user views the screen messages and
35 ATM options of the financial institution encoded in the
36 user's ATM card. This screen function may be performed
37 by installing a range of screen message alternatives
38 either at the controller 5 or at the ATM 1. Once a
39 user's card has been read by the ATM, the controller 5,

1 or a memory reading device at the ATM 1 can determine if
2 the card was issued by a participating financial
3 institution 15. If so, the financial institution's
4 screen messages are displayed; if not, a standard screen
5 message is displayed as the controller 5 accesses the
6 ATM EFT networks 6.

7 **Summary, Ramifications, and Scope**

8 The present invention is unique in providing a
9 method and system for on-demand communications between a
10 remote ATM and a host computer. Such a method and
11 system has heretofore eluded the market place even
12 though economic benefits have generated significant
13 interest and attempts to invent such a system. The
14 present invention is also unique in providing a method
15 and system for on-demand communications that is
16 adaptable to host computers or ATM's or both that demand
17 apparently continuous communications between the host
18 computer and the ATM. This means that ATM emulation or
19 host computer emulation can be provided to the ATM
20 and/or host computer whose functionality demands such
21 apparently continuous communications. Moreover, the
22 present invention is also unique in providing a method
23 and system for joining or adding heretofore incompatible
24 host computer networks through ATM emulation and/or host
25 computer emulation as necessary for compatibility.

26 The present invention has been described in terms
27 of the presently preferred embodiment using a dial-up
28 telephone connection to provide a non-continuous
29 communications link. Of course, the non-continuous
30 communications link could be provided by many
31 alternative means as demanded by a particular ATM to
32 host computer system including, without limitation,
33 communications via microwave, satellite, cellular, high
34 frequency radio, low frequency radio, etc.

35 The present invention has been described in terms
36 of the presently preferred embodiment using a standard
37 ATM that provides basic functionality such as data, cash
38 and deposit protection; cash disbursement; deposit
39 acceptance; account balance information; transfers

1 between accounts; stamp purchasing; coupon issuance;
2 etc. Of course, the present invention is compatible
3 with ATMs of less or more functionality. Moreover, the
4 present invention anticipates the increasing
5 functionality of ATMs over time and intends that its
6 operation with such increases in functionality of ATMs
7 be considered as within the scope and spirit of the
8 present invention.

9 Although the present invention has been described
10 in terms of the presently preferred embodiment, it is to
11 be understood that such disclosure is purely
12 illustrative and not to be interpreted as limiting.
13 Consequently, without departing from the spirit and
14 scope of the invention, various alternations,
15 modifications, and/or alternative applications of the
16 invention will, no doubt, be suggested to those skilled
17 in the art after having read the preceding disclosure.
18 Accordingly, it is intended that the following claims be
19 interpreted as encompassing all alternations,
20 modifications or alternative applications as fall within
21 the true spirit and scope of the invention.

22 What I claimed is:

CLAIMS

- 1 1. A system for conducting financial transactions
2 using a remote terminal with on-demand access to an ATM
3 host computer, said system comprising:
4 (a) a remote terminal which includes a
5 communications protocol of an ATM
6 (b) a host computer for said ATM, and
7 (c) a non- continuous communications link between
8 said remote terminal and the host computer.
- 1 2. A system as described in Claim 1 wherein the non-
2 continuous communications link is a dial-up telephone
3 connection interface.
- 1 3. A system as described in Claim 1, wherein the
2 remote terminal is an automatic vending machine.
- 1 4. A system as described in Claim 1, wherein the
2 remote terminal is an ATM.
- 1 5. A system for conducting financial transactions
2 using a remote terminal with on-demand access to an ATM
3 host computer, said system comprising:
4 (a) a remote terminal which includes a
5 communication protocol of an ATM;
6 (b) a host computer for said ATM,
7 (c) a non-continuous communications link between
8 the remote terminal and the host computer, and
9 (d) a means for emulation of a continuous
10 communications link between said remote terminal and the
11 host computer.
- 1 6. A system as described in Claim 5 wherein the non-
2 continuous communications link is a dial-up telephone
3 connection interface.
- 1 7. A system as described in Claim 5, wherein the
2 remote terminal is an automatic vending machine.

1 8. A system as described in Claim 5, wherein the
2 remote terminal is an ATM.

1 9. A system as described in Claim 5, wherein said
2 means for emulation includes an emulator on the remote
3 terminal side of the non-continuous communications link.

1 10. A system as described in Claim 9, wherein
2 electronic polling communications and electronic
3 responses thereto periodically occur between said remote
4 terminal and said emulator.

1 11. A system as described in Claim 5 wherein said means
2 for emulation includes an emulator on the host computer
3 side of the non-continuous communications link.

1 12. A system as described in Claim 11 wherein
2 electronic polling communications and electronic
3 responses thereto periodically occur between said host
4 computer and said emulator.

1 13. A system for conducting banking transactions using
2 a remote terminal with on-demand access to an ATM host
3 computer, said system comprising:

4 (a) a remote terminal which includes a
5 communication protocol of an ATM machine;

6 (b) a host computer for said ATM,

7 (c) a non-continuous communications link between
8 the remote terminal and the host computer,

9 (d) a first emulator on the remote terminal side
10 of the non-continuous communications link, said first
11 emulator emulating to the remote terminal a continuous
12 communication link with the host computer; and

13 (e) a second emulator on the host computer side of
14 the non-continuous communications link, said second
15 emulator emulating to the host computer a continuous
16 communications link with the remote terminal.

1 14. A system as described in Claim 13 wherein the non-

1 continuous communications link is a dial-up telephone
2 connection interface.

1 15. A system as described in Claim 13 wherein the
2 remote terminal must have apparently continuous
3 communications with the host computer.

1 16. A system as described in Claim 13 wherein the host
2 computer must have apparently continuous communications
3 with the remote terminal.

1 17. A system as described in Claim 13 wherein host
2 computer electronic polling communications are
3 periodically sent from said remote terminal to said
4 first emulator, and responses thereto are sent from said
5 first emulator to said remote terminal; and wherein ATM
6 electronic polling communications are periodically sent
7 from said host computer to said second emulator, and
8 responses thereto are sent from said second emulator to
9 said host computer.

1 18. An emulation system for installation within an
2 electronic interconnection between a host computer and a
3 remote terminal comprising:
4 a first emulator for interconnection in electronic
5 communication with said remote terminal;
6 a second emulator for interconnection in electronic
7 communication with said host computer;
8 said first emulator and said second emulator being
9 electronically adapted for a non-continuous
10 communications link therebetween.

1 19. An emulator system as described in Claim 18 wherein
2 said first emulator is adapted to provide electronic
3 signals responsive to polling electronic signals
4 received from said remote terminal.

1 20. An emulator system as described in Claim 18 wherein
2 said second emulator is adapted to provide electronic

1 signals responsive to polling electronic signals
2 received from said host computer.

1 21. An emulator system as described in Claim 18 wherein
2 said first emulator is designed to electronically
3 communicate with said second emulator through said non-
4 continuous communications link upon the receipt of
5 electronic signals from said remote terminal.

1 22. A method for establishing a non-continuous
2 communications link between a remote terminal and a host
3 computer, wherein said remote terminal and said host
4 computer require an apparently continuous communications
5 link there between, comprising the steps of:

6 (a) interconnecting a first emulation means with
7 said remote terminal, said first emulation means acting
8 to emulate a host computer;

9 (b) interconnecting a second emulation means with
10 said host terminal, said second emulation means acting
11 to emulate a remote terminal;

12 (c) establishing a non-continuous communications
13 link between said first emulation means and said second
14 emulation means.

1 23. A method as described in Claim 22 wherein said
2 first emulation means provides signals to said remote
3 terminal representative of a host computer in continuous
4 communication therewith; and said second emulation means
5 provides electronic signals to host computer
6 representative of a remote terminal in continuous
7 communication therewith.

1 24. A method as described in Claim 22 including the
2 further steps of interconnecting said remote terminal
3 and said host computer in a direct communications mode
4 to establish communication therebetween, said
5 establishment of direct communication mode including the
6 steps of:

7 (a) providing a communication between said remote

- 1 terminal and said first emulation means;
- 2 (b) providing a communication between said first
- 3 emulation means and said second emulation means;
- 4 (c) providing a communication between said second
- 5 emulation means and said host computer;
- 6 (d) providing a communication between said host
- 7 computer and said remote terminal; and
- 8 (e) providing further communications between said
- 9 remote terminal and said host computer.

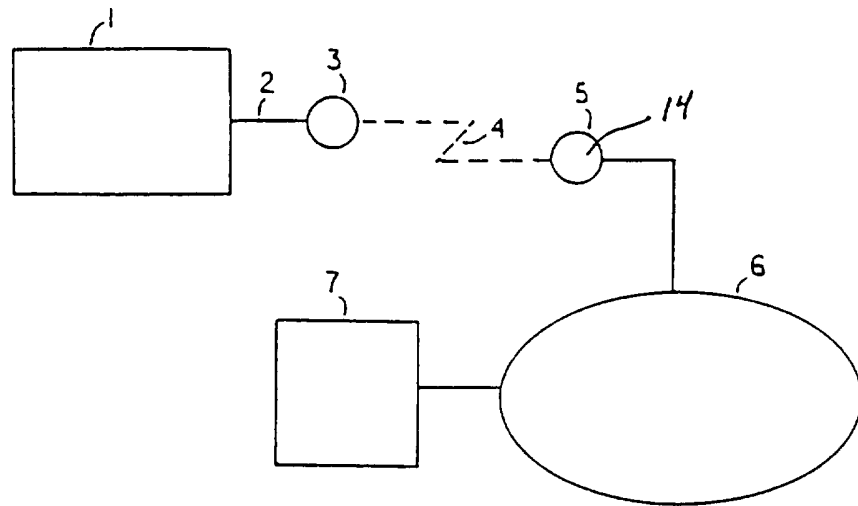


FIG. 1

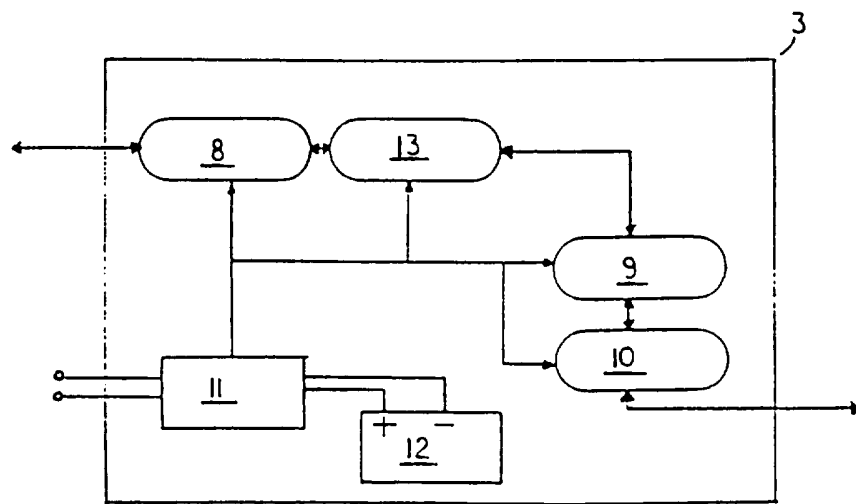


FIG. 2

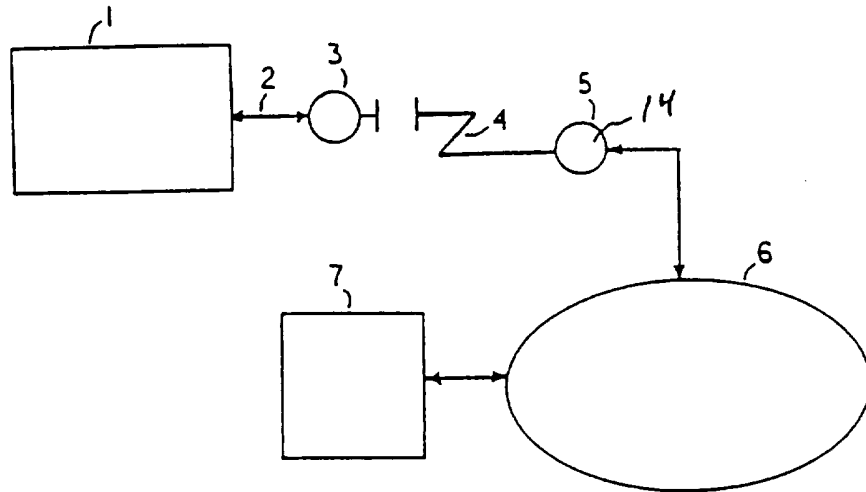


FIG.3

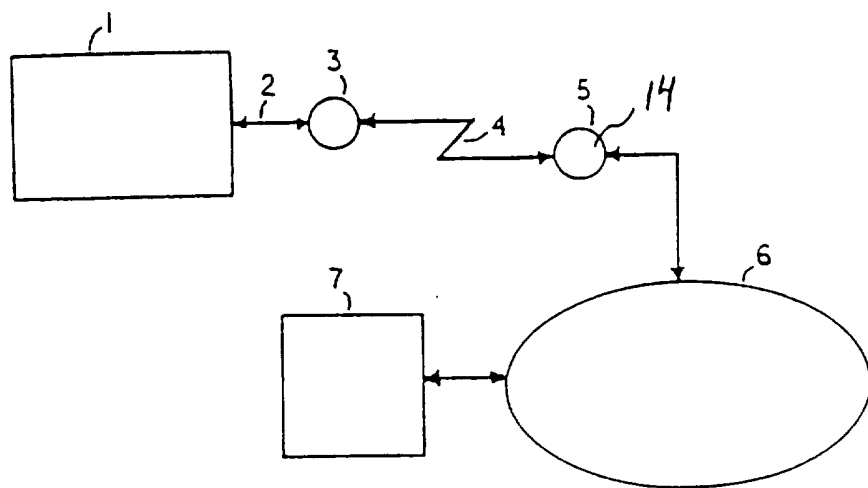


FIG.4

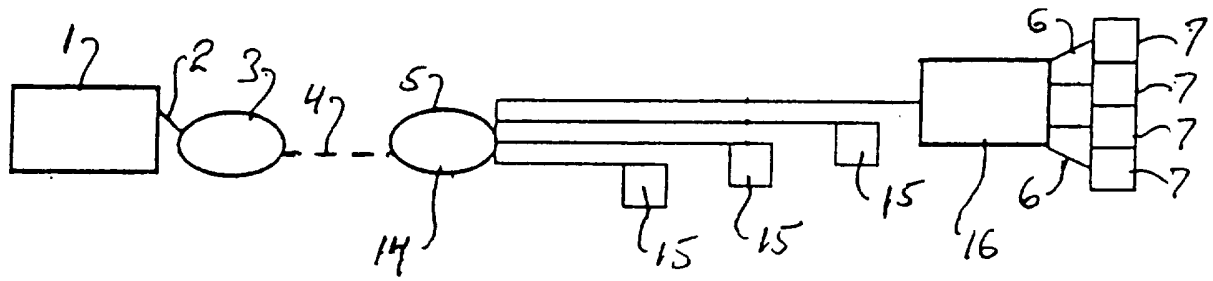


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/14286

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(6) : H04M 11/00; G06F 17/60
 US CL : 379/09-93, 96; 364/401-408; 235/379
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 379/09-93, 96; 364/401-408; 235/379

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	US, A, 5,025,373 (KEYSER, JR, ET AL) 18 June 1991, see line 3 of the abstract, column 13, lines 23-27 and 30-42.	1, 2, 4 ----- 3, 5-24
X ----- Y	US, A, 4,972,463 (DANIELSON ET AL) 20 November 1990, column 1, line 33, column 5, lines 1-14, column 3, line 34-55 and column 8, lines 35-42.	1-12 ----- 13-24
Y	US, A, 5,311,576 (BRUNSON ET AL) 10 May 1994, column 15, line 68 and col. 16, lines 21-22.	1-24

Further documents are listed in the continuation of Box C. See patent family annex.

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| <ul style="list-style-type: none"> * Special categories of cited documents: *A* document defining the general state of the art which is not considered to be part of particular relevance *E* earlier document published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed | <ul style="list-style-type: none"> *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art *Z* document member of the same patent family |
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Date of the actual completion of the international search 11 JANUARY 1996	Date of mailing of the international search report 29 FEB 1996
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International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 5,202,976 (HANSEN ET AL) 13 April 1993, see Fig. 1.	1-24

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/14286

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

APS search, The following terms are searched: "ATM", "automatic teller machines", "non-continuous", "communication link", "link", "emulat?", "emulator", "telephone line", "dial up", and "emulat? (3a) continuous?".