

- 1 -

**System and Method for Pushing Information from a Host
System to a Mobile Data Communication Device**

BACKGROUND OF THE INVENTION

5 The present invention is directed toward the field of replicating
information from a host system where the information is normally stored to a
mobile data communication device. In particular, the system and method of the
present invention provide an event-driven redirection computer program
("redirector program") operating at the host system, which, upon sensing a
10 particular user-defined event has occurred, redirects user-selected data items
from the host system to the user's mobile data communication device. The
mobile data communication device is preferably coupled to the host system via
a wireless network and one or more landline networks. Due to the bandwidth
limitations of wireless networks, only a portion of a user-selected data item is
15 generally redirected to the user's mobile device, with the user given the option
of then retrieving the entire data item (or some other portion of the data item)
from the host system.

 Instead of warehousing (or storing) the user's data items at the host
system and then "synchronizing" the mobile data communication device to data
20 items stored at the host system when the mobile device requests that such items
of information be communicated to it, the present invention employs a "push"
paradigm that continuously packages and retransmits the user-selected items of
information to the mobile data communication device in response to a triggering
event detected at the host system. Wireless mobile data communications
25 devices, especially those that can return a confirmation signal to the host that
the pushed data has been received are especially well suited for this type of
push paradigm.

 Present systems and methods for replicating information from a host
system to a user's mobile data communication device are typically



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- 2 -

"synchronization" systems in which the user's data items are warehoused (or stored) at the host system for an indefinite period of time and then transmitted in bulk only in response to a user request. In these types of systems and methods, when replication of the warehoused data items to the mobile device is desired, the user typically places the mobile device in an interface cradle that is electrically connected to the host system via some form of local, dedicated communication, such as a serial cable or an infrared or other type of wireless link. Software executing on the mobile data communication device then transmits commands via the local communications link to the host system to cause the host to begin transmitting the user's data items for storage in a memory bank of the mobile device. In these synchronization schemes, the mobile unit "pulls" the warehoused information from the host system in a batch each time the user desires to replicate information between the two devices. Therefore, the two systems (host and mobile) only maintain the same data items after a user-initiated command sequence that causes the mobile device to download the data items from the host system. A general problem with these synchronization systems is that the only time that the user data items are replicated between the host system and the mobile data communication device is when the user commands the mobile device to download or pull the user data from the host system. Five minutes later a new message could be sent to the user, but the user would not receive that message until the next time the user fetches the user data items. Thus, a user may fail to respond to an emergency update or message because the user only periodically synchronizes the system, such as once per day. Other problems with these systems include: (1) the amount of data to be reconciled between the host and the mobile device can become large if the user does not "synchronize" on a daily or hourly basis, leading to bandwidth difficulties, particularly when the mobile device is communicating via a wireless packet-switched network; and (2) reconciling large amounts of data, as can accrue in these batch-mode synchronization

systems, can require a great deal of communication between the host and the mobile device, thus leading to a more complex, costly and energy-inefficient system. A more automated, continuous, efficient and reliable system of ensuring that user data items are replicated at the user's mobile device is
5 therefore needed.

An additional feature of the present invention is that the push paradigm, in combination with a return communications pathway, lends itself well to a system that permits a user to control remotely, through the user's mobile device, a number of aspects of the host system.

10 There remains a general need in this art for a system and method of continuously pushing user-selected data items (or certain portions of the selected data items) stored at a host system to a user's mobile data communication device.

There remains a more particular need for such a system and method
15 where user-selected data items are continuously "pushed" from the host system to the mobile data communication device upon the occurrence of one or more user-defined triggering events.

There remains an additional need for such a system and method that provides flexibility in the types and quantities of user data items that are pushed
20 from the host system to the mobile data communication device and that also provides flexibility in the configuration and types of events that can serve to trigger the redirection of the user data items.

There remains yet an additional need for such a system and method that can operate locally on a user's desktop PC or at a distance via a network server.

25 There remains still another need for such a system and method that provides for secure, transparent delivery of the user-selected data items from the host system to the mobile device.

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The document WO 97/41654 describes a system and method for disseminating information from one or more information sources, or databases, to mobile subscribers through a message distribution center. The message
5 distribution center processes the data from the one or more information sources and generates individual messages for subscribers based upon a subscriber-defined profile. The information messages can be transmitted at predetermined times, such as every morning at 9:00 am, or
10 upon the occurrence of a predetermine event, such as when a stock price exceeds a particular value. In addition, the information messages can be transmitted based on the subscriber's location, or based on a request message from the individual subscriber.

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The document WO 97/32251 describes a method of replicating information between two systems in which software programs are executed at a provider computer system and a consumer computer system in order to
20 maintain a communications control structure for transferring information between the two systems. This control structure originates at the provider computer and is transferred to the consumer computer. Changes to the structure on the provider computer result in an updated
25 version being transferred to the consumer computer. The communications control structure contains a combination of data, metadata, and instructions which are used by the respective programs to control the origination of outgoing communications and the processing of incoming
30 communications between the provider and consumer.

SUMMARY OF THE INVENTION

The present invention overcomes the problems noted above and satisfies the needs in this field for a system and method of pushing user-selected data items from a host system to a user's mobile data communication device upon
5 detecting the occurrence of one or more user-defined event triggers. As used in this application, the term host system refers to the computer where the redirector software is operating. In the preferred embodiment of the present invention, the host system is a user's desktop PC, although, alternatively, the host system could be a network server connected to the user's PC via a local-
10 area network ("LAN"), or could be any other system that is in communication with the user's desktop PC.

A redirector program operating at the host system enables the user to redirect or mirror certain user-selected data items (or parts of data items) from the host system to the user's mobile data communication device upon detecting
15 that one or more user-defined triggering events has occurred. Also operating at the host system are various sub-systems that can be configured to create triggering events, such as a screen saver sub-system or a keyboard sub-system, as well as sub-systems for repackaging the user's data items for transparent delivery to the mobile data device, such as a TCP/IP sub-system or one or more
20 E-Mail sub-systems. Other sub-systems for creating triggering events and repackaging the user's data items could also be present at the host system. The host system also includes a primary memory store where the user's data items are normally stored.

Using the redirector program, the user can select certain data items for
25 redirection, such as E-mail messages, calendar events, meeting notifications, address entries, journal entries, personal reminders etc. Having selected the data items for redirection, the user can then configure one or more event triggers to be sensed by the redirector program to initiate redirection of the user data items. These user-defined trigger points (or event triggers) include

- 5 -

external events, internal events and networked events. Examples of external events include: receiving a message from the user's mobile data communication device to begin redirection; receiving a similar message from some external computer; sensing that the user is no longer in the vicinity of the host system; or any other event that is external to the host system. Internal events could be a calendar alarm, screen saver activation, keyboard timeout, programmable timer, or any other user-defined event that is internal to the host system. Networked events are user-defined messages that are transmitted to the host system from another computer coupled to the host system via a network to initiate redirection. These are just some of the examples of the types of user-defined events that can trigger the redirector program to push data items from the host to the mobile device. Although in the preferred embodiment it is anticipated that the configuration that specifies which data items will be redirected and in what form will be set at the host system, it is within the scope of this invention that such configuration may be set or modified through data sent from the mobile communications device.

In addition to the functionality noted above, the redirector program provides a set of software-implemented control functions for determining the type of mobile data communication device and its address, for programming a preferred list of message types that are to be redirected, and for determining whether the mobile device can receive and process certain types of message attachments, such as word processor or voice attachments. The determination of whether a particular mobile device can receive and process attachments is initially configured by the user of that mobile device at the host system. This configuration can be altered on a global or per message basis by transmitting a command message from the mobile device to the host system. If the redirector is configured so that the mobile data device cannot receive and process word processor or voice attachments, then the redirector routes these attachments to an external machine that is compatible with the particular

- 6 -

attachment, such as an attached printer or networked fax machine or telephone. Other types of attachments could be redirected to other types of external machines in a similar fashion, depending upon the capabilities of the mobile device. For example, if a user is traveling and receives a message with an attachment that the user's mobile device cannot process or display, the user may from a mobile communications device send a command message to the host system indicating that that attachment is to be sent to a fax machine at a hotel where the user will be spending the evening. This enables the user to receive important E-mail attachments as long as the host system is provided with sufficient information about the destination where the attachment is to be forwarded.

Once an event has triggered redirection of the user data items, the host system then repackages these items in a manner that is transparent to the mobile data communication device, so that information on the mobile device appears similar to information on the user's host system. The preferred repackaging method includes wrapping the user data items in an E-mail envelope that corresponds to the address of the mobile data communication device, although, alternatively, other repackaging methods could be used with the present invention, such as special-purpose TCP/IP wrapping techniques, or other methods of wrapping the user selected data items. The repackaging preferably results in E-mail messages generated by the user from the mobile device to be transmitted from the host system, thus enabling the user to appear to have a single E-mail address, such that the recipients of messages sent from the mobile communications device do not know where the user was physically located when the message was first sent. The repackaging also permits both messages to the mobile device and sent from the mobile device to be encrypted and decrypted as well as compressed and decompressed.

In an alternative system and method, the redirector program executes on a network server, and the server is programmed to detect numerous redirection

event triggers over the network from multiple user desktop computers coupled to the server via a LAN. The server can receive internal event triggers from each of the user desktops via the network, and can also receive external event triggers, such as messages from the users' mobile data communication devices.

- 5 In response to receiving one of these triggers, the server redirects the user's data items to the proper mobile data communication device. The user data items and addressing information for a particular mobile device can be stored at the server or at the user's PC. Using this alternative configuration, one redirector program can serve a plurality of users. This alternative configuration
10 could also include an internet- or intranet-based redirector program that could be accessible through a secure webpage or other user interface. The redirector program could be located on an Internet Service Provider's system and accessible only through the Internet.

- In another alternative configuration of the present invention, a redirector
15 program operates at both the host system and at the user's mobile data communication device. In this configuration, the user's mobile device operates similarly to the host system described below, and is configured in a similar fashion to push certain user-selected data items from the mobile device to the user's host system (or some other computer) upon detecting an event trigger at
20 the mobile device. This configuration provides two-way pushing of information from the host to the mobile device and from the mobile device to the host.

- The primary advantage of the present invention is that it provides a system and method for triggering the continuous and real-time redirection of user-selected data items from a host system to a mobile data communication
25 device. Other advantages of the present invention include: (1) flexibility in defining the types of user data to redirect, and in defining a preferred list of message types that are to be redirected or preferred senders whose messages are to be redirected; (2) flexibility in configuring the system to respond to numerous internal, external and networked triggering events; (3) transparent

-8-

repackaging of the user data items in a variety of ways such that the mobile data communication device appears as though it were the host system; (4) integration with other host system components such as E-mail, TCP/IP, keyboard, screen saver, webpages and certain programs that can either create user data items or be configured to provide trigger points; and (5) the ability to operate locally on a user's desktop system or at a distance via a network server.

These are just a few of the many advantages of the present invention, as described in more detail below. As will be appreciated, the invention is capable of other and different embodiments, and its several details are capable of modifications in various respects. Accordingly, the drawings and description of the preferred embodiments set forth below are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention satisfies the needs noted above as will become apparent from the following description when read in conjunction with the accompanying drawings wherein:

FIG. 1 is a system diagram showing the redirection of user data items from a user's desktop PC (host system) to the user's mobile data communication device, where the redirector software is operating at the user's desktop PC.

FIG. 2 is a system diagram showing the redirection of user data items from a network server (host system) to the user's mobile data communication device, where the redirector software is operating at the server.

FIG. 3 is a block diagram showing the interaction of the redirector software with other components of the host system in FIG. 1 (the user's desktop PC) to enable the pushing of information from the host system to the user's mobile data communication device.

FIG. 4 is a flow chart showing the steps carried out by the redirector software operating at the host system.

FIG. 5 is a flow chart showing the steps carried out by the mobile data communication device to interface with the redirector software operating at the
5 host system.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring now to the drawings, FIG. 1 is an example system diagram showing the redirection of user data items (such as message A or C) from a user's
10 office PC (host system) 10 to the user's mobile data communication device 24, where the redirector software 12 is operating at the user's PC. Message A in FIG. 1 represents an internal message sent from desktop 26 to the user's host system 10 via LAN 14. Message C in FIG. 1 represents an external message from a sender that is not directly connected to LAN 14, such as the user's mobile data
15 communication device 24, some other user's mobile device (not shown), or any user connected to the Internet 18. Message C also represents a command message from the user's mobile data communication device 24 to the host system 10. As described in more detail in FIG. 3, the host system 10 preferably includes, along with the typical hardware and software associated with a workstation or desktop
20 computer, the redirector program 12, a TCP/IP subsystem 42, a primary message store 40, an E-mail subsystem 44, a screen saver subsystem 48, and a keyboard subsystem 46.

In FIG. 1, the host system 10 is the user's desktop system, typically located in the user's office. The host system 10 is connected to a LAN 14, which
25 also connects to other computers 26, 28 that may be in the user's office or elsewhere. The LAN 14, in turn, is connected to a wide area network ("WAN") 18, preferably the Internet, which is defined by the use of the Transmission Control Protocol/Internet Protocol ("TCP/IP") to exchange information, but which, alternatively could be any other type of WAN. The connection of the LAN

- 10 -

14 to the WAN 18 is via high bandwidth link 16, typically a T1 or T3 connection. The WAN 18 in turn is connected to a variety of gateways 20, via connections 32. A gateway forms a connection or bridge between the WAN 18 and some other type of network, such as an RF wireless network, cellular network, satellite
5 network, or other synchronous or asynchronous land-line connection.

In the example of FIG. 1, a wireless gateway 20 is connected to the Internet for communicating via wireless link 22 to a plurality of wireless mobile data communication devices 24. Also shown in FIG. 1 is machine 30, which could be a FAX machine, a printer, a system for displaying images (such as video) or a
10 machine capable of processing and playing audio files, such as a voice mail system. The present invention includes the ability to redirect certain message attachments to such an external machine 30 if the redirector program configuration data reflects that the mobile device 24 cannot receive and process the attachments, or if the user has specified that certain attachments are not to be forwarded to mobile
15 device 24, even if such device can process those attachments. By way of example, consider an E-mail sent to a user that includes three attachments -- a word processing document, a video clip and an audio clip. The redirection program could be configured to send the text of the E-mail to the remote device, to send the word processing document to a networked printer located near the user, to
20 send the video clip to a store accessible through a secure connection through the internet and to send the audio clip to the user's voice mail system. This example is not intended to limit the breadth and scope of the invention, but rather to illustrate the variety of possibilities embodied in the redirection concept.

The preferred mobile data communication device 24 is a hand-held two-
25 way wireless paging computer, a wirelessly enabled palm-top computer, a mobile telephone with data messaging capabilities, or a wirelessly enabled laptop computer, but could, alternatively be other types of mobile data communication devices capable of sending and receiving messages via a network connection 22. Although it is preferable for the system to operate in a two-way communications

- 11 -

mode, certain aspects of the invention could be beneficially used in a "one and one-half" or acknowledgment paging environment, or even with a one-way paging system. The mobile data communication device 24 includes software program instructions that work in conjunction with the redirector program 12 to enable the
5 seamless, transparent redirection of user-selected data items. FIG. 4 describes the basic method steps of the redirector program 12, and FIG. 5 describes the steps of the corresponding program operating at the mobile device 24.

In an alternative embodiment of the present invention, not explicitly shown in the drawings, the mobile device 24 also includes a redirector program. In this
10 embodiment, user selected data items can be replicated from the host to the mobile device and vice versa. The configuration and operation of the mobile device 24 having a redirector program is similar to that described herein with respect to FIGs. 1-4.

A user of the present invention can configure the redirector program 12
15 to push certain user-selected data items to the user's mobile data communication device 24 when the redirector 12 detects that a particular user-defined event trigger (or trigger point) has taken place. User-selected data items preferably include E-mail messages, calendar events, meeting notifications, address entries, journal entries, personal alerts, alarms, warnings, stock quotes, news bulletins,
20 etc., but could, alternatively, include any other type of message that is transmitted to the host system 10, or that the host system 10 acquires through the use of intelligent agents, such as data that is received after the host system 10 initiates a search of a database or a website or a bulletin board. In some instances, only a portion of the data item is transmitted to the mobile device 24 in order to minimize
25 the amount of data transmitted via the wireless network 22. In these instances, the mobile device 24 can optionally send a command message to the host system to receive more or all of the data item if the user desires to receive it.

Among the user-defined event triggers that can be detected by the redirector program 12 are in the preferred embodiment external events, internal

events and networked events. External events preferably include: (1) receiving a command message (such as message C) from the user's mobile data communication device to begin redirection, or to execute some other command at the host, such as a command to enable the preferred list mode, or to add or
5 subtract a particular sender from the preferred list; (2) receiving a similar message from some external computer; and (3) sensing that the user is no longer in the vicinity of the host system; although, alternatively, an external event can be any other detectable occurrence that is external to the host system. Internal events could be a calendar alarm, screen saver activation, keyboard timeout,
10 programmable timer, or any other user-defined event that is internal to the host system. Networked events are user-defined messages that are transmitted to the host system from another computer coupled to the host system via a network to initiate redirection. These are just some of the events that could be used with the present invention to initiate replication of the user-selected data items from the
15 host system 10 to the mobile device 24.

FIG. 1 shows an E-mail message A being communicated over LAN 14 from computer 26 to the user's desktop system 10 (also shown in FIG. 1 is an external message C, which could be an E-mail message from an Internet user, or could be a command message from the user's mobile device 24). Once the
20 message A (or C) reaches the primary message store of the host system 10, it can be detected and acted upon by the redirection software 12. The redirection software 12 can use many methods of detecting new messages. The preferred method of detecting new messages is using Microsoft's ® Messaging API (MAPI), in which programs, such as the redirector program 12, register for
25 notifications or 'advise syncs' when changes to a mailbox take place. Other methods of detecting new messages could also be used with the present invention.

Assuming that the redirector program 12 is activated, and has been configured by the user (either through the sensing of an internal, network or

- 13 -

external event) to replicate certain user data items (including messages of type A or C) to the mobile device 24, when the message A is received at the host system 10, the redirector program 12 detects its presence and prepares the message for redirection to the mobile device 24. In preparing the message for redirection, the
5 redirector program 12 could compress the original message A, could compress the message header, or could encrypt the entire message A to create a secure link to the mobile device 24.

Also programmed into the redirector 12 is the address of the user's mobile data communication device 24, the type of device, and whether the device 24 can
10 accept certain types of attachments, such as word processing or voice attachments. If the user's type of mobile device cannot accept these types of attachments, then the redirector 12 can be programmed to route the attachments to a fax or voice number where the user is located using an attached fax or voice machine 30.

15 The redirector may also be programmed with a preferred list mode that is configured by the user either at the host system 10, or remotely from the user's mobile data communication device by transmitting a command message C. The preferred list contains a list of senders (other users) whose messages are to be redirected or a list of message characteristics that determine whether a message
20 is to be redirected. If activated, the preferred list mode causes the redirector program 12 to operate like a filter, only redirecting certain user data items based on whether the data item was sent from a sender on the preferred list or has certain message characteristics that if present will trigger or suppress redirection of the message. In the example of FIG. 1, if desktop system 26 was operated by
25 a user on the preferred list of host system 10, and the preferred list option was activated, then message A would be redirected. If, however, desktop 26 was operated by a user not on the host system's preferred list, then message A would not be redirected, even if the user of the host system had configured the redirector to push messages of type A. The user of the host system 10 can configure the

- 14 -

preferred list directly from the desktop system, or, alternatively, the user can then send a command message (such as C) from the mobile device 24 to the desktop system 10 to activate the preferred list mode, or to add or delete certain senders or message characteristics from the preferred list that was previously configured.

- 5 It should be appreciated that a redirection program could combine message characteristics and preferred sender lists to result in a more finely-tuned filter. Messages marked as low priority or that are simple return receipts or message read receipts, for example, could always be suppressed from redirection while messages from a particular sender would always be redirected.

- 10 After the redirector has determined that a particular message should be redirected, and it has prepared the message for redirection, the software 12 then sends the message A to a secondary memory store located in the mobile device 24, using whatever means are necessary. In the preferred embodiment this method is to send the message A back over the LAN 14, WAN 18, and through the wireless
- 15 gateway 20 to the mobile data communication device 24. In doing so, the redirector preferably repackages message A as an E-mail with an outer envelope B that contains the addressing information of the mobile device 24, although alternative repackaging techniques and protocols could be used, such as a TCP/IP repackaging and delivery method (most commonly used in the alternative server
- 20 configuration shown in FIG.2). The wireless gateway 20 requires this outer envelope information B in order to know where to send the redirected message A. Once the message (A in B) is received by the mobile device 24, the outer envelope B is removed and the original message A is placed in the secondary memory store within the mobile device 24. By repackaging and removing the
- 25 outer envelope in this manner, the present invention causes the mobile computer 24 to appear to be at the same physical location as the host system 10, thus creating a transparent system.

In the case where message C is representative of an external message from a computer on the Internet 18 to the host system 10, and the host 10 has been

- 15 -

configured to redirect messages of type C, then in a similar manner to message A, message C would be repackaged with an outer envelope B and transmitted to the user's mobile device 24. In the case where message C is representative of a command message from the user's mobile device 24 to the host system 10, the
5 command message C is not redirected, but is acted upon by the host system 10.

If the redirected user data item is an E-mail message, as described above, the user at the mobile device 24 sees the original subject, sender's address, destination address, carbon copy and blind carbon copy. When the user replies to this message, or when the user authors a new message, the software operating at
10 the mobile device 24 adds a similar outer envelope to the reply message (or the new message) to cause the message to be routed first to the user's host system 10, which then removes the outer envelope and redirects the message to the final destination, such as back to computer 26. In the preferred embodiment, this results in the outgoing redirected message from the user's host system 10 being
15 sent using the E-mail address of the host mailbox, rather than the address of the mobile device, so that it appears to the recipient of the message that the message originated from the user's desktop system 10 rather than the mobile data communication device. Any replies to the redirected message will then be sent to the desktop system 10, which if it is still in redirector mode, will repackage the
20 reply and resend it to the user's mobile data device, as described above.

FIG. 2 is an alternative system diagram showing the redirection of user data items from a network server 11 to the user's mobile data communication device 24, where the redirector software 12 is operating at the server 11. This configuration is particularly advantageous for use with message servers such as
25 Microsoft's ® Exchange Server, which is normally operated so that all user messages are kept in one central location or mailbox store on the server instead of in a store within each user's desktop PC. This configuration has the additional advantage of allowing a single system administrator to configure and keep track

- 16 -

of all users having messages redirected. If the system includes encryption keys, these too can be kept at one place for management and update purposes.

In this alternative configuration, server 11 preferably maintains a user profile for each user's desktop system 10, 26, 28, including information such as whether a particular user can have data items redirected, which types of message and information to redirect, what events will trigger redirection, the address of the users' mobile data communication device 24, the type of mobile device, and the user's preferred list, if any. The event triggers are preferably detected at the user's desktop system 10, 26, 28 and can be any of the external, internal or network events listed above. The desktop systems 10, 26, 28 preferably detect these events and then transmit a message to the server computer 11 via LAN 14 to initiate redirection. Although the user data items are preferably stored at the server computer 11 in this embodiment, they could, alternatively, be stored at each user's desktop system 10, 26, 28, which would then transmit them to the server computer 11 after an event has triggered redirection.

As shown in FIG. 2, desktop system 26 generates a message A that is transmitted to and stored at the host system 11, which is the network server operating the redirector program 12. The message A is for desktop system 10, but in this embodiment, user messages are stored at the network server 11. When an event occurs at desktop system 10, an event trigger is generated and transmitted to the network server 11, which then determines who the trigger is from, whether that desktop has redirection capabilities, and if so, the server (operating the redirector program) uses the stored configuration information to redirect message A to the mobile computer 24 associated with the user of desktop system 10.

As described above with reference to FIG. 1, message C could be either a command message from a user's mobile data communication device 24, or it could be a message from an external computer, such as a computer connected to the Internet 18. If the message C is from an Internet computer to the user's

- 17 -

desktop system 10, and the user has redirection capabilities, then the server 11 detects the message C, repackages it using electronic envelope B, and redirects the repackaged message (C in B) to the user's mobile device 24. If the message C is a command message from the user's mobile device 24, then the server 11 simply
5 acts upon the command message.

Turning now to FIG. 3, a block diagram showing the interaction of the redirector software 12 with additional components of the host system 10 of FIG. 1 (the desktop PC) to enable more fully the pushing of information from the host system 10 to the user's mobile data communication device 24 is set forth. These
10 additional components are illustrative of the type of event-generating systems that can be configured and used with the redirector software 12, and of the type of repackaging systems that can be used to interface with the mobile communication device 24 to make it appear transparent to the user.

The desktop system 10 is connected to LAN 14, and can send and receive
15 data, messages, signals, event triggers, etc., to and from other systems connected to the LAN 14 and to external networks 18, 22, such as the Internet or a wireless data network, which are also coupled to the LAN 14. In addition to the standard hardware, operating system, and application programs associated with a typical microcomputer or workstation, the desktop system 10 includes the redirector
20 program 12, a TCP/IP sub-system 42, an E-mail sub-system 44, a primary data storage device 40, a screen saver sub-system 48, and a keyboard sub-system 46. The TCP/IP and E-mail subsystems 42, 44 are examples of repackaging systems that can be used to achieve the transparency of the present invention, and the screen saver and keyboard sub-systems 46, 48 are examples of event generating
25 systems that can be configured to generate event messages or signals that trigger redirection of the user selected data items.

The method steps carried out by the redirector program 12 are described in more detail in FIG. 4. The basic functions of this program are: (1) configure and setup the user-defined event trigger points that will start redirection; (2)

- 18 -

configure the types of user data items for redirection and optionally configure a preferred list of senders whose messages are to be redirected; (3) configure the type and capabilities of the user's mobile data communication device; (4) receive messages and signals from the repackaging systems and the event generating systems; and (5) command-and control the redirection of the user-selected data items to the mobile data communication device via the repackaging systems. Other functions not specifically enumerated could also be integrated into this program.

The E-Mail sub-system 44 is the preferred link to repackaging the user-selected data items for transmission to the mobile data communication device 24, and preferably uses industry standard mail protocols, such as SMTP, POP, IMAP, MIME and RFC-822, to name but a few. The E-Mail sub-system 44 can receive messages A from external computers on the LAN 14, or can receive messages C from some external network such as the Internet 18 or a wireless data communication network 22, and stores these messages in the primary data store 40. Assuming that the redirector 12 has been triggered to redirect messages of this type, the redirector detects the presence of any new messages and instructs the E-Mail system 44 to repackage the message by placing an outer wrapper B about the original message A (or C), and by providing the addressing information of the mobile data communication device 24 on the outer wrapper B. As noted above, this outer wrapper B is removed by the mobile device 24, and the original message A (or C) is then recovered, thus making the mobile device 24 appear to be the desktop system 10.

In addition, the E-Mail sub-system 44 receives messages back from the mobile device 24 having an outer wrapper with the addressing information of the desktop system 10, and strips this information away so that the message can be routed to the proper sender of the original message A (or C). The E-Mail sub-system also receives command messages C from the mobile device 24 that are directed to the desktop system 10 to trigger redirection or to carry out some other

- 19 -

function. The functionality of the E-Mail sub-system 44 is controlled by the redirector program 12.

The TCP/IP sub-system 42 is an alternative repackaging system. It includes all of the functionality of the E-Mail sub-system 44, but instead of
5 repackaging the user-selected data items as standard E-mail messages, this system repackages the data items using special-purpose TCP/IP packaging techniques. This type of special-purpose sub-system is useful in situations where security and improved speed are important to the user. The provision of a special-purpose wrapper that can only be removed by special software on the mobile device 24
10 provides the added security, and the bypassing of E-mail store and forward systems can improve speed and real-time delivery.

As described previously, the present invention can be triggered to begin redirection upon detecting numerous external, internal and networked events, or trigger points. Examples of external events include: receiving a command
15 message from the user's mobile data communication device 24 to begin redirection; receiving a similar message from some external computer; sensing that the user is no longer in the vicinity of the host system; or any other event that is external to the host system. Internal events could be a calendar alarm, screen saver activation, keyboard timeout, programmable timer, or any other user-defined
20 event that is internal to the host system. Networked events are user-defined messages that are transmitted to the host system from another computer that is connected to the host system via a network to initiate redirection.

The screen saver and keyboard sub-systems 46, 48 are examples of systems that are capable of generating internal events. Functionally, the redirector
25 program 12 provides the user with the ability to configure the screen saver and keyboard systems so that under certain conditions an event trigger will be generated that can be detected by the redirector 12 to start the redirection process. For example, the screen saver system can be configured so that when the screen saver is activated, after, for example, 10 minutes of inactivity on the desktop

- 20 -

system, an event trigger is transmitted to the redirector 12, which starts redirecting the previously selected user data items. In a similar manner the keyboard sub-system can be configured to generate event triggers when no key has been depressed for a particular period of time, thus indicating that redirection should
5 commence. These are just two examples of the numerous application programs and hardware systems internal to the host system 10 that can be used to generate internal event triggers.

FIGs. 4 and 5, set forth, respectively, flow charts showing the steps carried out by the redirector software 12 operating at the host system 10, and the steps
10 carried out by the mobile data communication device 24 in order to interface with the host system. Turning first to FIG. 4, at step 50, the redirector program 12 is started and initially configured. The initial configuration of the redirector 12 includes: (1) defining the event triggers that the user has determined will trigger redirection; (2) selecting the user data items for redirection; (3) selecting the
15 repackaging sub-system, either standard E-Mail, or special-purpose technique; (4) selecting the type of data communication device, indicating whether and what type of attachments the device is capable of receiving and processing, and inputting the address of the mobile device; and (5) configuring the preferred list of user selected senders whose messages are to be redirected.

20 FIG. 4 sets forth the basic steps of the redirector program 12 assuming it is operating at a desktop system 10, such as shown in FIG. 1. If the redirector 12 is operating at a network server 11, as shown in FIG. 2, then additional configuration steps may be necessary to enable redirection for a particular desktop system 10, 26, 28 connected to the server, including: (1) setting up a
25 profile for the desktop system indicating its address, events that will trigger redirection, and the data items that are to be redirected upon detecting an event; (2) maintaining a storage area at the server for the data items; and (3) storing the type of data communication device to which the desktop system's data items are

- 21 -

to be redirected, whether and what type of attachments the device is capable of receiving and processing, and the address of the mobile device.

Once the redirector program is configured 50, the trigger points (or event triggers) are enabled at step 52. The program 12 then waits 56 for messages and
5 signals 54 to begin the redirection process. A message could be an E-Mail message or some other user data item that may have been selected for redirection, and a signal could be a trigger signal, or could be some other type of signal that has not been configured as an event trigger. When a message or signal is detected, the program determines 58 whether it is one of the trigger events that has been
10 configured by the user to signal redirection. If so, then at step 60 a trigger flag is set, indicating that subsequently received user data items (in the form of messages) that have been selected for redirection should be pushed to the user's mobile data communication device 24.

If the message or signal 54 is not a trigger event, the program then
15 determines at steps 62, 64 and 66 whether the message is, respectively, a system alarm 62, an E-Mail message 64, or some other type of information that has been selected for redirection. If the message or signal is none of these three items, then control returns to step 56, where the redirector waits for additional messages 54 to act upon. If, however the message is one of these three types of information,
20 then the program 12 determines, at step 68, whether the trigger flag has been set, indicating that the user wants these items redirected to the mobile device. If the trigger flag is set, then at step 70, the redirector 12 causes the repackaging system (E-Mail or TCP/IP) to add the outer envelope to the user data item, and at step
72 the repackaged data item is then redirected to the user's mobile data
25 communication device 24 via LAN 14, WAN 18, wireless gateway 20 and wireless network 22. Control then returns to step 56 where the program waits for additional messages and signals to act upon. Although not shown explicitly in FIG 4, after step 68, the program could, if operating in the preferred list mode, determine whether the sender of a particular data item is on the preferred list, and

- 22 -

if not, then the program would skip over steps 70 and 72 and proceed directly back to step 56. If the sender was on the preferred list, then control would similarly pass to steps 70 and 72 for repackaging and transmission of the message from the preferred list sender.

5 FIG. 5 sets forth the method steps carried out by the user's mobile data communication device 24 in order to interface to the redirector program 12 of the present invention. At step 80 the mobile software is started and the mobile device 24 is configured to operate with the system of the present invention, including, for example, storing the address of the user's desktop system 10.

10 At step 82, the mobile device waits for messages and signals 84 to be generated or received. Assuming that the redirector software 12 operating at the user's desktop system 10 is configured to redirect upon receiving a message from the user's mobile device 24, at step 86, the user can decide to generate a command message that will start redirection. If the user does so, then at step
15 88 the redirection message is composed and sent to the desktop system 10 via the wireless network 22, through the wireless gateway 20, via the Internet 18 to the LAN 14, and is finally routed to the desktop machine 10. In this situation where the mobile device 24 is sending a message directly to the desktop system 10, no outer wrapper is added to the message (such as message
20 C in FIGs. 1 and 2). In addition to the redirection signal, the mobile device 24 could transmit any number of other commands to control the operation of the host system, and in particular the redirector program 12. For example, the mobile 24 could transmit a command to put the host system into the preferred list mode, and then could transmit additional commands to add or subtract
25 certain senders from the preferred list. In this manner, the mobile device 24 can dynamically limit the amount of information being redirected to it by minimizing the number of senders on the preferred list. Other example commands include: (1) a message to change the configuration of the host system to enable the mobile device 24 to receive and process certain

- 23 -

attachments; and (2) a message to instruct the host system to redirect an entire data item to the mobile device in the situation where only a portion of a particular data item has been redirected.

Turning back to FIG. 5, if the user signal or message is not a direct
5 message to the desktop system 10 to begin redirection (or some other command), then control is passed to step 90, which determines if a message has been received. If a message is received by the mobile, and it is a message from the user's desktop 10, as determined at step 92, then at step 94 a desktop redirection flag is set "on" for this message, and control passes to step 96 where
10 the outer envelope is removed. Following step 96, or in the situation where the message is not from the user's desktop, as determined at step 92, control passes to step 98, which displays the message for the user on the mobile device's display. The mobile unit 24 then returns to step 82 and waits for additional messages or signals.

15 If the mobile device 24 determines that a message has not been received at step 90, then control passes to step 100, where the mobile determines whether there is a message to send. If not, then the mobile unit returns to step 82 and waits for additional messages or signals. If there is at least one message to send, then at step 102 the mobile determines whether it is a reply message
20 to a message that was received by the mobile unit. If the message to send is a reply message, then at step 108, the mobile determines whether the desktop redirection flag is on for this message. If the redirection flag is not on, then at step 106 the reply message is simply transmitted from the mobile device to the destination address via the wireless network 22. If, however, the redirection
25 flag is on, then at step 110 the reply message is repackaged with the outer envelope having the addressing information of the user's desktop system 10, and the repackaged message is then transmitted to the desktop system 10 at step 106. As described above, the redirector program 12 executing at the desktop system then strips the outer envelope and routes the reply message to the

- 24 -

appropriate destination address using the address of the desktop system as the "from" field, so that to the recipient of the redirected message, it appears as though it originated from the user's desktop system rather than the mobile data communication device.

5 If, at step 102, the mobile determines that the message is not a reply message, but an original message, then control passes to step 104, where the mobile determines if the user is using the redirector software 12 at the desktop system 10, by checking the mobile unit's configuration. If the user is not using the redirector software 12, then the message is simply transmitted to the
10 destination address at step 106. If, however, the mobile determines that the user is using the redirector software 12 at the desktop system 10, then control passes to step 110, where the outer envelope is added to the message. The repackaged original message is then transmitted to the desktop system 10 at step 106, which, as described previously, strips the outer envelope and routes the
15 message to the correct destination. Following transmission of the message at step 106, control of the mobile returns to step 82 and waits for additional messages or signals.

 Having described in detail the preferred embodiments of the present invention, including the preferred methods of operation, it is to be understood
20 that this operation could be carried out with different elements and steps. This preferred embodiment is presented only by way of example and is not meant to limit the scope of the present invention which is defined by the following claims.

25

Claims

1. A method of redirecting data items from a host system to a mobile data communication device comprising the steps of

[A] configuring a first triggering event at said host system.

[B] detecting that said first triggering event has occurred at said host system and generating a first trigger,

[C] receiving data items at said host system; and

[D] in response to said first trigger and as the data items are received at said host system, continuously redirecting the received data items from said host system to said mobile data communication device.

2. The method of claim 1, further comprising the step of selecting at least one type of data item to redirect from said host system to said mobile data communication device.

3. The method of claim 1, further comprising the step of providing configuration information regarding the capabilities of said mobile data communication device.

4. The method of claim 3, further comprising the step of providing configuration information including a network address of said mobile data communication device

-26-

5 The method of claim 3, further comprising the step of providing configuration information including a type of said mobile data communication device

6. The method of claim 3, further comprising the step of providing configuration information including a plurality of types of data item attachments that said mobile data communication device can receive and process

7 The method of claim 1, further comprising the steps of

receiving a data item at said host system, said data item being addressed using a sender address and a receiver address;

determining whether the receiver address is associated with said mobile data communication device;

if the receiver address is associated with said mobile data communication device , then packaging the data item into an electronic envelope addressed using a host address and a mobile device address and redirecting the electronic envelope from said host system to said mobile data communication device ; and

extracting the data item from the electronic envelope and displaying the data item at said mobile data communication device using the sender address and the receiver address.

8 The method of claim 6, further comprising the steps of,

for each data item to be redirected, determining whether the data item includes an attachment, and determining the type of attachment

-27-

determining whether said mobile data communication device can receive and process attachments of the determined type, and

if so, then redirecting the attachment to said mobile data communication device, and if not, then redirecting the attachment to an external machine that is compatible with the attachment

9 The method of claim 8, further comprising the step of providing a sound file as the type of attachment

10 The method of claim 1, further comprising the step of providing redirection events that include external events, internal events, or networked events

11 The method of claim 10, further comprising the step of configuring one of the external events to be a message from said mobile data communication device to start redirection.

12 The method of claim 10, further comprising the step of configuring one of the internal events to be a calendar alarm.

13 The method of claim 10, further comprising the step of configuring one of the internal events to be a screen saver activation

14 The method of claim 10, further comprising the step of configuring one of the internal events to be a key board timeout signal

-28-

15 The method of claim 10, further comprising the step of providing networked events that include messages to begin redirection from computer systems connected to said host system via a network

16 The method of claim 10, further comprising the step of providing a pager as said mobile data communication device

17 The method of claim 10, further comprising the step of providing a device equipped to receive both voice and non-voice data messages as said mobile data communication device

18 The method of claim 1, further comprising the step of providing a preferred list at said host system for limiting the redirection step to redirecting only those data items that are transmitted to said host system from a sender on the preferred list

19 The method of claim 18, wherein a user can add and subtract senders from the preferred list

20. The method of claim 18, wherein the preferred list is activated and deactivated at said host system .

21 The method of claim 18, wherein the preferred list is activated and deactivated by a command message transmitted from said mobile data communication device to said host system

-29-

22 The method of claim 19, wherein the user can add and subtract senders from the preferred list by configuring said host system

23. The method of claim 19, wherein the user can add and subtract senders from the preferred list by transmitting a command message from said mobile data communication device to said host system

24 A method of replicating data between a first system and a second system , comprising the steps of:

[A] establishing a first set of data elements at said first system as subject to replication with a corresponding second set of data elements at said second system

[B] detecting a first event trigger at said first system ; and

[C] in response to the first event trigger, continuously replicating data between said first system and said second system by

[C.1] detecting a change in at least one data element in the first set of data elements at said first system .

[C.2] providing an indication of the data element in the first set of data elements that has changed to said second system by placing information in an electronic wrapper delivered to said second system as part of a data transfer transaction,

[C.3] initiating the data transfer transaction, thereby transferring the electronic wrapper to said second system .

[C.4] receiving the electronic wrapper at said second system ,

-30-

[C.5] processing the electronic wrapper, and

[C.6] updating a corresponding data element in the second set of data elements based on the information contained in the electronic wrapper

25 The method of claim 24, further comprising the step of providing a host computer as said first system and a hand held electronic device as said first second system.

26 The method of claim 2, further comprising the step of providing a hand held electronic device as said first system and a host computer as said second system.

27 The method of claim 24, further comprising the step of configuring the data transfer transaction as an electronic message sent from said first system through a data network to said second system

28. The method of claim 24, further comprising the step of providing a set of calendar entries as the first set of data elements.

29 The method of claim 24, further comprising the step of providing a set of address book entries as the first set of data elements

30 The method of claim 27, further comprising the step of providing an attachment to the electronic message

-31-

31 The method of claim 27, further comprising the step of providing an e-mail message as the electronic message and providing the internet as the data network

32 The method of claim 24, wherein the method includes a step of receiving from said second system a request to begin replication

33. The method of claim 32, wherein the method includes a step of processing the request to begin replication

34 The method of claim 24, wherein said second system can limit the information being sent to it by sending a command to said first system

35 A method of redirecting messages between a host system and a mobile data communication device, comprising the steps of

- configuring one or more redirection events at the host system,
- detecting that a redirection event has occurred at the host system and generating a redirection trigger,
- receiving messages at the host system from a plurality of message senders;
- in response to the redirection trigger, continuously redirecting the messages from the host system to the mobile data communication device;
- receiving the messages at the mobile data communication device,
- generating reply messages at the mobile data communication device to be sent to the plurality of message senders and transmitting the reply messages to the host system,

-32-

receiving the reply messages at the host system and configuring address information of the reply messages so that the reply messages appear to have been generated at the host system instead of at the mobile data communication device; and

transmitting the reply messages from the host system to the plurality of message senders.

36 The method of claim 35, further comprising the step of
storing information regarding the configuration of the mobile data communication device at the host system

37 The method of claim 36, wherein the configuration information stored at the host system includes

(A) the network address of the mobile data communication device, and

(B) an indication of the types of message attachments that the mobile data communication device can receive and process

38 The method of claim 37, wherein the configuration information further includes

(C) an indication of the type of mobile data communication device

39 The method of claim 35, wherein the received messages are addressed using a sender address and a receiver address, the method further comprising the steps of

determining whether the receiver address is associated with the mobile data communication device

-33-

if the receiver address is associated with the mobile data communication device, then determining a network address of the mobile data communication device and repackaging the messages into electronic envelopes addressed using the receiver address and the network address of the mobile data communication device; and

after receiving the redirected messages at the mobile data communication device, extracting the messages from the electronic envelopes and displaying the messages at the mobile data communication device using the sender address and the receiver address, so that it appears as though the mobile data communication device is the host system

40 The method of claim 37, further comprising the steps of

for each message to be redirected, the host system determining whether the message includes an attachment, and if so then determining the type of attachment:

accessing the stored configuration information at the host system to determine whether the mobile data communication device can receive and process attachments of the determined type; and

if so, then redirecting the attachments to the mobile data communication device, and if not, then redirecting the attachments to a device that is capable of processing the attachment

41 The method of claim 40, wherein the type of attachment is a sound file

42 The method of claim 35, wherein the redirection events include external events, internal events, or networked events

-34-

43 The method of claim 42, wherein the external event is a message from the mobile data communication device to start redirection

44 The method of claim 42, wherein the internal event is a calendar alarm

45 The method of claim 42, wherein the internal event is a keyboard timeout signal

46 The method of claim 42, wherein the internal event is a screen saver activation

47. The method of claim 42, wherein the networked events include messages to begin redirection from computer systems other than the mobile data communication device, which are connected to the host system via a wired network.

48. The method of claim 35, wherein the mobile data communication device is a pager

49 The method of claim 35, wherein the mobile data communication device is a device equipped to receive both voice and non-voice data messages.

50 The method of claim 35, wherein the host system includes a preferred list for limiting the redirection step to redirecting only those messages that are transmitted to the host system from a sender on the preferred list

-35-

51. The method of claim 50, wherein a user can add and subtract senders from the preferred list
52. The method of claim 50, wherein the preferred list is activated and deactivated at the host system.
53. The method of claim 51, wherein the user can add and subtract senders from the preferred list by configuring the host system
54. The method of claim 51, wherein the user can add and subtract senders from the preferred list by transmitting a command message from the mobile data communication device to the host system.
55. A method of redirecting electronic data items from a host system operated by a user to the user's mobile data communication device, comprising the steps of
- configuring an external redirection event at the host system, wherein the external redirection event is the host system sensing whether the user is in the vicinity of the host system;
 - receiving electronic data items at the host system; and
 - if the host system senses that the user is not in the vicinity of the host system, then continuously redirecting the received data items to the user's mobile data communication device until the host system senses that the user is in the vicinity of the host system

-36-

56 A method of redirecting messages from a desktop computer system to a mobile data communication device associated with the desktop computer system, comprising the steps of

- providing a message redirection program at the desktop system,
- providing a screen saver program at the desktop system,
- linking the screen saver program to the message redirection program, and
- if the message redirection program detects that the screen saver is activated, then continuously redirecting messages from the desktop computer system to the mobile data communication device until the message redirection program detects that the screen saver is deactivated.

57 A method of redirecting data items from a server system to a plurality of mobile data communication devices, comprising the steps of

- providing a redirection program at the server system;
- providing a plurality of desktop systems in communication with the server system via a network,
- providing a user profile for each of the plurality of desktop systems at the server system, wherein the user profiles each associate a particular desktop system with a particular mobile data communication device;
- configuring the desktop systems to detect redirection events,
- detecting the redirection events at the desktop systems; –
- transmitting redirection messages from the desktop systems to the server system; and
- in response to the redirection messages, continuously redirecting the data items from the server system to the mobile data communication devices based on the user profiles

-37-

58. A system for redirecting information between a host system and a mobile device, comprising

a first redirector application operating at the host system, wherein the first redirector application is configured to sense a triggering event at the host system and to continuously redirect information from the host system to the mobile device, and

a second redirector application operating at the mobile device, wherein the second redirector application is configured to sense a triggering event at the mobile device and to continuously redirect information from the mobile device to the host system

59. A mobile data communication device programmed with computer software instructions for enabling the steps of:

(A) generating an electronic message having a destination address,

(B) determining whether the mobile data communication device is operating in conjunction with a redirector application operating at a host system,

(C) if the mobile data communication device is not operating in conjunction with the redirector application, then transmitting the electronic message to the destination address, and

(D) if the mobile data communication device is operating in conjunction with the redirector application, then packaging the electronic message into an electronic envelope having a host address, and transmitting the electronic envelope to the host system

60. A message redirection method operating at a host system, comprising the steps of:

configuring one or more redirection events at the host system,

detecting that a redirection event has occurred at the host system and generating a redirection trigger,

receiving messages at the host system from a plurality of message senders,

in response to the redirection trigger, continuously redirecting the received messages from the host system to a mobile data communication device associated with the host system,

-38-

receiving reply messages from the mobile data communication device at the host system and configuring the reply messages using address information of the host system; and

transmitting the configured reply messages from the host system to the plurality of message senders

61 A method of forwarding an electronic message from a host system to a mobile device, comprising the steps of

receiving an electronic message at the host system,

forwarding a portion of the electronic message to the mobile device,

transmitting a command from the mobile device to the host system to retrieve the remainder of the electronic message; and

in response to the command, the host system transmitting the remainder of the electronic message to the mobile device.

62 A message redirection method, comprising the steps of

configuring one or more redirection events at a host system,

detecting that a redirection event has occurred at the host system and generating a redirection trigger,

receiving messages at the host system from a plurality of message senders;

in response to the redirection trigger, continuously redirecting the received messages from the host system to a mobile data communication device associated with the host system;

receiving the redirected messages at the mobile data communication device;

generating reply messages at the mobile data communication device,

transmitting the reply messages from the mobile data communication device to the host system

receiving the reply messages at the host system and configuring the reply messages using address information of the host system, and

-39-

transmitting the configured reply messages from the host system to the plurality of message senders

63. A method of redirecting information from a host system to a mobile device, comprising the steps of:

- (A) providing a set of trigger events at the host system,
- (B) selecting one or more of the trigger events from the set of trigger events;
- (C) detecting that a trigger event has occurred at the host system;
- (D) determining whether the detected trigger event is one of the selected trigger events, and if so then setting a trigger flag at the host system;
- (E) receiving information at the host system; and
- (F) if the trigger flag is set, then continuously redirecting the received information from the host system to the mobile device.

64. A computer system for redirecting messages from a mobile data communication device, comprising:

- a host system capable of sending and receiving messages;
- a redirector component, operable with the host system, that upon receiving a message generated at the mobile data communications device, by a message sender destined for a message recipient, configures address information of the received message such that the received message appears to have been generated at the host system instead of at the mobile data communication device

-40-

65. A computer system for redirecting messages from a mobile data communication device comprising:

a host system capable of sending and receiving messages, wherein a message sender's email address is associated with the host system;

a redirector component operable with the host system that upon receiving a message generated at the mobile device, by a message sender destined for a message recipient, configures address information of the received message, prior to redirection to the message recipient, such that the received message uses the message sender's email address associated with the host system, thereby allowing messages generated at either the mobile device or host system to share the message sender's email address associated with the host system

66. A computer system as claimed in claim 65, wherein a from email address field in the configured received message is the message sender's email address associated with the host system.

67. A computer system as claimed in claim 66, wherein a reply-to email address field in the configured received message is the message sender's email address associated with the host system.

68. A computer system as claimed in claim 67, further comprising a descriptor added to the configured received message to indicate to the message recipient that the message was generated at the mobile data communications device instead of the host system

-41-

69 A method for redirecting messages from a mobile data communication device, comprising the steps of:

providing a host system capable of sending and receiving messages,

providing a redirector component, operable with the host system, that upon receiving a message generated at the mobile data communications device by a message sender destined for a message recipient, configures address information of the received message such that the received message appears to have been generated at the host system instead of at the mobile data communication device

70. A method as claimed in claim 69, wherein the configuring step provides for a from email address field in the configured received message is the message sender's email address associated with the host system

71 A method as claimed in claim 70, wherein the configuring step provides for a reply-to email address field in the configured received message is the message sender's email address associated with the host system

72. A method as claimed in claim 71, wherein the configuring step further adds a descriptor is added to the configured received message to indicate to the message recipient that the message was generated at the mobile data communications device instead of the host system.

-42-

73. A method for redirecting messages from a mobile data communication device by a message sender destined for a message recipient comprises the steps of.

receiving a message, generated at the mobile data communications device by the message sender destined for the message recipient, at a redirector component associated with a host system wherein messages generated at the host system by the message sender use a first address;

configuring address information of the received message such that the received message uses the message sender's first address as the address originating the message, thereby allowing messages generated at either the mobile data communications device or host system to share the message sender's first address;

redirecting the configured received message to the message recipient.

74. A method as claimed in claim 73, wherein the message sender's first address is an email address associated with the host system.

75. A method as claimed in claim 74, wherein the configuring step ensures a from email address field in the configured received message is the message sender's email address associated with the host system

76. A method as claimed in claim 75, wherein the configuring step ensures a reply-to email address field in the configured received message is the message sender's email address associated with the host system

-43-

77 A method for redirecting messages between a host system and a mobile data communication device, comprising the steps of

configuring one or more redirection events at the host system,

detecting that a redirection event has occurred at the host system and generating a redirection trigger;

receiving incoming messages directed to a first address at the host system from a plurality of message senders;

in response to the redirection trigger, continuously redirecting the incoming messages from the host system to the mobile data communication device,

receiving outgoing messages generated at the mobile communications device at the host system;

configuring address information of the outgoing messages so that the first address is used as an originating address of the outgoing messages; and

transmitting the outgoing messages from the host system to message recipients.

78. A method of forwarding an electronic message from a host system to a mobile device, comprising the steps of:

(A) receiving an electronic message at the host system;

(B) forwarding a first portion of the electronic message to the mobile device;

(C) transmitting a command from the mobile device to the host system to retrieve a second portion of the electronic message,

(D) in response to the command, the host system transmitting the second portion of the electronic message to the mobile device, and

-44-

(E) repeating steps (C) and (D) until the entire electronic message is transmitted to the mobile device.

79. A method of redirecting electronic messages from a first system to a second system, comprising the steps of

- providing a redirector application at the first system for redirecting electronic messages from the first system to the second system;

- providing a plurality of redirection rules at the first system for limiting the electronic messages that are redirected to the second system, wherein the plurality of redirection rules includes a first rule that limits redirection to a preferred list of message senders and a second rule that limits redirection to messages of a specified priority level;

- configuring at least one redirection event at the first system; and

- sensing the redirection event and continuously redirecting electronic messages that satisfy the plurality of redirection rules from the first system to the second system.

80 A method of forwarding information from a host system to a mobile device, comprising the steps of

- providing a redirector application at the host system;

- configuring the redirector application to forward a plurality of information types to the mobile device, wherein the plurality of information types includes e-mail messages, calendar data, and meeting reminders;

- configuring the redirector application to sense a plurality of redirection events, wherein the plurality of redirection events includes a screen saver activation event and a mobile device command event, wherein the screen saver activation event occurs when a screen saver application operating at the host system is activated and the mobile device command event occurs when a user of the mobile device transmits a command to the host system to trigger redirection,

-45-

sensing that one of the redirection events has occurred at the host system; and
continuously redirecting the plurality of information types from the host system to the
mobile device

81. A secure electronic message redirection system, comprising:

a host system having a redirector application, wherein the redirector application is
configured to sense a trigger event at the host system and in response to the trigger event to
continuously redirect electronic messages from the host system to a mobile data communication
device;

an encryption module operating at the host system that encrypts the electronic messages
prior to redirection to the mobile data communication device; and

a decryption module operating at the mobile data communication device that decrypts the
electronic messages that are received from the host system

82. A mobile data communications device comprising:

an email system capable of sending and receiving messages;

a redirector component, operable with the email system, that upon generating a message
at the mobile data communications device by a message sender destined for a message recipient,
configures address information of the generated message such that the transmitted message
appears to have been generated at the message sender's host system instead of at the mobile data
communication device

83. A mobile data communications device comprising

an email system capable of sending and receiving messages;

-46-

a redirector component, operable with the email system, that upon generating a message at the mobile data communications device by a message sender destined for a message recipient, configures address information of the generated message such that a transmitted message uses an email address used by the message sender at a second email system

- 84 A method of redirecting data items from a host system to a mobile data communication device, comprising the steps of
- a. configuring a triggering event at the host system,
 - b. detecting that the triggering event has occurred at the host system and generating a trigger;
 - c. receiving data items at the host system;
 - d. in response to the trigger and as data items are received at the host system, continuously redirecting the received data items from the host system to the mobile communication device,
 - e. determining whether each data item includes an attachment and if so, determining the type of attachment;
 - f. providing attachment redirection information, and,
 - g. redirecting the attachment in accordance with the attachment redirection information

-47-

85. The method of claim 84, wherein the attachment redirection information includes one or more attachment types that the mobile communication device can receive and process.
86. The method of claim 84 wherein the attachment redirection information includes one or more attachment types and one or more associated commands which control processing of each attachment type by the host system.
87. The method of claim 86, wherein the one or more commands include a command for storing a data item attachment to a data store accessible by the host system.
88. The method of claim 86, wherein the one or more commands include a command for redirecting an attachment to an external machine compatible with the attachment.
89. The method of claim 86, wherein the one or more commands include a command for redirecting a data item attachment to the mobile communication device.
90. The method of claim 84, wherein the step of providing attachment redirection information is provided by information transmitted by the mobile communication device.
91. The method of claim 88, wherein the external machine is a printer

-48-

92. The method of claim 88, wherein the external machine is a facsimile machine.
93. The method of claim 88, wherein the attachment is a sound file and the external machine is a voice mail system.
94. A method for redirecting data items from a first system to a second system, comprising the steps of:
- a. receiving data items at the first system;
 - b. redirecting each received data item from the first system to the second system;
 - c. determining whether the received data item includes an attachment;
 - d. if so, then sending attachment redirection information from the second system to the first system; and
 - e. redirecting the attachment to the second system, an external machine compatible with the attachment, or both, in accordance with the attachment redirection information.
95. The method of claim 94, wherein the external machine is a networked printer.
96. A method of redirecting data items from a host system to a mobile communication device comprising the steps of:
- a. configuring a triggering event at the host system;

-49-

- b. sensing that the triggering event has occurred at the host system and generating a trigger; and
- c. in response to the trigger and as the data items are received:
 - i. storing the received data items in a data store accessible to the host system; and
 - ii. continuously forwarding the received data items from the host system to the mobile communication device to thereby mirror the stored data items at the host system on the mobile communication device

97. The method of claim 96 wherein the stored data items include email messages.

98. The method of claim 97, wherein the stored data items further include voice mail messages.

99. A server-based email system operable with one or more wireless communication devices comprising:

- a. a redirector component that:
 - i. upon receiving email messages destined for a first email address associated with the email system, pushes the email messages to a wireless communication device associated with the first email address;
- and,

-50-

- ii. upon receiving email messages generated at the mobile device pushes the received email messages to respective email message recipients using the first email address as an originating email address.
100. An information system operable with one or more wireless communication devices comprising:
- a. an email system operating at a server; and,
 - b. a redirector component associated with the email system comprising:
 - i. means for redirecting email to users of the email system having a wireless communication device associated with their respective user accounts, wherein each user account is uniquely identified by an email address;
 - ii. means for using the email address of a user as an originating email address when an email message is composed and transmitted from a wireless communication device.
101. An information system as claimed in claim 99, wherein the email system further comprises:
- a. an incoming information store; and,
 - b. an outgoing information store wherein one or more of the email messages transmitted from the wireless communication device is stored in the outgoing information store