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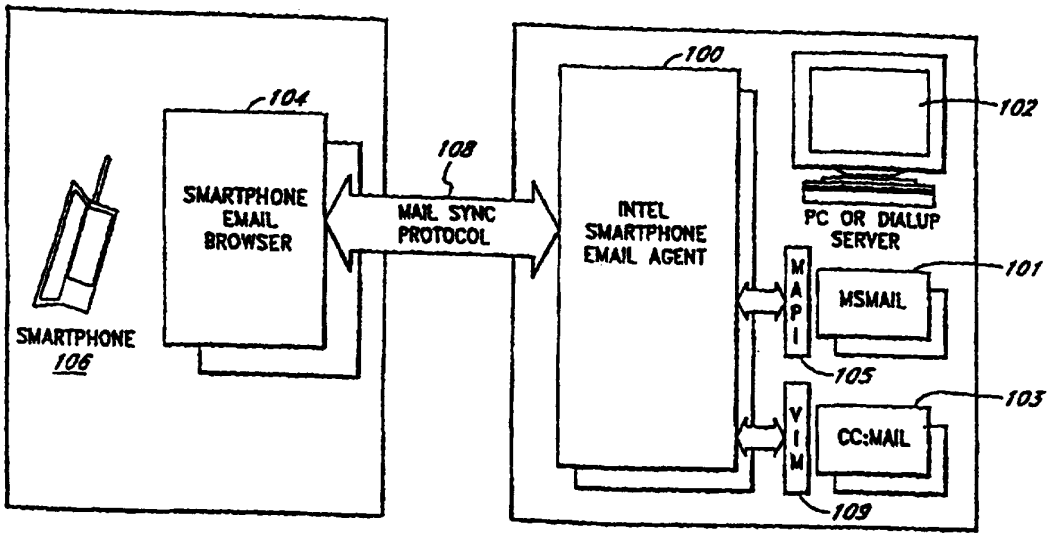

(57) Abstract

A method and apparatus for scaling E-mail (electronic mail) address book (132) databases for devices with limited storage capacity and synchronization of a first set of mail subsetter (128) for automatically generating a default personal address book (PAB) (128) and a mail synchronizer for application independent E-mail synchronization. A pseudo unique identification (200) is generated for each message or folder in the mail boxes to be synchronized. A pseudo unique identification (200) is generated for each message or folder in the mail boxes to be synchronized. An event log (202) is then generated for each mail box. The memory also has a synchronization mechanism (236) for making the first set of data and the second set of data equivalent by using the information in the change list generated by the change detection mechanism (230).

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A METHOD FOR SCALING LARGE E-MAIL DATABASES FOR DEVICES WITH LIMITED STORAGE

This application is a Continuation-In-Part of pending application serial number 08/431,500 entitled APPLICATION INDEPENDENT RECORD LEVEL SYNCHRONIZATION filed April 28, 1995.

BACKGROUND OF THE INVENTION

(1) Field of the Invention

The invention relates to E-mail (electronic mail) systems. More particularly, the present invention is related to the method and apparatus for scaling E-mail address book databases for devices with limited storage capacity.

(2) Background

E-mail (electronic mail) is one of the most popular data use application for data and voice telephones, in particular, for cellular telephones. However, telephones are typically limited in storage capacity. An average advanced cellular phone (such as a SmartPhone) being designed has less than one mega byte (MB) of storage available for use by a user. In contrast, a typical electronic address database using corporate environments are very large.

Given the storage constraints of devices such as a SmartPhone and the desirability for access to a large electronic address database, it is desirable to have some type of a default personal address book. Currently, there are a couple of E-mail systems which may be used to offer some type of method for generating a default personal address book. However, neither of the systems are easy to use. For example, cc: Mail Mobile System from Lotus Development Corporation and cc: Mail Remote System from Lotus Development Corporation duplicate the address database (generally several mega-bytes in size) on a notebook PC (Personal Computer), or require the user to generate their own address book there

is no subsetting offered by the systems. Additionally the E-mail systems do not work with devices with limited storage such as is found in SmartPhones.

MS Mail system from Microsoft allows subsetting using personal address books, however, with this method and apparatus, the user must manually select and move entries in the network database to his or her personal address book. Additionally, the method and apparatus clearly does not scale to large databases such as for corporations, where there may be a large number of employees. More specifically, manually finding, selecting and moving, for example one hundred people regularly from a large list of employees is not only inefficient and slow but ultimately unusable in a corporate or large organizational environment, e.g. with tens of thousands of employees.

Additionally, MS Mail does not provide synchronization for the personal address book and the network database. For example, if John Doe is in both a user's personal address book and in a network database and if John Doe's name is deleted from the network database, his name will remain in the user's personal address book. Hence, the user will not know that John Doe is no longer available until a mail is transmitted to him and the mail is returned as "undeliverable" or "user unknown".

CC: Mail from Lotus Development Corporation provides synchronization but it is very inefficient. Synchronization is performed on-line with CC: Mail, i.e. when a user is connected and requires that the entire database be reconciled. Exemplary circumstances requiring reconciliation include when new records are added such as for new employees, when records have been deleted such as to account for employee attrition, and when updates are made such as for changed telephone numbers. Scanning a large database for change takes tens of minutes and since synchronization must be performed periodically, use of CC: Mail Remote or Mobile in a large organizational environment becomes impractical.

Therefore it is desirable to have a method and an apparatus for scaling E-mail address book databases for devices with limited storage capacity by providing an easy to use method for generating default personal address books automatically

and to provide an efficient method for keeping the personal address books synchronized with a main database.

BRIEF SUMMARY OF THE INVENTION

A method and an apparatus for scaling E-mail (electronic mail) address book databases for devices with limited storage capacity and synchronization of a first set of mail with a second set of mail at the message/folder level. A memory contains a mail subsetter for automatically generating a default personal address book and a mail synchronizer for application independent E-mail synchronization. A pseudo unique identification is generated for each message or folder in the mail boxes to be synchronized. An event log is then generated for each mail box. The memory also has a Synchronization mechanism for making the first set of data and the second set of data equivalent by using the information in the Change List generated by the Change Detection Mechanism. A processor runs the mail synchronizer.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1a illustrates the architecture of the present invention.

Figure 1b illustrates an exemplary system block diagram with an implementation of the present invention.

Figure 1c illustrates an exemplary system block diagram of the present invention.

Figure 1d illustrates an exemplary personal address book.

Figure 1e illustrates the general steps followed in an exemplary installation procedure installing the present invention's client device address book (DAB).

Figure 2a illustrates an exemplary block diagram of the mail synchronizer of the present invention.

Figure 2b illustrates a block diagram of the identification (ID) generator illustrated in Figure 2a.

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