PTO/SB/16 (12-04)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. _____

INVENTOR(S)		
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
James M.	Dabbs III	Stockbridge, GA
Brian	Claise	Alpharetta, GA

Additional inventors are being named on the _____ *separately numbered sheets attached hereto*

TITLE OF THE INVENTION (500 characters max):

METHOD AND APPARATUS FOR EFFICIENT AND RELIABLE GROUP ALERTING

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☑ The address corresponding to Customer Number: 001609

OR

☑ Firm or Individual Name: Roylance, Abrams, Berdo & Goodman, L.L.P.

Address: 1300 19th Street, N.W., Suite 600

City	State	Zip
Washington	D.C.	20036
Country U.S.A.	**Telephone** (202) 659-9076	**Fax** (202) 659-9344

ENCLOSED APPLICATION PARTS *(check all that apply)*

☐ Application Data Sheet. See 37 CFR 1.76
☑ Specification *Number of Pages* 29
☑ Drawing(s) *Number of Sheets* 4
☐ CD(s), Number of CDs _____
☐ Other (specify) _____

Application Size Fee: If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

METHOD OF PAYMENT OF FILING FEES AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT

☐ Applicant claims small entity status. See 37 CFR 1.27.
☑ A check or money order is enclosed to cover the filing fee and application size fee (if applicable).
☐ Payment by credit card. Form PTO-2038 is attached
☑ The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Deposit Account Number: 18-2220. A duplicative copy of this form is enclosed for fee processing.

TOTAL FEE AMOUNT ($) $100.00

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.
☑ No.
☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

SIGNATURE Stacey J. Longanecker
TYPED or PRINTED NAME Stacey J. Longanecker
TELEPHONE (202) 659-9076

Date December 16, 2004
REGISTRATION NO. 33,952 *(if appropriate)*
Docket Number: 47726

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

47726

Patent Application

for

METHOD AND APPARATUS FOR EFFICIENT AND RELIABLE GROUP ALERTING

by
James M. Dabbs III
and
Brian Claise

Detailed Description of the Preferred Embodiments

[0001] Overview

[0002] A method is described for reliable, wireless group alerting. In this system, an encrypted message is broadcast to a group address. This message is received by a number of mobile receivers, each of which then acknowledges back to the system, decrypts the message, displays it to the user, and allows the user to respond. The system comprises a database, switch, a wireless network, and a plurality of intelligent mobile receivers. It employs centralized management to simplify the role of the mobile users and administrators, minimizing configuration and operational human errors that would otherwise result in confusion or lost messages. It also employs novel mechanisms to compress the responses from the receivers to use minimal airtime. The system is particularly relevant to public safety and critical infrastructure operators, where large group dispatches must be delivered quickly and deterministically to a heavily distracted mobile workforce, and their responses must be delivered to the dispatch center efficiently. As such, this system provides a comprehensive, meaningful solution to support distracted users with simple, resilient group messaging.

[0003] System Description

[0004] With reference to Fig. 1, a central switching system ('Switch') connects to a Wireless Network and communicates with a number of subscriber devices ('Receivers') such as pagers, cell phones, or wireless personal data assistants. Each Receiver contains one identifying Primary Address and multiple Group Addresses, and is capable of receiving broadcast alert messages directed to any of its addresses. The Switch contains a Receiver Database describing receivers, their group membership, and connects to a Wireless Network, such as a PCS network employing cell broadcast, a paging network, or a broadcast-capable data network employing group addressing.

[0005] With reference to Fig. 2, the Receiver Database comprises an independent table of Receivers and an independent table of Groups. Each Receiver row contains an identifying personal address, as well as other information specific to a single device and its Wireless Network architecture. Each Group row contains an identifying group address, an encryption key, and a symbolic name. A dependent table, Membership, provides the many-to-many relationship between Receiver and Group rows. Each Membership row assigns one receiver to one group. Membership rows contain GroupAddress and PersonalAddress columns, identifying a Group and Receiver row, respectively. Each Membership row also contains a ReceiverGroupNumber column, a small mnemonic value that uniquely identifies the Group from other Groups programmed into the same Receiver, and CC ('carbon copy') flag to define specific behavioral aspects of the Receiver. Receivers do not respond to messages received by group addresses if their CC flag is set, while they can respond to messages received by group addresses with if their CC flag is clear. This mechanism allows users to monitor alerts to specific groups, without expectation by the source of the alerts for a response.

[0006] As administrative changes occur to the Receiver Database, configuration transactions are executed over the air with individual Receivers to synchronize their configuration memory with the Receiver Database. The system therefore maintains an up-to-date image in each the configuration memory of each Receiver, including a list

of Group addresses, their ReceiverGroupNumber values, their symbolic names, encryption keys, and CC flags.

[0007] A 'Client' (e.g., a computer-aided dispatch center, a human user, or other network client) uses this system to broadcast alert messages to groups of Receivers. To do so, the client composes a message, including display content and a list of response strings. The Client then connects to the Switch and requests transmission of the message to a particular group name. Depending on architecture of the Wireless Network, either the Client or the Wireless Network assigns an identifying field to the message such that user responses can be associated with the correct message.

[0008] Upon receipt of the message, the Switch responds to the Client with detailed information on the group such as a list or a count of group members. It then encrypts the Group Message, assigns a cyclical message sequence number, and transmits the message to the Group Address.

[0009] Upon receiving the Group Message, the Receivers decrypt the message and display the content, group name, and multiple choice options to the user. Each Receiver with a CC flag of false transmits one or more acknowledgement codes through the Network back to the Switch, specifying message received, message read notifications, and enumerated multiple-choice responses. The datagram carrying the acknowledgement code also includes the personal address of the receiver, the ReceiverGroupNumber of the group address, and the message sequence number of the message, which together efficiently and uniquely identify the specific group message at the specific Receiver.

[0010] Each receiver provides a configuration display for the user. This display allows the user to specify, by group name, how notification should occur for messages received by each group address. Similarly, the Switch provides an administrative human interface that allows a system administrator to set up and maintain the Receivers belonging to each Group.

[0011] An Exemplary Computer Aided Dispatch (CAD) System

[0012] The foregoing system description discusses the high-level organization and data flow of a group messaging system that can use any of a variety of network types.

With reference to Figs. 3, 4 and 5, the following is a description of an exemplary type of network, that is, a ReFLEX "two-way" paging network that incorporates the new group messaging layer of the present invention. Fig. 3 is a Sparkgap campus server or network controller which is configured to implement group messaging in accordance with the present invention. Fig. 4 illustrates the use of a Sparkgap network controller in a system configuration similar to Fig. 1. Fig. 5 illustrates another exemplary system configuration.

[0013] The Sparkgap network controller in Fig. 3 provides private two-way paging, mobile data, and wireless email over inexpensive channel pairs in the 800/900 ESMR band. Coverage can be configured for a single building, multiple counties, or state-wide service, supporting small user devices such as pagers and personal data assistants (PDAs) with Motorola's proprietary ReFLEX protocol. Since the Sparkgap server provides encrypted acknowledgement paging, responders reply immediately to CAD events and other messages directly from their pagers, and AES encryption protects all transmissions. Since the Sparkgap server supports mobile applications, law enforcement officers can use PDAs to connect wirelessly with municipal, state, and federal databases to run license checks, warrants, and other mobile applications. Further, the Sparkgap server is useful for automatic vehicle location. Small, inexpensive GPS sending units can monitor vehicles and heavy equipment, sending real-time location and status information on a 24/7 basis. The Sparkgap server can also support wireless e-mail. Users can send and receive secure, wireless email using pagers and PDAs.

[0014] The Sparkgap server can support one base station or hundreds of base stations, each consisting of a standard 900MHz paging transmitter and ReFLEX base receiver. A single station covers a 7-20 mile radius, and a network can coordinate multiple stations using simulcast or cellular arrangements to optimize coverage and capacity. A single channel pair can serve thousands of users, and multiple channels can be aggregated for additional capacity. Even under worst-case peak conditions, ReFLEX uses centralized arbitration to prevent contention and channel overloading.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.