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Kaplan et al.

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(54) **SYSTEM AND METHOD FOR MOBILE CONFIGURATION**

(75) Inventors: **Diego Kaplan**, San Diego, CA (US); **Bilhan Kirbas**, La Jolla, CA (US)

(73) Assignee: **Kyocera Wireless Corp.**, San Diego, CA (US)

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(51) **Int. Cl.**
H04M 3/00 (2006.01)

(52) **U.S. Cl.** **455/466**; 455/418; 455/419; 455/420; 455/517

(58) **Field of Classification Search** 455/418, 455/419, 420, 517, 466
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,029,065	A	2/2000	Shah	455/414
6,223,028	B1	4/2001	Chang et al.	455/419
6,275,693	B1	8/2001	Lin et al.	455/414
6,292,833	B1	9/2001	Liao et al.	709/229
2002/0144151	A1 *	10/2002	Shell et al.	713/201
2003/0186721	A1 *	10/2003	Kanazawa et al.	455/552.1

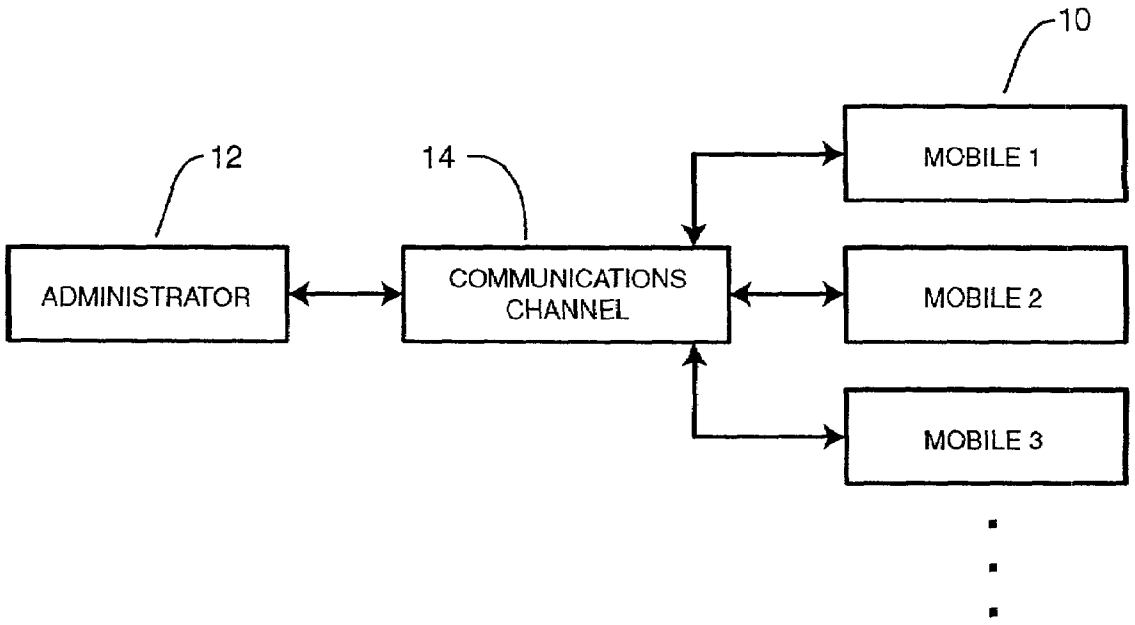
* cited by examiner

Primary Examiner—Joseph Feild
Assistant Examiner—S. Smith

(57) **ABSTRACT**

A system and method for configuring, or provisioning, mobile communication devices **10** by an administrator **12**. Administrator **12** comprises a computer, or second mobile **18**. Mobile configuration feature codes are communicated to mobile **10** by communications channel **14** which can comprise RF wireless transmission over a mobile communication network. Feature codes are transmitted to mobile **10** by way of a Short Message System (SMS) or an Internet protocol-based Over-the-Air (IOTA) protocol.

19 Claims, 3 Drawing Sheets



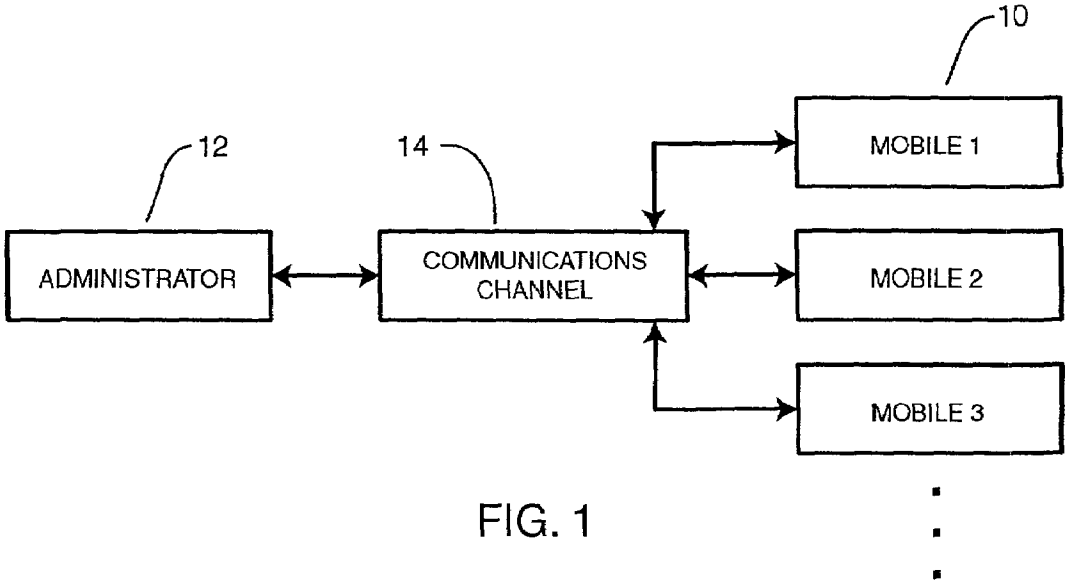


FIG. 1

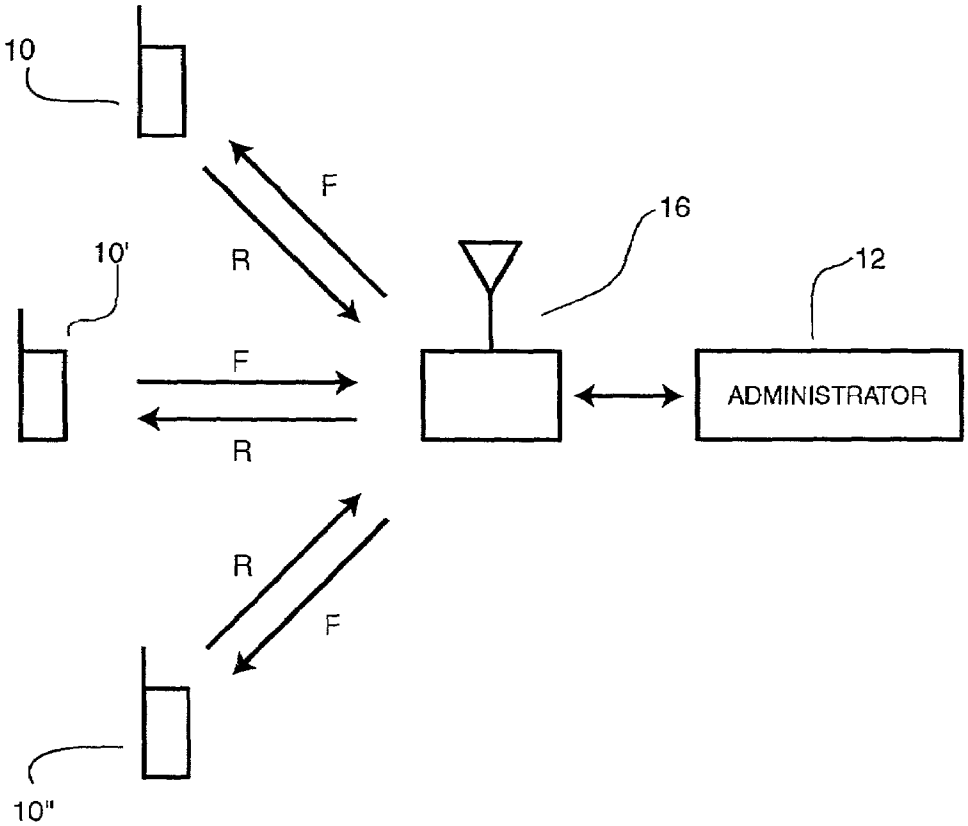


FIG. 2

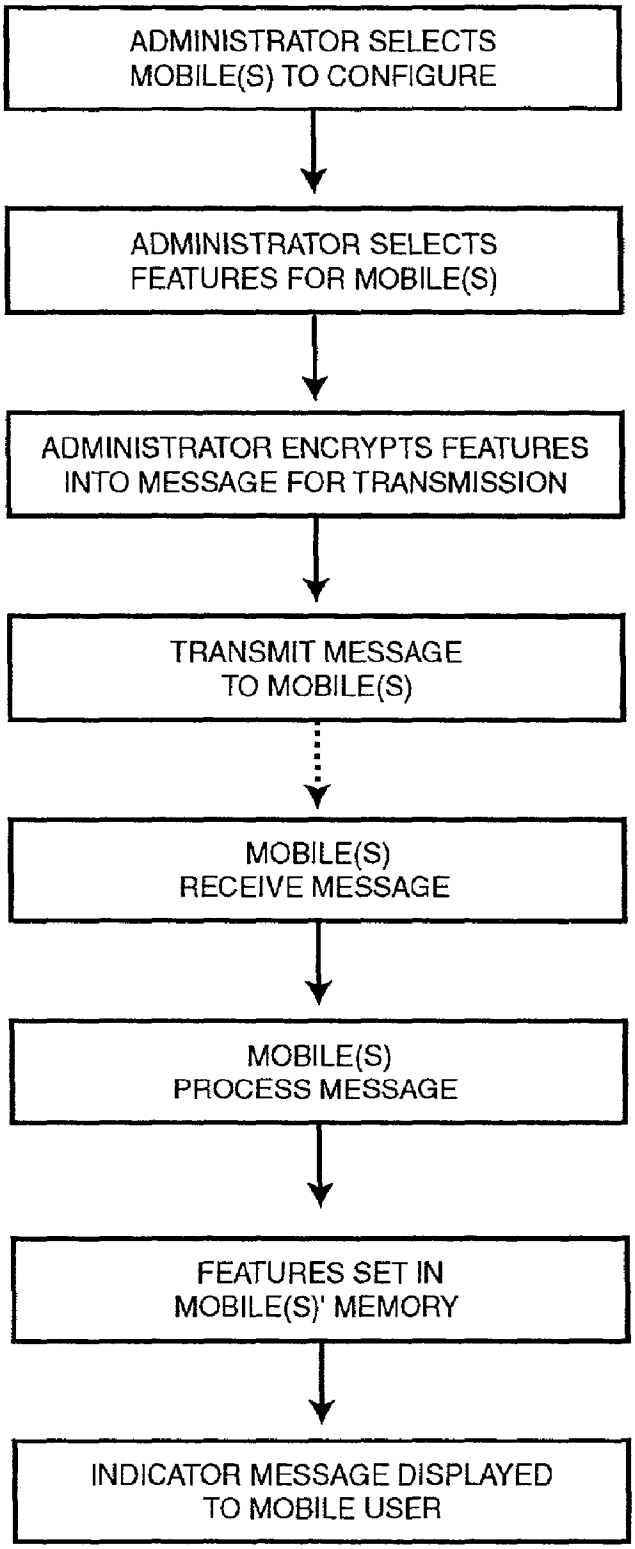


FIG. 3

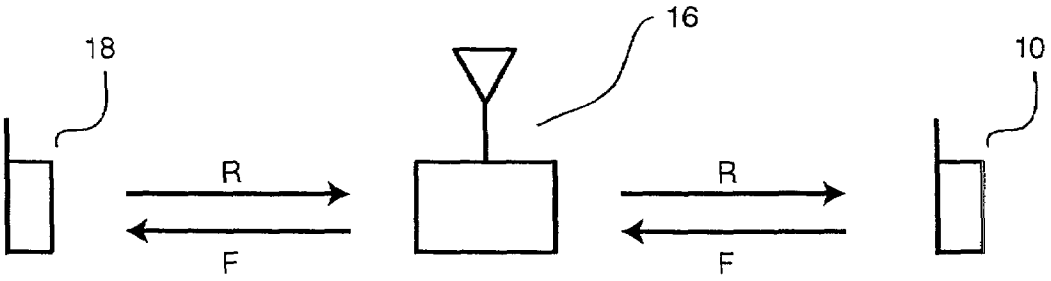


FIG. 4

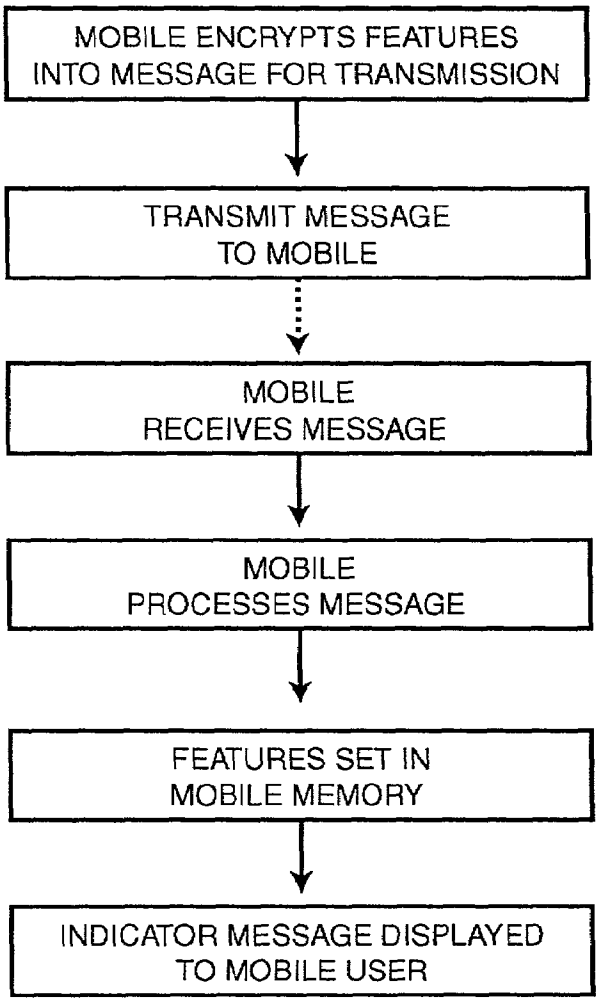


FIG. 5

SYSTEM AND METHOD FOR MOBILE CONFIGURATION

BACKGROUND OF THE INVENTION

1. Field of the Invention (Technical Field)

The present invention relates to mobile communication devices, in particular to configuring or reconfiguring a mobile by transmitting a configuration message from a mobile, or a computer, to the mobile to be configured.

2. Background Art

There are a variety of mobile communication devices available for wireless, or remote, communications, including mobile cellular and satellite telephones, pagers, personal digital assistants (PDAs), and the like. These devices typically comprise a rigid housing enclosing a printed circuit board, an associated microprocessor, electronic and electro-acoustic components, and a portable power supply such as a battery. Mobile communication devices communicate through a variety of means, including antennas that transmit and receive radio frequency (RF) signals, infrared (IR) emitters and receivers, or cable connections to input/output ports of computers and other mobile devices. The user interfaces with the circuitry and microprocessor of the device through a keypad, or touchpad, located on the front outer surface of the housing. Keys on the keypad are pressed by the user to temporarily close an internal switch and send a signal to the microprocessor where an appropriate routine processes the input and operates the device. On mobile telephones, graphical elements, such as alphanumeric characters and icons, are located on or near the keys of the keypad to guide the user in interfacing with the mobile. A display on the housing of the device provides a readout of data input by the user, access to spatially navigated menu trees, includes a graphical user interface (GUIs), windows, and messages.

Mobile telephones in particular (hereafter referred to as "mobiles") are configured, or "provisioned", for various modes of operation. The configuration determines how basic functions of the mobile will operate, such as setting or resetting wireless voice and data exchange protocol parameters, parameters used to enable or disable communication features, and local network services available to the mobile. Examples of communication features include, but are not limited to, call forwarding, call waiting, caller identification, automatic callback, conference calling, message waiting notification, call encryption, voice mail, cost of call notification, enhanced vocoder (voice encoder), and the ability to transmit and receive textual messages. Mobiles are also configured so that communications occur through the appropriate service provider and are invoiced properly. A telephone number and a 34-bit binary mobile identification number (MIN) for analog communications, (international mobile subscriber identity (IMSI) for CDMA communications), used to identify a particular mobile subscriber within the mobile telephone communication network, are also configured into a mobile in a number assignment module (NAM) within non-volatile memory of the mobile. The NAM is also used to indicate whether the mobile functions in the personal communication service (PCS) band (1.9 GHz) or the cellular band (800 MHz). Other configuration information can include an electronic serial number (ESN), network identification (NID), system identification (SID), a home registration indicator, a preferred roaming list (PRL), and other information that allows the network base station to

mobile, set into the mobile upon entering an appropriate access code, or set after connection to the wireless carrier network through which the mobile operates.

Typically, the configuration is established after connection to the wireless carrier network, commonly referred to as over-the-air service provisioning (OTASP). (A specification for OTASP operation can be found in "Over-the-Air Service Provisioning of Mobile Stations in Spread Spectrum Systems", TIA/EIA/IS-683-A, incorporated herein by reference.) Local service parameters are acquired from and set by the carrier network via the over-the-air function/customer service center (OTAF/CSC) through a particular server, typically that of the communication service provider. The mobile requests configuration information from a network server and is then configured "over the air" in accordance with the information acquired from the server. The information obtained from the server is executable or binary code containing interfaces, data, and operational parameters that modify local service parameters to set or alter mobile functions, such as communication features, including whether the mobile will support cellular or personal communication service, dual-band or single band transmission, analog or digital transmission protocol, etc.

Users are not directly provided the information necessary to configure, or reconfigure, a mobile; however, most mobiles can be reconfigured by accessing a "hidden" menu within the mobile processor. To do so, the communications service provider must either contact the user, or subscriber, in order to instruct the user how to reconfigure the mobile, or the mobile must be taken to a service provider service center. The mobile cannot be reconfigured for a particular feature until the appropriate access code has been entered into the mobile to access the appropriate configuration menu. Particular communication features require a feature code in order to set or reset the feature.

Once configured, information is exchanged between mobiles or between mobiles and other devices such as computers via RF signals, or cable connections sometimes referred to as "connectivity kits". Wireless RF transmission provides the longest transmission range currently available and is often more flexible than cable transmission.

As mobile designs have advanced over time, more features are available to the user, such as the ability to program, store, and transmit data. Mobiles store contact information, for example, names, telephone numbers, addresses, e-mail addresses, web site addresses, and scheduling information such as meetings and appointments. Many mobiles are capable of transmitting textual data as well as voice information to other mobiles, computers, servers, or over the Internet by means such as short messaging systems (SMS), discussed below, and Internet protocol-based over-the-air configuration management (IOTA protocol).

In order to transmit data and text messages between mobiles or between mobiles and computers, servers, or the Internet, spatially navigated menus shown on the display are typically implemented to aid the user in inputting messages and data, and also to aid the user in accessing data for revision or transmission. To improve the efficiency of text message transmission between mobiles, a variety of SMS have been designed for rapid text entry. Early applications of SMS were used by telephone operators to alert subscribers to newly received voice mail messages or stored facsimiles by displaying a simple message on the mobile display that the user saw once the mobile was turned on. Later applications of SMS provide users with a list of default messages

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