Title: A SYSTEM AND METHOD OF SELF SERVICE INTERNET PROTOCOL PHONE ACTIVATION

Abstract: The present invention relates to a system for activating a device (10) for executing voice over internet protocol functions. The system comprises a main server (20) for receiving an activation request from a user; a verification module (30) for verifying a device identifier and a user identity; and a registration module (40) for registering the user and updating the user information after the user has been verified by the verification module (30). The present invention further relates to a method for activating a device (10) for VoIP functions, comprising verifying a device identifier and a user identity; updating the device identifier and the user identity in the main server (20); assigning available extension number to the user; and delivering a configuration file to the device (10).
A SYSTEM AND METHOD OF SELF SERVICE INTERNET PROTOCOL PHONE ACTIVATION

Technical field of the invention

The present invention generally relates to a system and method for activation of devices capable of voice over Internet Protocol (VoIP) functions, more particularly the present invention relates to a system and method for autonomous activation of devices capable of VoIP functions without manual intervention once an activation request has been sent.

Background of the invention

Voice over Internet Protocol (VoIP) is a field of technology that allows real-time audio data transmission over the Internet. Rather than using the public switched telephone network (PSTN) as in the traditional telephone, VoIP technology involves sending voice information in digital form in discrete packets over the internet.

The VoIP technology is especially advantageous for the corporate world as it avoids the cost associated with long distance communication or international calls via the public switched telephone network. Although charges may be incurred by the VoIP service providers, it is still significantly cheaper compared to the costs involved in public switch telephone network. In addition, the VoIP technology is also advantageous in terms of the infrastructure requirement. To compare with the traditional telephone, the VoIP devices do not require a Private Branch Exchange (PBX) to be installed in the building. In fact, the VoIP services are available as long as they are connected to internet.

Internet Protocol (IP) phones are devices which are equipped with the functionality to make VoIP calls. VoIP phone systems today vary greatly in features, size, and type of phone lines they can operate with. The IP phones are generally divided into hardphones and softphones. Hardphones are hardware devices dedicated for VoIP
communications, whereas the softphones are software that is incorporated into
devices which allows for VoIP communication to be performed in those non-
dedicated devices. Regardless of which type the IP phone is, activation of the
phones are required before VoIP calls can be made. Activation involves setting up
the devices with the correct configuration before a call can be made. The setting
information includes the call number assigned to the devices and a device identifier
such as the media access control (MAC) address.

VoIP service providers as well as the end users are faced with the challenge of
activating IP phones in bulk. This is especially prominent in the corporate
environment or institutions involving numerous end-users. The present method of
activation of IP phones requires a system administrator to perform user registration
at the server side and phone configuration file creation at the server side. An
activation technician is required to perform flash configuration on the phone, as
well as testing and verification of the IP phone setup. These processes are very
much manual, resource intensive, time consuming and prone to human errors.

United States Patent No. 6958992 B2 describes a method for registering an IP
phone using an IP phone switch via a personal identification number for
authentication. The personal identification number is associated with a directory
number at the IP phone switch and communication is established between the IP
phone and the IP phone switch. The personal identification number is
authenticated with an address code received from the IP phone. The directory
number is then associated with the directory number for routing and switching call
traffic to and from the IP phone. The drawback of this method is that it requires
intervention by a system administrator in assisting the process of registering the IP
phone and a personal identification number is needed to be generated.

automatically deploying IP telephony devices. The method comprises receiving a
request for configuring the IP phone connected to router the wherein the request
includes an IP address of the IP phone and data that uniquely identifies the IP
phone such as MAC address. Upon approving the IP phone, the configuration data
is sent to the IP phone for deployment of the phone. The method described in this prior art relies on the IP address for authentication instead of a user account which may lead to security problems.

United States Patent No. 8144692 B2 discloses a method for provisioning phones that are used in packet voice network. The method requires the end users to provide all the information needed for provisioning system to identify user and phone association. Once the association is determined, the IP phone can be automatically provisioned without manual involvement. The prior art requires the user to call the system to have his voice verified. This has rendered the activation process more laborious and voice verification may be prone to error.

In view of the above, there is a need therefore to provide a system and method which allows autonomous configuring and activating devices capable of VoIP functions in an error proof manner without requiring human intervention.

Summary of the invention

It is an objective of the present invention to provide a system and method for activation of devices capable of VoIP for the devices to be used for communication over the internet.

It is another objective of the present invention to provide a system and method for activation of the device capable of VoIP in which human intervention is not required for the completion of the activation process.

It is further an objective of the present invention to provide a system and method which utilizes email to send an activation request containing verification information for initiating the activation process of the device for VoIP functions.

It is also an objective of the present invention to reduce the time and cost for activating the devices with VoIP functions.
It is further another objective of the present invention to provide a system and method which verifies information on the MAC address and user identity for activating the devices for VoIP functions.

The present invention relates to a system for activating a device for executing voice over internet protocol functions, comprising a server for providing the device connection to a network, and receiving activation request from a user, wherein the activation request comprises an email containing the MAC address of the device, a verification module, operating within the server, for verifying the device and a user for using the voice over internet protocol, a registration module in connection with the verification module for registering the user and updating the user information after the user has been verified by the verification module.

The present invention further relates to a method for activating a device for executing voice over internet protocol functions. The method involves a server receiving an activation request comprising an email containing MAC address of the device. Verification on the MAC address and a user identity is performed, wherein the activation request is rejected when the MAC address or the user identity is found to be non-valid. The MAC address and the user identity are updated in the server. An available extension number is assigned to the device. A configuration file is generated and delivered to the device.

Brief description of drawings

Figure 1 illustrates a system for activating a device for voice over internet protocols functions according to the present invention.

Figure 2 illustrates a process flow for the method of activating a device for voice over internet protocols functions according to the present invention.

Detailed description of the preferred embodiments
The present invention will now be described in more detail with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as being limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

The present invention relates to a system for activating a device (10) for executing voice over internet protocol (VoIP) functions, comprising a main server (20) for providing the device connection to a network, and receiving activation request from a user, wherein the activation request comprises an email containing the device identifier. The system of the present invention further comprises a verification module (30), operating within the main server (20), for verifying a device identifier and a user identity. A registration module (40) is in connection with the verification module (30) for registering the user and updating the user information after the user has been verified by the verification module (30).

With reference to Figure 1, the system for activating a VoIP capable device (10) according to the present invention comprises the main server (20), the verification module (30), the registration module (40), identity server (50), and the device identifier database (60). The device (10) may be any type of device that is capable of executing VoIP communication functions. Having said that, the device (10) includes IP phones dedicated for VoIP services and digital devices incorporated with the VoIP software that enable VoIP calls to be made. The digital devices include, in a non-limiting manner, personal digital assistants (PDA), personal computers, handheld devices, wireless and mobile devices.

The main function of the main server (20) is to provide network connection to the device (10), thereby allowing data transfer over the internet. In addition, the main server (20) of the present invention also receives the activation request from the user. In a preferred embodiment, the activation request comprises an email having the device identifier as the subject. In a preferred embodiment, the device identifier is the MAC address of the device (10). The main server (20) is also connected to
the verification module (30) and the registration module (40) for performing their respective functions which will be described in detail hereafter. The main server (20) is also capable of generating phone configuration for the device (10) at the end of the activation process.

The verification module (30) which operates within the main server (20) verifies the information of the activation request, wherein the information comprises the device identifier and the user identity. The MAC address is verified against a device identifier database (60) which comprises a list of MAC addresses of the devices which have been registered and activated. This is to prevent registration of the same device for more than one time.

Another piece of information which requires to be verified is the user identity. The user identity is verified against the identity server (50) which is connected to the verification module (30). In a preferred embodiment, the identity server (50) comprises the list of valid user identities and the user information. In a preferred embodiment, the user identity is represented by the email address of the activation request.

The registration module (40) operates in connection with the verification module (30) and the main server (20). The registration module (40) registers the user identity into the record together with the device identifier, preferably the MAC address. Available extension number is determined and assigned to the user. The configuration file thus compiled is then conveyed from the main server (20) to the device (10) for deployment of the device (10).

With reference to Figure 2 which shows the method of activating the device (10) for VoIP functions according to the present invention, the method according to the present invention comprises receiving by a main server (20) an activation request comprising an email containing a device identifier, performing verification by the verification module on the device identifier and a user identity, wherein the activation request is rejected when the device identifier or the user identity is found to be non-valid, updating the device identifier and the user identity in the main
server (20), assigning an available extension number to the device (10), and generating a configuration file and delivering the configuration file to the device (10).

The method is initiated by the user sending an activation request to the main server (10). The activation request is preferably an email having the MAC address of the device as its subject. The MAC address normally can be retrieved from the configuration parameters display in the VoIP dedicated hardphones. The validity of the activation request format is then determined by the system. The activation request is rejected if the format of the MAC address is determined to be incorrect. The MAC address is a 12 character hexadecimal code. For example, if an additional character has been erroneously entered into the subject column of the email, an error message will be sent to the user. After determining that the MAC address is correct, the process will then proceeds to the verification stage performed by the verification module (30).

In the verification stage, the MAC address of the device (10) will be verified by checking the device identifier database (60) connected to the verification module (30). The device identifier database (60) contains a list of the MAC addresses of the registered devices. If the MAC address is found to be in use (i.e. the MAC address has been recorded in the database), then the verification fails and an error message is sent to the user. This is to prevent registration of the same device for more than one time and avoid assigning more than one extension number to the device.

The verification of the user identity then follows after the successful verification of the MAC address. In this step, the user identity is checked with the identity server (50). In a preferred embodiment, the user identity is represented by the email address. This is advantageous because the user does not need to enter a separate user ID into the email. If the user identity is not found within the identity server (50), then the verification fails and an error message is sent to the user, signifying termination of the activation process. Otherwise, the user information associated with the user identity is retrieved from the identity server (50). Logically, a user
must have been registered with the VoIP service provider beforehand for using the VoIP service, to have his user identity recorded in the identity server (50). A non-registered user, therefore, is not able to activate its device for the service. In a preferred embodiment, an authentication module is updated wherein the retrieved user information and the MAC address is recorded therein.

The registration module (40) then retrieves the available extension number for assigning to the new device (10). Together with the user information and the MAC address, the assigned extension number is updated to the authentication module for generation of a configuration file by the main server (20). With this, the user is also now registered in the main server (20).

The configuration file is then sent to the device (10) via the registration module (40) for execution of the configuration setting stored in the configuration file. In a preferred embodiment, the configuration is tested by making a VoIP call to the newly assigned extension number to determine if VoIP communication via the device is functioning.

Although the present invention has been described in a specific embodiment as in the above description, it should be understood that the above description does not limit the invention to the above given details. It will be apparent to those skilled in the art that various changes and modification may be made therein without departing from the principle of the invention or from the scope of the appended claims.
Claims

1. A system for activating a device (10) for executing voice over internet protocol (VoIP) functions, comprising:
   a main server (20) for providing the device connection to a network, and receiving an activation request from a user, wherein the activation request comprises a device identifier;
   a verification module (30), operating within the main server (20), for verifying a device identifier and a user identity;
   a registration module (40) in connection with the verification module (30) for registering the user and updating the user information after the user has been verified by the verification module (30).

2. A system for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 1, wherein the activation request comprises an email containing a media access control (MAC) address.

3. A system for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 1, wherein the verification module (30) is connected to a device identifier database (60) comprising a list of device identifiers in use.

4. A system for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 1, wherein the verification module is connected to an identity server (50) comprising a list of valid email addresses representing user identities.

5. A method for activating a device (10) for executing voice over internet protocol (VoIP) functions, comprising:
   receiving by a main server (20) an activation request comprising a device identifier;
performing verification by a verification module (30) on a device identifier and a user identity, wherein the activation request is rejected when the device identifier or the user identity is found to be non-valid;

upgrading by the verification module (30) the device identifier and the user identity in the main server (20);

assigning by a registration module (40) an available extension number to the device (10);

generating a configuration file and delivering the configuration file by the main server (20) to the device (10).

6. A method for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 5, wherein the activation request comprises an email containing the media access control (MAC) address.

7. A method for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 5, wherein the device identifier is verified by referring to a device identifier database (60).

8. A method for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 5, wherein the user identity is represented by the email address of the activation request.

9. A method for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 5, wherein the user identity is verified by referring to an identity server (50).

10. A method for activating a device (10) for executing voice over internet protocol (VoIP) functions according to claim 5, wherein the method further comprises retrieving user information for generating configuration file after the user identity is found to be valid.
Figure 1

10
Send Email with subject set to Phone MAC Address

20
Generate Phone Configuration

30
Verify User

40
User Registration

50
Verify Phone Status

60
Approve Phone

Identity Server

MAC Address database

Registration module

Figure 1
INTERNATIONAL SEARCH REPORT

International application No
PCT/MY2014/00Q115

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L29/12  H04L29/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18 August 2005 (2005-08-18) paragraph [Q008] - paragraph [Q009]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>paragraph [0020]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>paragraph [0029] - paragraph [0032]</td>
<td>2,6</td>
</tr>
<tr>
<td></td>
<td>paragraph [0036] - paragraph [0037]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>paragraph [0046] - paragraph [0052]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>paragraph [0061] - paragraph [0063]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>paragraph [0081] claim 1</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>EP 2 364 043 AI (RESEARCH IN MOTION LTD [CA]) 7 September 2011 (2011-09-07) abstract paragraph [0111]</td>
<td>2,6</td>
</tr>
</tbody>
</table>

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

Date of the actual completion of the international search
24 November 2014

Date of mailing of the international search report
10/12/2014

Name and mailing address of the ISA/
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016

Authorized officer
lapo chi no, Giuliana

Form PCT/ISA/210 (second sheet) (April 2005)
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 2005180403 A1</td>
<td>18-08-2005</td>
<td>CA 2555567 A1</td>
<td>01-09-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 1918668 A</td>
<td>21-02-2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 202005021044 U1</td>
<td>08-02-2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1719311 A1</td>
<td>08-11-2006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2005180403 A1</td>
<td>18-08-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2005198218 A1</td>
<td>08-09-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2005081479 A1</td>
<td>01-09-2005</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 2364Q43 A1</td>
<td>07-09-2011</td>
</tr>
</tbody>
</table>