US008935690B2

(12) **United States Patent**
Kim et al.

(10) **Patent No.: US 8,935,690 B2**
(45) **Date of Patent: Jan. 13, 2015**

(54) **METHOD AND SYSTEM FOR INSTALLING APPLICATIONS**

(75) Inventors: **Jin-hee Kim**, Gyeonggi-do (KR); **Dong-sung Kim**, Gyeonggi-do (KR); **Woo-hyuk Choi**, Gyeonggi-do (KR); **Young-ha Kim**, Seoul (KR); **Nam-geol Lee**, Seoul (KR)

(73) Assignee: **Samsung Electronics Co., Ltd.**, Yeongtong-gu, Suwon-si, Gyeonggi-do (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 633 days.

(21) Appl. No.: **13/018,554**

(22) Filed: **Feb. 1, 2011**

(65) **Prior Publication Data**

US 2011/0202914 A1 Aug. 18, 2011

Related U.S. Application Data

(60) Provisional application No. 61/304,017, filed on Feb. 12, 2010.

(30) **Foreign Application Priority Data**

Jul. 28, 2010 (KR) 10-2010-0072852

(51) **Int. Cl.**
G06F 9/445 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 8/61*** (2013.01)
USPC **717/178**; 717/172; 717/173; 717/175; 709/201; 709/202

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,104,392	A *	8/2000	Shaw et al.	715/749
6,751,671	B1 *	6/2004	Urien	709/229
2003/0076794	A1 *	4/2003	Kawasaki et al.	370/329
2003/0088650	A1 *	5/2003	Fassold et al.	709/220
2003/0120463	A1 *	6/2003	Cox et al.	702/186
2003/0236907	A1 *	12/2003	Stewart et al.	709/231
2004/0224674	A1 *	11/2004	O'Farrell et al.	455/418
2004/0225708	A1 *	11/2004	Christodoulou et al.	709/200
2005/0114767	A1 *	5/2005	Sato	715/527
2007/0245238	A1 *	10/2007	Fugitt et al.	715/700
2008/0129819	A1 *	6/2008	Mark et al.	348/51
2008/0189679	A1 *	8/2008	Rodriguez et al.	717/105
2008/0228927	A1 *	9/2008	Toub	709/228
2008/0307390	A1 *	12/2008	Marchant	717/115
2009/0217359	A1 *	8/2009	Kikkawa et al.	726/5

(Continued)

OTHER PUBLICATIONS

Solin, Daniel; "Generating One-Time URLs with PHP;" ONLamp.com; May 12, 2002; Retrieved from internet: http://www.onlamp.com/ipt/a/2994 ; XP002656466.

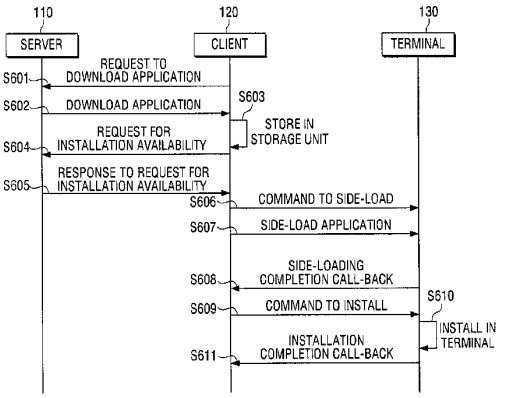
(Continued)

Primary Examiner — Chameli Das
(74) *Attorney, Agent, or Firm* — Cha & Reiter, LLC.

(57) **ABSTRACT**

A method for installing an application according to an exemplary embodiment downloads an application purchased by a client and installs the application in a terminal in an asynchronous manner. The method includes transmitting a request to download at least one application to the server, downloading an application from the server in response to the request to download at least one application and storing the downloaded application, and installing the stored application in the terminal in an order of completion of downloading of the application.

20 Claims, 6 Drawing Sheets



DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

(56) **References Cited**

U.S. PATENT DOCUMENTS

2009/0260004	A1*	10/2009	Datta et al.	717/175
2010/0063929	A1*	3/2010	Torigai et al.	705/44
2010/0251230	A1*	9/2010	O'Farrell et al.	717/173
2010/0262958	A1*	10/2010	Clinton et al.	717/171
2010/0262959	A1*	10/2010	Bruno et al.	717/171
2012/0036552	A1*	2/2012	Dare et al.	726/1
2012/0102110	A1*	4/2012	Salesky et al.	709/204
2012/0191839	A1*	7/2012	Maynard	709/223
2013/0007111	A1*	1/2013	Charles	709/203
2013/0124602	A1*	5/2013	Miley	709/203
2013/0238749	A1*	9/2013	Anka	709/217
2013/0246929	A1*	9/2013	Hoffman et al.	715/738
2013/0263220	A1*	10/2013	Larson et al.	726/3
2013/0263260	A1*	10/2013	Mahaffey et al.	726/22
2013/0293916	A1*	11/2013	Tamura	358/1.13
2014/0196026	A1*	7/2014	Seo et al.	717/178

OTHER PUBLICATIONS

Muehlbauer, Thomas; Patent Application Publication No. US 2007/0220592 A1; Publication Date: Sep. 20, 2007; "Comparing Media Files Against Database Content;" . . .

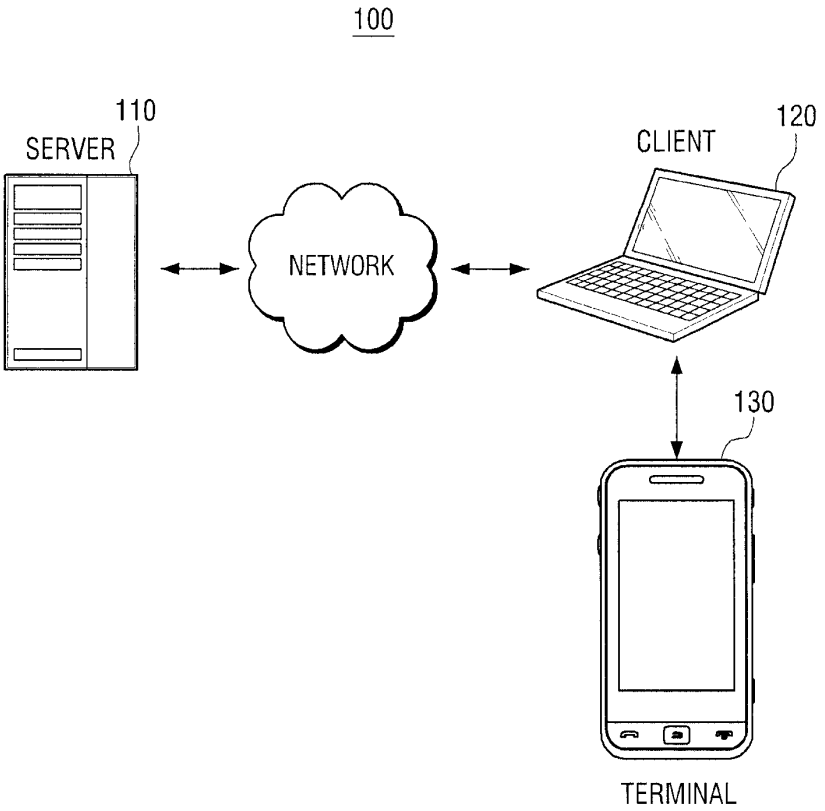
Gharabally, Sam, et al.; Patent Application Publication No. US 2009/0183151 A1; Publication Date: Jul. 16, 2009; "Obtaining Software for a Handheld Device;" . . .

Sivakumar, Nishant; "How To Do Synchronous and Asynchronous Web Downloads;" Jun. 28, 2002; [Retrieved from internet: http://www.codeproject.com/KB/IP/cswget01.aspx on Apr. 26, 2011]; XP002634260.

Poplett, John Harlan, et al.; Patent Application Publication No. US 2008/0160983 A1; Publication Date: Jul. 3, 2008; "Distributing Mobile-Device Applications;" . . .

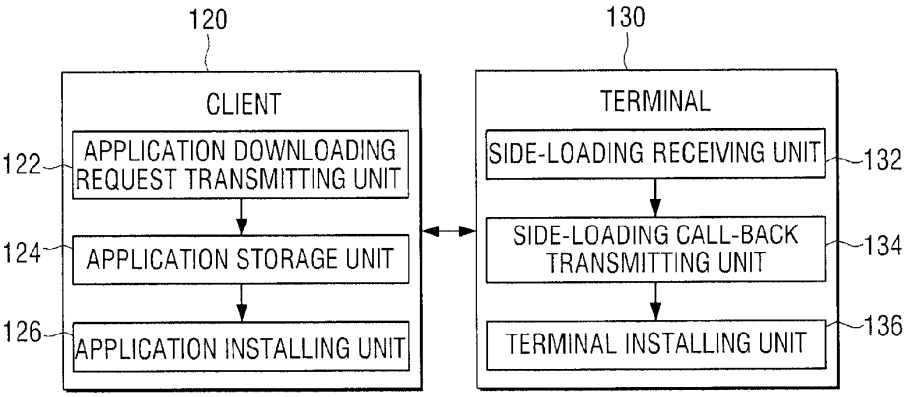
* cited by examiner

FIG. 1



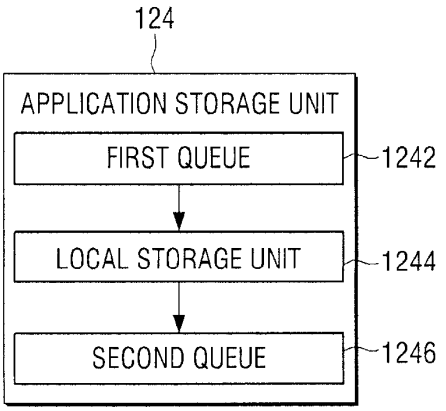
DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

FIG. 2



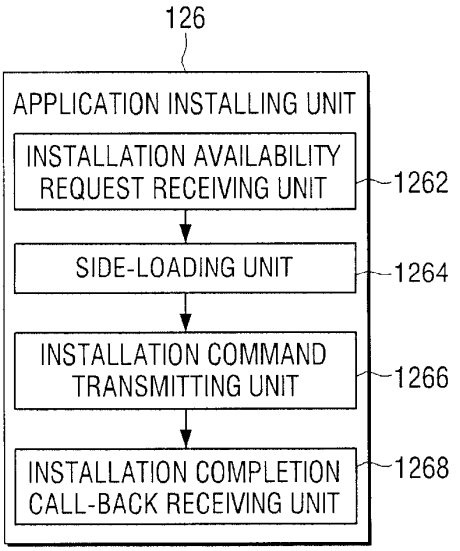
DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

FIG. 3



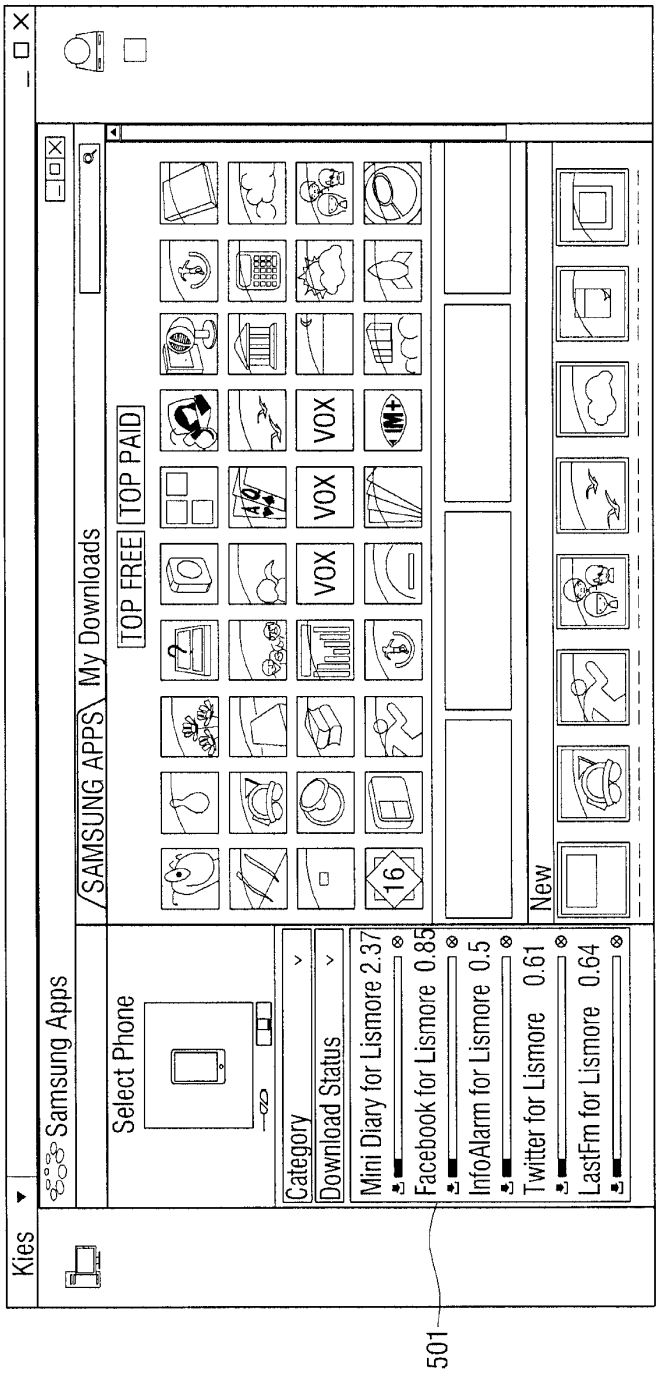
DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

FIG. 4



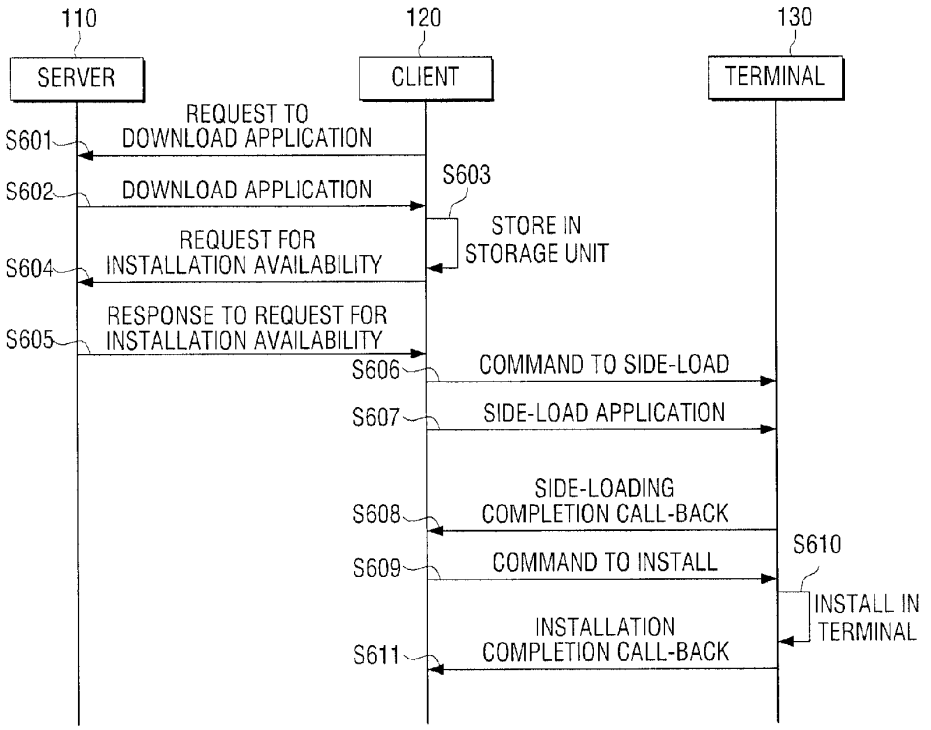
DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

FIG. 5



DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

FIG. 6



DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

METHOD AND SYSTEM FOR INSTALLING APPLICATIONS

CLAIM OF PRIORITY

This application claims priority from Korean Patent Application No. 2010-0072852, filed in the Korean Intellectual Property Office on Jul. 28, 2010, the disclosure of which is incorporated herein by reference. In addition, this application claims the benefit of U.S. Provisional Patent Application No. 61/304,017, filed in the U.S. Patent and Trademark Office on Feb. 12, 2010, the teachings of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a method and a system for installing applications, and more particularly, to a method and a system for installing applications on a terminal using a personal computer (PC).

2. Description of the Prior Art

Recently, as a smart phone is widely recognized and becoming prevalent, applications are increasingly downloaded and installed using an application store by users of all types.

In order to download applications in a terminal such as a mobile phone, a PC is typically used to install the applications. However, a conventional method of installing applications using a PC employs synchronization method which has drawbacks.

For example, while an application is synchronized, no operation can be performed in an application store and thus, a user has to wait until the synchronization is completed.

In addition, if an additional application is installed, it is not possible to install only the newly added application. Instead, the entire applications must be synchronized, causing inconvenience to the user.

SUMMARY OF THE INVENTION

The present invention overcomes the above-described problems and provides additional advantages, by providing a method and an apparatus for installing applications using an asynchronous method.

In accordance with another aspect of the invention, a method for installing an application that is purchased by a client and downloaded from a server in a terminal includes transmitting a request to download at least one application to the server, downloading an application from the server in response to the request to download at least one application and storing the downloaded application, and installing the stored application in the terminal in an order of completion of downloading of the application.

A protocol between the client and the server may be a Hypertext Transfer Protocol over Secure Socket Layer (HTTPS) protocol.

The storing may include downloading the application from the server in an asynchronous manner.

The storing may include downloading the application through a one-time URL address transmitted from the server.

The one-time URL address may be generated as random characters are combined and may be discarded after being used one time.

The storing may include storing an application downloaded from the server in the client in a form of package.

The installing may include receiving a response to a request for availability of installation of the application from the server, transmitting a command to side-load the application to the terminal and side-loading the application on the terminal, and if a side-loading completion call-back is received from the terminal, transmitting a command to install the application.

The installing may further include receiving an installation completion call-back from the terminal.

In accordance with another aspect of the invention, a method for installing an application that is downloaded from a server and stored in a client in a terminal includes, if a command to side-load the stored application is received from the client, side-loading the stored application from the client; if the side-loading is completed, transmitting the side-loading call-back signal to the client; and if a command to install the side-loaded application is received from the client, installing the side-loaded application in the terminal, wherein the application stored in the client is downloaded from the server and stored in an order of completion of downloading of the application.

The side-loading command and the installing command may be transmitted to the terminal using object exchange (OBEX).

The application may be side-loaded on the terminal using a Media Transfer Protocol (MTP).

In accordance with another aspect of the invention, a system for installing an application that is purchased by a client and downloaded from the server in a terminal includes an application downloading request transmitting unit which transmits a request to download at least one application to the server, an application storage unit which downloads an application from the server in response to the request to download at least one application and stores the downloaded application, and an application installing unit which installs the stored application in the terminal in an order of completion of downloading the application.

A protocol between the client and the server may be a Hypertext Transfer Protocol over Secure Socket Layer (HTTPS) protocol.

The application storage unit may download the application from the server in an asynchronous manner.

The application storage unit may include a first queue which downloads the application from the server and stores the downloaded application in an order of purchasing the application, a local storage unit which stores the application downloaded from the server in a form of package, and a second queue which stores the application stored in a form of package in an order of completion of downloading.

The application storage unit may download the application through a one-time URL address transmitted from the server.

The one-time URL address may be generated as random characters are combined and may be abolished/discarded after being used one time.

The application installing unit may include an installation availability request receiving unit which receives a response to a request for availability of installation of the application from the server, a side-loading unit which transmits a command to side-load the application to the terminal and side-loads the application on the terminal, and an installation command transmitting unit which transmits a command to install the application if a side-loading completion call-back is received from the terminal.

The application installing unit may further include an installation completion call-back receiving unit which receives an application completion call-back from the terminal.

DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621

In accordance with another aspect of the invention, a system for installing an application that is downloaded from a server and stored in a client in a terminal, includes a side-loading receiving unit which, if a command to side-load the stored application is received from the client, receives side-loading of the stored application from the client, a side-loading call-back signal transmitting unit which, if the side-loading is completed, transmits the side-loading call-back signal to the client, and a terminal installing unit which, if a command to install the side-loaded application is received from the client, installs the side-loaded application in the terminal, wherein the application stored in the client is downloaded from the server and stored in an order of completion of downloading of the application.

The side-loading command and the installing command may be transmitted to the terminal using object exchange (OBEX).

The application may be side-loaded on the terminal using a Media Transfer Protocol (MTP).

According to the various exemplary embodiments, an application may be downloaded and installed in an asynchronous manner and thus, user convenience may be enhanced.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and/or other aspects of the present disclosure will be more apparent by describing certain present disclosure with reference to the accompanying drawings, in which:

FIG. **1** is a view illustrating a system for installing applications according an exemplary embodiment;

FIG. **2** is a schematic block diagram to explain functions of a client and a terminal illustrated in FIG. **1**;

FIG. **3** is a schematic block diagram of an application storage unit illustrated in FIG. **2**;

FIG. **4** is a schematic block diagram of an application installing unit illustrated in FIG. **2**;

FIG. **5** is a view illustrating an example of a web browser of an application store which is executed by an application installing system according to an exemplary embodiment; and

FIG. **6** is a flowchart illustrating a method for installing applications according to an exemplary embodiment.

DETAILED DESCRIPTION

In the following description, like drawing reference numerals are used for the like elements, even in different drawings. The matters defined in the description, such as detailed construction and elements, are provided to assist in a comprehensive understanding of exemplary embodiments. However, exemplary embodiments can be practiced without those specifically defined matters. Also, well-known functions or constructions are not described in detail as they would obscure the application with unnecessary detail.

FIG. **1** is a view illustrating a system for installing applications according an exemplary embodiment. As shown, an application installing system **200** includes a server **110**, a client **120**, and a terminal **130**. The server **110** is connected to the client **120** via a network, for example, via the Internet. The client **120** and the terminal **130** may be connected via cable or wirelessly. For example, the client **120** may be connected to the terminal **130** through a USB port or Bluetooth.

Herein, the sever **110** refers to a server which runs an application store for selling applications to users, and the server stores a plurality of applications to be transmitted to a client. The client refers to a PC which transmits a request for downloading a plurality of applications available in an application store to a server and stores applications downloaded from the server. The terminal **130** refers to a mobile phone which executes purchased applications, and may include various multimedia apparatuses such as a smart phone, a cellular phone, an MP3 player, and a PMP.

FIG. **2** is a schematic block diagram illustrating the functions of a client and a terminal shown in FIG. **1**. As illustrated in FIG. **2**, a client **120** of an application installing system **120** includes an application download request transmitting unit **122**, an application storage unit **124** and an application installing unit **126**, and a terminal **130** of the application installing system **120** includes a side-loading receiving unit **132**, a side-loading call-back signal transmitting unit **134** and a terminal installing unit **136**.

In operation, the download request transmitting unit **132** transmits a request for downloading at least one application to the server **110**. The server **110** transmits an application to the client **120** in response to the download request of the client **120**.

Herein, the protocol between the client **120** and the server **110** may be a Hypertext Transfer Protocol over Secure Socket Layer (HTTPS) protocol. The HTTPS protocol is employed for security reasons since the HTTPS protocol may be protected from eavesdropping while an HTTP protocol is vulnerable to eavesdropping when contents are transmitted through a specific program.

Herein, the HTTPS is an upgraded version of the HTTP which is a worldwide web communication protocol. The HTTPS is developed by Netscape Communications Corporation for authentication and encryption of communication and is widely used in e-commerce.

The HTTPS encrypts a session data through an SSL protocol or a TLS protocol instead of using a general text in socket communication. Accordingly, an appropriate level of security for the data should be guaranteed. The basic TCP/IP port of HTTPS is 443. The level of security depends on accuracy of configuration of a web browser and an encryption algorithm supporting the software of the server **110**. The URL of a web page using HTTPS starts with "https://" instead of "http://".

The application storage unit **124** downloads an application corresponding to a request for downloading at least one application from the server **110** and stores the downloaded application.

Herein, the application storage unit **124** may download an application from the server **110** in an asynchronous manner. Accordingly, as an application installing system, according to an exemplary embodiment, downloads an application from the server **110** in an asynchronous manner, the client **120** may navigate other applications, that is, make inquires into or search for other applications in an application store while an application available in the application store is being downloaded or installed. In addition, only one application may be installed without synchronizing and thus, user convenience may be enhanced.

In an exemplary embodiment, the application storage unit **124** comprises a first queue **1242**, a local storage unit **1244**, and a second queue **1246** as illustrated in FIG. **3**.

Once applications are downloaded on the client **120** from the server **110**, the first queue **1242** downloads the applications from the server **110** in the order of purchase and stores them.

The local storage unit **1244** stores applications which are downloaded and stored in the first queue **1242** in the form of package. Herein, storing applications in the form of package means downloading not only one program but also other related programs together. For example, when downloading

MS OFFICE, not only MS OFFICE but also other MS OFFICE-related programs such as Word, PowerPoint, and Excel are downloaded and stored.

Specifically, the local storage unit **1244** stores applications downloaded from the server **110** in the form of application binary. Herein, the application binary interface (ABI) covers details regarding how functions control and pass parameter and retrieve return values. In computer software, the ABI describes the low-level interface between an operation program and an operating system or another application, an operating program and the library of the operating program, or between application components. Herein, the ABI is distinct from an application programming interface (API) which defines interface between a source code and a library.

The second queue **1246** stores applications stored in the local storage unit **1244** in the form of package in the order of completion of downloading.

The application installing system, according to an exemplary embodiment, may install applications which are stored in the second queue **1246** in the order of downloading completion on the terminal **130** by the application installing unit **126** which will be explained later.

Referring to FIG. **2**, the application storage unit **124** may download applications through a one-time URL address transmitted from the server **110** and store them. Herein, the one-time URL address is generated as random characters are combined and may be abolished/discarded after being used one time.

As the application installing system, according to an exemplary embodiment, accesses and uses a one-time URL address once and abolishes the URL address, applications may be downloaded through the one-time URL address only one time.

The application installing unit **126** installs on the terminal **130** applications which are stored in the application storage unit **124** in the order of completion of downloading. In other words, the application installing system, according to an exemplary embodiment, does not install applications on the terminal **130** in the order of purchase in a synchronous manner. Instead, the application installing system, according to an exemplary embodiment, downloads applications in asynchronous manner and stores the applications on the terminal **130** in the order of completion of downloading.

In an exemplary embodiment, the application installing unit **126** comprises an installation availability request receiving unit **1262**, a side-loading unit **1264**, an installation command transmitting unit **1266**, and an installation completion call-back receiving unit **1268**, as illustrated in FIG. **4**.

The installation availability request receiving unit **1262** receives a response to a request for application installation availability from the server **110**. In other words, the installation availability request receiving unit **1262** transmits a request for installation availability of an application which is purchased, downloaded, and stored from the server **110** to the server **110** and receives a response to the request from the server **110**. This is to prevent, for example, an application X which is purchased by a user A and installed in the terminal **130** of the user A from being installed in the terminal **130** of a user B. The server **110** stores information regarding a user terminal such as a type of apparatus or a phone ID of the user terminal **130** which purchases an application and may transmit a response to the request for installation availability of an application to the client **120** using stored information regarding the user terminal.

The side-loading unit **1264** transmits a side-loading command of an application to the terminal **130** and side-loads the application on the terminal **130**. Herein, the side-loading represents transmitting contents for a personal computer to a terminal, for example, copying and sending a music file or video, which is contents for a personal computer, to a terminal such as a cellular phone via a USB cable or wirelessly. In other words, the side-loading unit **1266** transmits a side-loading command to a terminal and actually performs side-loading of an application on the terminal.

If the installation command transmitting unit **1266** receives a side-loading completion call-back from the terminal **130**, the installation command transmitting unit **1266** transmits a command to install an application to the terminal **130**. That is, if the installation command transmitting unit **1266** receives a side-loading completion call-back indicating that side-loading is completed from the terminal **130**, the installation command transmitting unit **1266** transmits a command to install an application to the terminal **130**.

The installation completion call-back receiving unit **1268** receives an installation completion call-back indicating that installation of an application is completed from the terminal **130**. That is, if the terminal **130** completes installing a side-loaded application, the installation completion call-back receiving unit **1268** receives an installation completion call-back transmitted from the terminal **130**.

Referring back to FIG. **2**, if the side-loading receiving unit **132** receives a command to perform side-loading of an application stored in the application storage unit **124** of the client **120**, the side-loading receiving unit **132** receives side-loading of the stored application from the client **120**.

If side-loading is completed, the side-loading call-back transmitting unit **134** transmits a side-loading call-back to the client **120** to inform the client **120** of completion of side-loading.

If the terminal installing unit **136** receives a command to install a side-loaded application from a client, the terminal installing unit **136** installs the side-loaded application in a terminal.

Herein, applications stored in the client **120** may be downloaded and stored from the server **110** in the order of completion of downloading. That is, in an application installing system according to an exemplary embodiment, applications are not downloaded in the order of purchase in a synchronous matter but instead, applications are downloaded in an asynchronous manner.

Herein, a side-loading command and an installation command may be transmitted to a terminal using object exchange (OBEX). The OBEX is a communication protocol between a terminal and a client, and may be regarded as a kind of MODEM communication. The OBEX is used mostly when a command is transmitted to a terminal. The OBEX is originally developed to exchange data object through an infrared link and refers to a set of protocols which facilitate exchange of objects such as vCard contact information or vCalendar schedule information using IrDA or Bluetooth.

In addition, applications may be side-loaded on a terminal using a media transfer protocol (MTP). The MTP is a protocol used mostly when a media file is transmitted to a terminal and may be used in compatible with the OBEX. Although the MTP is relatively slow in comparison with a UMS, it provides an enhanced robust security protection by preventing possibilities of virus or malicious code infiltration.

FIG. **5** is a view illustrating an example of a web browser of an application store which is executed by an application installing system according to an exemplary embodiment.

As illustrated in FIG. **5**, an application store web browser displays a plurality of applications, and if an application is purchased and requested to be downloaded on a client, an application list is displayed on a download status window **501**

to show applications being downloaded and the download status of each application is also displayed on the window.

In an application installing system according to an exemplary embodiment, applications are not downloaded in the order of purchase in a synchronous matter and instead, applications are downloaded in an asynchronous manner. Therefore, it is possible to navigate other applications, that is, make inquires into or search for other applications in an application store.

FIG. **6** is a flowchart illustrating a method for installing applications according to an exemplary embodiment.

First, the client **120** transmits a request to download at least one application to the server **110** (S**601**).

Herein, the communication protocol between the client **120** and the server **110** may be a HTTPS protocol.

Subsequently, the client **120** downloads an application from the server **110** in response to the download request from the server **110** (S**602**) and stores the downloaded application in a storage unit (S**603**).

Herein, the applications may be downloaded stored in the storage unit in the order of completion of downloading from the server **110**.

In an exemplary embodiment of downloading applications (S**602**), applications may be downloaded from the server **110** in asynchronous manner.

When applications are downloaded (S**602**), applications may be downloaded through a one-time URL address transmitted from the server **110**.

Herein, the one-time URL address is generated as random characters are combined and may be abolished/discarded after being used one time.

In an exemplary embodiment of storing applications (S**603**), the applications downloaded from the server **110** may be stored in a storage unit of the client **120** in the form of package.

Subsequently, in order to see if it is possible to install an application stored in the client **120** in a terminal, the client **120** transmits a request for installation availability of application to the server **110** in the order of completion of downloading of applications (S**604**).

In other words, the client **120** transmits to the server **110** a request for installation availability of an application purchased and downloaded from the server **110** in the terminal **130** which is connected to the client **120**, and receives a response to the request from the server **110**. This is to prevent, for example, an application X which is purchased by a user A and installed in the terminal **130** of the user A from being installed in the terminal **130** of a user B. The server **110** stores information regarding a user terminal such as a type of apparatus or a phone ID of the user terminal **130** which purchases an application and may transmit a response to the request for installation availability of an application to the client **120** using stored information regarding the user terminal.

Subsequently, the client **120** receives a response to the request for installation availability of an application from the server **110** (S**604**). If the client **120** receives a response that it is possible to install an application, the client **120** transmits a command to side-load the application to the terminal **130** and performs side-loading of the actual application stored in the client **120** on the terminal (S**606**).

Herein, the side-loading represents transmitting contents for a personal computer to a terminal, for example, copying and sending a music file or video, which is contents for a personal computer, to a terminal such as a cellular phone via a USB cable or wirelessly.

Herein, a side-loading command and an installation command may be transmitted to the terminal **130** using object exchange (OBEX). The OBEX is a communication protocol between a terminal and a client, and may be regarded as a kind of MODEM communication. The OBEX is used mostly when a command is transmitted to a terminal.

In addition, applications may be side-loaded on a terminal using a media transfer protocol (MTP). The MTP is a protocol used mostly when a media file is transmitted to a terminal and may be used in compatible with the OBEX. Although the MTP is relatively slow in comparison with a UMS, it provides a better security protection by preventing possibilities of virus or malicious code infiltration.

If the client **120** receives a side-loading completion call-back from the terminal **130** (S**608**), the client **120** transmits a command to install an application to the terminal (S**609**).

In other words, if the client **120** receives a side-loading completion call-back indicating that side-loading is completed from the terminal **130**, the client **120** transmits a command to install an application to the terminal **130**.

Subsequently, the terminal **130** installs the application side-loaded from the client **120** in the terminal **130** (S**610**), and if installation of the application is completed, transmits an installation completion call-back to the client **120** (S**611**).

Accordingly, in an application installing system according to an exemplary embodiment, applications are downloaded from the server **110** in an asynchronous manner. Therefore, the client **120** may navigate other applications, that is, make inquires into or search for other applications in an application store while an application available in the application store is being downloaded or installed. In addition, only one application may be installed without synchronizing the entire applications and thus, user convenience may be enhanced.

Meanwhile, the above-mentioned application installing method may be embodied as a program command executable through various computer means and recorded in a recording medium readable by a computer. In this case, the recording medium readable by a computer may include a program command, a data file, and data configuration alone or in combination. Meanwhile, the program command recorded in the recording medium may be exclusively designed and configured for the present invention or may be known to and commonly used by those skilled in the field of computer software industry.

The recording medium readable by a computer includes magnetic media such as a hard disk, a floppy disk, and a magnetic tape, optical media such as a CD-ROM and a DVD, magneto-optical media such as a floptical disk, and a hardware apparatus specially designed to store and perform a program command such as ROM, RAM, and a flash memory. Meanwhile, such a recording medium may be a transmission medium such as an optical or metal strip and waveguide including carrier wave which transmits a signal designating a program command, data configuration, and so forth.

In addition, the program command includes a machine code composed by a compiler and a high-level language code executable by a computer using an interpreter. The above-described hardware apparatus may be configured to operate as more than one software module to perform operations of the present invention and vice versa.

Although a few embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in this embodiment without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.

What is claimed is:

1. A method for installing an application on an external terminal, the method comprising:

transmitting sequentially at least one request to a server to download applications to be installed on the external terminal;

asynchronously receiving from the server the applications in response to the request and storing the downloaded applications in an order of download completion;

transmitting a search request to the server and displaying information received from the server in response to the search request while the applications are downloading;

determining whether it is capable to install the applications on the external terminal, based on information regarding the external terminal; and

if the applications can be installed in the external terminal, transmitting at least one of the stored downloaded application to the external terminal to be installed,

wherein the transmitting at least one of the stored downloaded application to the external terminal comprises:

receiving a command to side-load the at least one application on the external terminal;

side-loading the at least one application on the external terminal for installing the at least one application on the external terminal when the side-loading of the at least one application is completed; and

receiving a side-loading call-back signal from the external terminal after the external terminal side-loaded the at least one application.

2. The method as claimed in claim **1**, wherein a communication with the server is utilizes a Hypertext Transfer Protocol over Secure Socket Layer (HTTPS) protocol.

3. The method as claimed in claim **1**, further comprising downloading at least one of the applications through a one-time URL address transmitted from the server.

4. The method as claimed in claim **3**, wherein the one-time URL address is generated as random characters are combined and is discarded after being used one time.

5. The method as claimed in claim **1**, wherein the storing comprises storing an application downloaded from the server in a form of package.

6. The method as claimed in claim **1**, wherein the installing comprises:

receiving from the server a response to a request for availability of installation of the at least one application;

transmitting to the terminal a command to side-load the at least one application and side-loading the at least one application on the terminal; and

in response to receive a side-loading completion call-back from the terminal, transmitting to the terminal a command to install the at least one application.

7. The method as claimed in claim **6**, wherein the installing further comprises:

receiving an installation completion call-back from the terminal.

8. A method for installing applications, which are downloaded from a server and stored in an external client, the method comprising:

in response to receiving a command to side-load the applications as received from the client, side-load the applications from the client;

in response to completion of the side-loading, transmit a side-loading call-back signal to the client; and

in response to receiving commands to install the side-loaded applications from the client, install the side-loaded applications,

wherein the side-loaded applications are:

downloaded from the server according to a purchase order in which the applications were purchased,

stored in the client in a download order in which each application completed downloading from the server to the external client, and side-loaded according to the download order and not the purchase order.

9. The method as claimed in claim **8**, wherein the side-loading command and the installing command are received using object exchange (OBEX).

10. The method as claimed in claim **8**, wherein the application is side-loaded using a Media Transfer Protocol (MTP).

11. A system for installing an application, which is requested by a client and downloaded from a server on an external terminal, comprising:

the server configured to:

store a plurality of applications and information regarding the external terminal, and

transmit one or more applications in response to a request; and

the client including a display, the client configured to:

transmits sequentially at least one request to the server to download applications to be installed on the external terminal,

asynchronously receive from the server the applications in response to the request and store the downloaded applications in an order of download completion,

transmit a search request to the server and display information received from the server in response to the search request while the applications are downloading,

determine whether it is capable to install the applications on the external terminal, based on the information regarding the external terminal, and

if the applications can be installed in the external terminal, transmit the at least one stored application to the external terminal to be installed,

wherein the client further configured to:

receive a command to side-load the at least one application on the external terminal; and

side-load the at least one application on the external terminal for installing the at least one application on the external terminal when the side-loading of the at least one application is completed; and

receive a side-loading call-back signal from the external terminal after the external terminal side-loaded the at least one application.

12. The system as claimed in claim **11**, wherein communication with the server utilizes a Hypertext Transfer Protocol over Secure Socket Layer (HTTPS) protocol.

13. The system as claimed in claim **11**, the client further configured to:

download the applications in a first queue arranged in an order in which the applications were requested; and

store the downloaded applications in a second queue in an order in which the applications completed downloading.

14. The system as claimed in claim **11**, the client further configured to download the application through a one-time URL address transmitted from the server.

15. The system as claimed in claim **14**, wherein the one-time URL address is generated as random characters are combined and is discarded after being used one time.

16. The system as claimed in claim **11**, the client further configured to:

transmit a request to the server for confirmation that one of the downloaded application is available to install;

upon receiving a positive response from the server to the request, transmit a command to the terminal to side-load the one of the downloaded applications; and

transmit a command to install the one of the downloaded applications in response to receiving a side-loading completion call-back from the terminal.

17. The system as claimed in claim **16**, the client further configured to: receive an application installation completion call-back from the terminal.

18. A system for installing applications, which are downloaded from a server and stored in an external client, comprising:

a controller configured to:

in response to receiving a command to side-load the stored applications as received from the client, receive side-loading of the stored applications from the client;

in response to completion of the side-loading, transmit a side-loading call-back signal to the client; and

in response to receiving a command to install the side-loaded applications from the client, install the side-loaded applications,

wherein the side-loaded applications are:

downloaded from the server according to a purchase order in which the applications were purchased,

stored in the client in a download order in which each application completed downloading from the server to the external client and not in the purchase order, and

side-loaded according to the download order and not the purchase order.

19. The system as claimed in claim **18**, wherein the command to side-load and the command to install are received using object exchange (OBEX).

20. The system as claimed in claim **18**, wherein the application is side-loaded on using a Media Transfer Protocol (MTP).

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 8,935,690 B2
APPLICATION NO. : 13/018554
DATED : January 13, 2015
INVENTOR(S) : Jin-hee Kim et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

Column 9, Claim 2, Line 28 should read as follows:
--...the server utilizes a...--

Signed and Sealed this
Fourteenth Day of April, 2015

Michelle K. Lee

Michelle K. Lee
Director of the United States Patent and Trademark Office

DoDots Exhibit 2049
Samsung v. DoDots - IPR2023-00621